



## Maximizing ROI with ESG Data Management

ESG strategy, technology & reporting to move your business forward

March 2024

# Executive Summary

---

> This whitepaper offers a comprehensive approach to maximizing ROI of strategic ESG data management and technological innovation, offering valuable insights for businesses looking to integrate sustainability into their core operations.

Our aim is to arm executives with a strong case to move forward with ESG data implementation, a clear picture of the challenges they are likely to face, and an understanding of how technology plays an enabling role in pulling this off successfully.

- Investing in ESG data has a positive ROI and unlocks improvements in financial performance. Companies with high sustainability performance tend to score higher on total shareholder return, stock market and accounting performance, and see an increase in revenue, supply chain cost reduction, brand value, and significant risk reduction. To demonstrate the potential ROI of ESG, we deliberately go beyond the usual calls for businesses to be virtuous, which is the rightful systemic reason behind it, but which often doesn't help take practical next steps.
- ESG data is complex and multidimensional. Aggregating this information into a set of scores can be challenging due to the complexity of ESG factors and the diverse nature of underlying data. Non-traditional sources of data can provide valuable and hard-to-get information for measuring ESG and identifying risks.
- Technology is pivotal—particularly data management and cloud-powered technologies—that play a crucial role in addressing the challenges of ESG data collection, reporting, and analytics. Agile data infrastructure and governance models can support effective ESG data management strategies, leveraging both traditional and non-traditional data sources to enhance ESG reporting and compliance.
- We advocate for building an in-house ESG data ecosystem to centralize data collection and management, ensuring control over data quality and integrity. In addition, ESG reporting platforms have an important role to play in simplifying the reporting process, but it is important to select or build a platform that meets the specific needs of the business.
- Organizations must approach their ESG data through a company-wide project and follow three guiding principles: start with rough estimates and gradually get more precise, progressively move from point-in-time to ongoing measurement, and ensure that both macro visibility and granular auditability are maintained.

# Table of contents

---

## PART I

---

**Why investing in ESG data has a positive ROI and unlocks improvements in financial performance**

---

04 - 14

## PART II

---

**Tech to the rescue**

- The alphabet soup of ESG reporting frameworks
- Key challenges of ESG data & reporting
- The importance of building
- Agile data infrastructure & governance
- Ingestion: How Cloud-powered technologies are Facilitating ESG data ingestion
- Leveraging non-traditional sources of data and physical sensors
- Storage: The value of building an in-house ESG data lake
- Reporting: The role of ESG reporting platforms
- Case Studies

---

15 - 46

## PART III

---

**Moving Forward**

- Guiding principle #1: From point-in-time to ongoing
- Guiding principle #2: From rough to precise
- Guiding principle #3: From macro to granular
- Where to next?

**About PALO IT  
The Authors**

---

47 - 57

# PART I

---

Why investing in ESG data has a positive ROI and unlocks improvements in financial performance



> Delivering on ESG and sustainability is a complex dynamic, because stakeholders, consumers, businesses, regulators, governments and activists approach it from different, and at times contradictory, angles.

#### Contradictions on the consumer front:

On one hand, we see a plethora of reports stating that consumers are willing to **pay more** for **environmentally** and **socially responsible products**. Reports from PWC, McKinsey and BCG-Patch emphasize that consumers are willing to pay a sustainability premium of 5% or more, **up to 12%**.

On the other hand, we see every day in the media and on the ground, that consumers are strongly opposed to paying more for their bills. **The “Yellow Vests” movement** of 2018-2019 in France, the current protests of 2024 from farmers across Europe, these movements all express some degree of resistance against carbon taxation and environmental regulations.

In particular, there is a **disconnect** between what **consumers want** and what most **companies sell**<sup>11</sup>.

Globally, **48% of consumers** consider how products are used when thinking about **sustainability**. These consumers are more concerned about how a product can be reused, its durability, and how it will **minimize waste**. In contrast, most companies sell **sustainable goods** based on how they are made, their **natural ingredients**, and the **farming practices** deployed.

<sup>11</sup><https://www.bain.com/insights/selling-sustainability-means-decoding-consumers-ceo-sustainability-guide-2023/>



Globally, **48%** of  
**consumers** consider how  
products are used when  
thinking about  
**sustainability**

## Some misconceptions about where ESG matters in the world.

---

Emerging market companies, as a cohort, underperform in ESG when compared to those in developed markets according to widely accepted agency rankings.

It's not entirely fair, of course, to apply identical ESG criteria to high-income and low-income nations, which are at different stages of economic development and face different sets of urgent social challenges.

However, emerging market companies that are significant exporters to the EU for example, tend to have higher ESG scores, and have a significant lead over their peers and local competitors. In fact, that lead is proportionally bigger advantage in emerging markets than in mature markets, where significant differentiation on sustainability is harder to achieve.

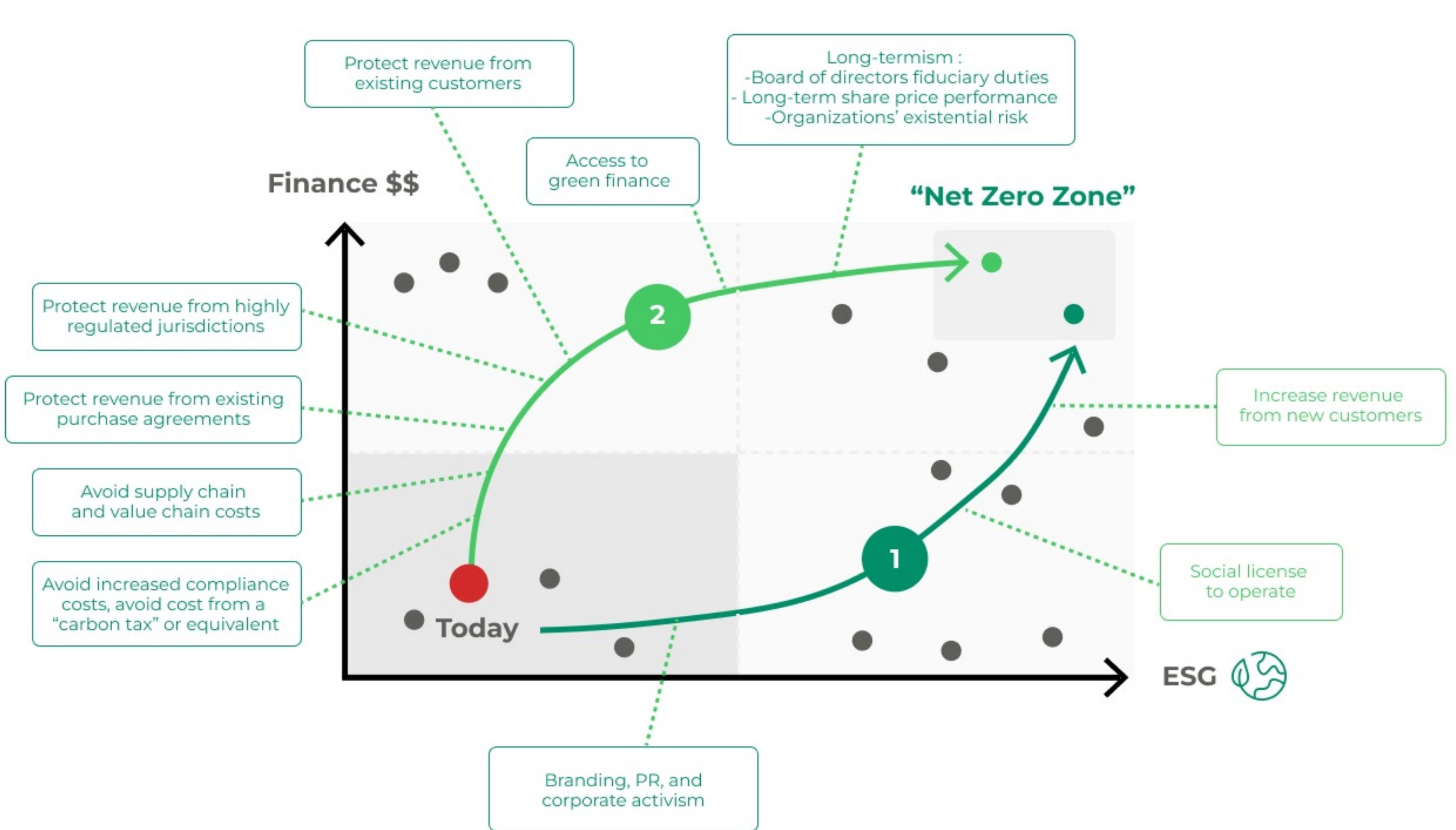
Faced with navigating those dynamics, business can roughly follow two angles, or pathways:

- 1 • The “right brain”, **ESG pathway associated with the ethical argument to save the climate and biodiversity**, supported by regulations to rein in excesses in production and consumption.
- 2 • The “left brain”, **analytical, material, and financial pathways to look for tangible businesses value**.

Unlike the previous digital transformation, which was in essence mono-dimensional (embrace tech to remove friction and generate more revenue) and akin to riding a wave, this sustainability phase feels more like walking on a tightrope or mountain ridge and trying to maintain a balance between the two angles, “1” and “2”.



BUSINESSES NAVIGATE ALONG AND BETWEEN THOSE PATHWAYS AND GUARDRAILS TO CONVERGE AT THIS “NET ZERO ZONE”, WITH DIFFERENT WAYS IN WHICH ESG DELIVERS ROI.



## 1

### ESG pathway associated with the ethical argument to save the climate and biodiversity

Branding, PR, and corporate activism maximize ROI when ESG efforts are strongly aligned with business priorities. It's obviously a delicate territory, as accusations of greenwashing can backfire, but if done well and aligned with true value and the right product, it definitely makes a mark.

Some organizations also go one step further and tie their brand and purpose to being ESG champions: Patagonia, Veja, and Bank Australia are just a few examples of brands that have successfully implemented an ESG strategy to drive value for their business.

On the other hand, Danone is a good example of the intent to drive a sustainability transformation from the top, with a CEO with a strong vision, but who struggled to take the rest of the organization on the journey, and who eventually lost the trust of his board.



**“Patagonia, Veja, and Bank Australia are just a few examples of brands that have successfully implemented an ESG strategy to drive value for their business.”**

- **ESG engagement contributes to attracting and retaining talent.** For specific demographics (not all) ESG commitments are important. The metrics seem intangible and can be challenged. However, all organizations and their management know how essential engaged talents are to delivering results and avoiding costly mistakes and breaches. For instance, studies regularly flag that between 70% and 80% of data breaches are caused by employee mistakes. In hyper-competitive and hyper-connected business models where tech is omnipresent, the paradox is that the human factor is more important than ever.
- **Acquiring revenue from new customers,** for those willing to spend more for sustainable products that matter to them. The commitment to ESG is reflected in the actual product: Patagonia, some natural health care products and organic food brands are clear examples.



## 2

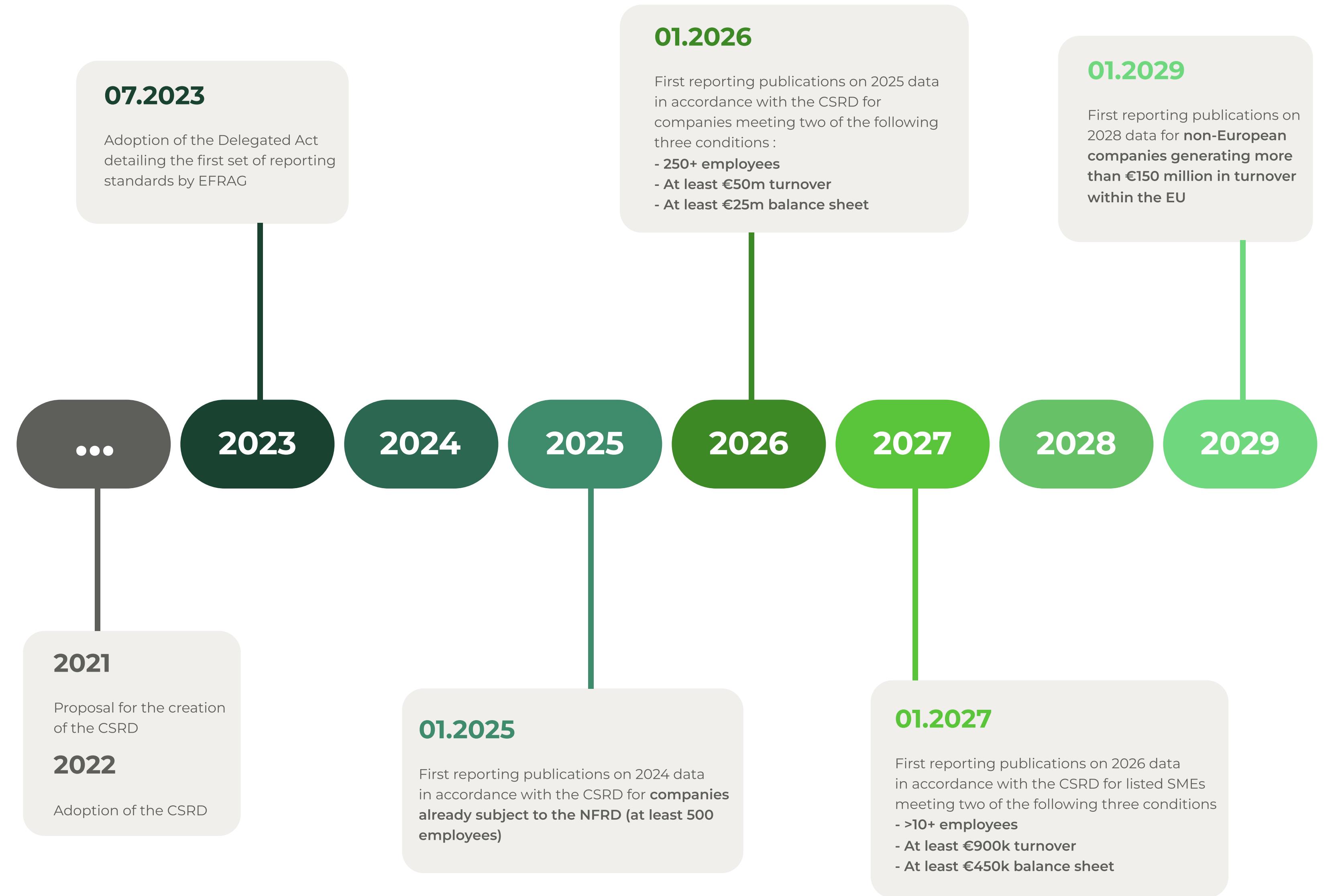
### Financial pathways to look for tangible businesses value

On the more financially-minded side, **avoiding increased compliance cost** is a significant driver. The European Corporate Sustainability Reporting Directive (CSRD) and mandatory European Sustainability Reporting Standards (ESRS) are probably the most significant catalysts at the moment.

While the CSRD and ESRS are interconnected, they serve distinct functions. The CSRD sets legal framework and reporting obligations, while the ESRS provides the roadmap for compliance. The ESRS provides a structured framework for reporting, covering a range of environmental, social, and governance aspects and outlines how and what information and ESG metrics companies need to report to comply with the CSRD.

In a nutshell, in 2025 this new regulation will apply to companies of more than 250 employees, with €50 million or more in sales, or a balance sheet of €25 million or more. In 2028, the CSRD will apply to non-European companies generating more than €150 million in sales on European territory.

In addition, CSRD moves from a “simple materiality” assessment (e.g. the climate has an impact on my business) to a “**double materiality**” (e.g. my business also has an impact on the climate). Double materiality recognizes the interconnectedness between a company’s financial success and its societal and environmental impact, and asks companies to report on the potential positive or negative impact of its operations on people or the environment over the short-, medium- or long term. For companies to measure and understand their impact, they will need to improve their ESG data management strategy and system.



> In fact, of all the ESG ROI rationale, the geopolitical appetite from jurisdictions like the EU to use regulations like CSRD to enforce some form of commercial protectionism is a sure bet, and should be a strong incentive for businesses worldwide.

Projecting what a carbon tax could cost businesses is also a compelling argument. Our modeling, based on known GHG emissions across sectors, shows that a global average price of carbon increasing from \$6/ton today to \$75/ton by 2030 could push a theoretical carbon tax for heavy emitters, such as utilizers, up to 30% of revenue.

Of course, this is speculative, to simply highlight the magnitude of what is at stake. One would assume that by the time carbon reaches \$75 as a global average, those big emitters and their value chain will have made a dent in their scope 1, 2, and 3 emissions; and therefore decreased emissions and associated tax.

Moving from the cost line to the top line, access to green finance is also an important angle. Demand from investors for sustainable investment opportunities—despite challenging market conditions that led sustainable funds slightly underperforming traditional funds for the first time since 2018—sustainable funds saw net positive fund flows of US\$115 billion (around 3% of 2021 year-end assets under management), while traditional funds saw sustained outflows.

source: <https://en.traace.co/post/esrs-in-csrd-reporting-standards>



The example of Thailand shows how real this can get. Thailand lost approximately US\$1 billion of revenue during the 4 years (2015-2019) that **the EU enforced the 'yellow card' seafood warning on Thailand because of reports of illegal, unreported, and unregulated fishing (IUU)** and forced labor on fishing vessels.

This meant the EU could fully ban seafood imports until Thailand reformed the sector and met international laws and standards. After industry reform, the amendment of 138 Thai fishing regulations to align with international laws and regulations, and the set up of key monitoring, surveillance, and control systems with Thai government bodies, the EU lifted the ban in 2019.



**“55% of global GDP,  
equal to US\$41.7 trillion,  
depends on high-functioning  
biodiversity and ecosystems.”**

> Companies with strong ESG performance can benefit from lower financing costs as lenders offer preferential terms for sustainable projects. This can include concessional finance, lower interest rates and longer loan tenures. It's also important to note that, in general, higher ESG scores cut firm finance costs by increasing equity financing, because value creation has always been at the heart of private equity (PE) investment strategy.

In addition to the previously mentioned ability to retain or attract customers who prioritize sustainability, sustainable projects also typically qualify for government incentives, subsidies, or grants aimed at promoting environmental initiatives, leading to increased market share and revenue growth.

Finally, “long-termism” is the ultimate goal of ESG and sustainability. One figure helps us to grasp the long-term stakes: **55% of global GDP, equal to US \$41.7 trillion, depends on high-functioning biodiversity and ecosystems**, with one fifth of countries at risk of their ecosystems collapsing. Without functioning ecosystems, we'll have no food, no wood, no crops, and no natural resources to feed into business value chains.

### Failing to manage that will put increasing pressure on several dimensions:

- **Board of directors fiduciary duties**

Directors who fail to address material ESG risks and opportunities are increasingly viewed as poor fiduciaries. For instance, Engine No. 1's Exxon Mobil board activism campaign and State Street's voting against the re-election of directors at companies with poor gender diversity on their boards reflect this trend<sup>2</sup>.

- **Long-term share price performance**

Research shows that the positive impact of ESG globally varies depending on ownership type, region, and degree of pollution. ESG is not a silver bullet for financial performance, but rather a catalyst for when other things are done right.

- **Organizations' long-term existential risk**

With the introduction of double materiality, companies need to report on their potential positive or negative impact over the short-, medium- or long-term. This will require them to identify, mitigate, and adapt to climate impact across their business model, products, and value chains, putting the very viability of their operations at existential risk. Deloitte research reveals inaction on climate change could cost the world's economy US\$178 trillion by 2070.<sup>3</sup>

<sup>2</sup> <https://www.wsj.com/articles/state-street-votes-against-400-companies-citing-gender-diversity-1501029490>

<sup>3</sup> <https://www2.deloitte.com/xe/en/pages/about-deloitte/press-releases/deloitte-research-reveals-inaction-on-climate-change-could-cost-the-world-economy-usd-178-trillion-by-2070.html>

# PART II

---

Tech to the rescue -  
ESG data collection  
& reporting

## > When we talk about ESG frameworks, we're mostly talking about data.

Given these obligations, ESG data will need to be treated with the same rigor that has been applied to financial data. Your compliance is on the line. Because of its breadth and variety of sources, this means that a company must be able to structure and juggle an astronomical amount of data to provide high-quality and reliable reports to all stakeholders (regulators, shareholders, staff, customers, suppliers, etc).

For instance, if a company is collecting human rights data to comply with the UN Guiding Principles on Business and Human Rights, it will need to assess all its key stakeholders (e.g., workers, customers, suppliers, etc.)

They'll need to be assessed against the 30 human rights outlined in the Universal Declaration of Human Rights and outline the company's approach to identify, mitigate, prevent, end and remedy any cases in the short-, medium-, and long-term (as well as documents that detail assessments, policies, procedures and mitigation plans).

This data should reside in the countries the users belong to and align with various data protection acts (e.g. GDPR, CCPA, PDPA, Data Protection Act 2018 UK, POPIA, etc).

```
141     rel="noreferrer"
142     href={trackUrl(url)}
143   >
144   Instagram
145   </a>
146 </li>
147 </ul>
148 </div>
149 );
150 }
151
152 ▼ renderWhatsNewLinks() {
153   return (
154     <div className={styles.whatsNew}>
155       <h4 className={styles.whatsNewTitle}>
156         <ul className={styles.whatsNewList}>
157           {this.renderWhat(
158             {this.renderWhat(
159               {this.renderWhat(
160                 {this.renderWhat(
161                   {this.renderWhat(
162                     {this.renderWhat(
163                       {this.renderWhat(
164                         {this.renderWhat(
165                           </ul>
166                         </div>
167                       );
168
169
170   ▼ renderWhatsNewItem(title, url) {
171     return (
172       <li className={styles.footerItem}>
173         <a href={trackUrl(url)} target="_blank" rel="noopener noreferrer">
174           {title}
175         </a>
176       </li>
177     );
178
179
180
181
182
183
184   ▼ renderFooterSub() {
185     return (
186       <div className={styles.footerSub}>
187         <Link to="/" title="Home - Unsplash">
188           <Icon type="logo" className={styles.footerSubLogo}>
189           />
190         </Link>
191         <span className={styles.footerSlogan}>
192           </span>
193         </div>
194       );
195
196
197
198   ▼ render() {
199     return (
200       <footer className={styles.footerGlobal}>
201         <div className="container">
202           {this.renderFooterMain()}
203           {this.renderFooterSub()}
204         </div>
205       </footer>
206     );
207
208   }
209 }
```

	Sample Data	Type of Data
<b>E</b>	<b>Carbon emission</b>	<b>Unstructured Data</b> <ul style="list-style-type: none"> <li>Company-specific: Management Announcements, Shareholder or Company policies, Regulatory filings/disclosures</li> <li>Public: News articles, NGO campaigns, social media, web pages, industry forums</li> <li>Documents: Trade confirms, loan agreements, prospectuses, etc.</li> </ul>
	<b>Energy consumption</b>	<b>Structured Data</b> <ul style="list-style-type: none"> <li>BBG/ ICE/ MSCI/ TruCost</li> <li>Extended public data sources such as UN, OECD, World Bank, NASA etc.</li> </ul>
	<b>Waste management</b>	<b>Client outreach</b> Digital questionnaires
<b>S</b>	<b>Diversity and inclusion</b>	<b>Comparable Proxy</b> Work with client to find comparative assets
	<b>Human rights</b>	<b>Internal Data</b> Internally available ESG & Climate risk data
	<b>Employee welfare</b>	
<b>G</b>	<b>Executive remunerations</b>	
	<b>Accountability &amp; oversight</b>	
	<b>Ethical conduct</b>	

To an extent, ESG is a complex use case to manage and deliver as part of a data strategy in support of business objectives.

If, for example, an organization defines that a reduction in its carbon footprint is a critical objective, then its ability to measure, track and improve its carbon footprint is a necessary output of a data strategy.

Collecting and analyzing data will help for reporting. In addition, it helps to predict various metrics—like carbon emissions—so organizations can put in place preventative measures.

However, many organizations find themselves ill-prepared given their low level of data maturity across their organization and within their value chain.

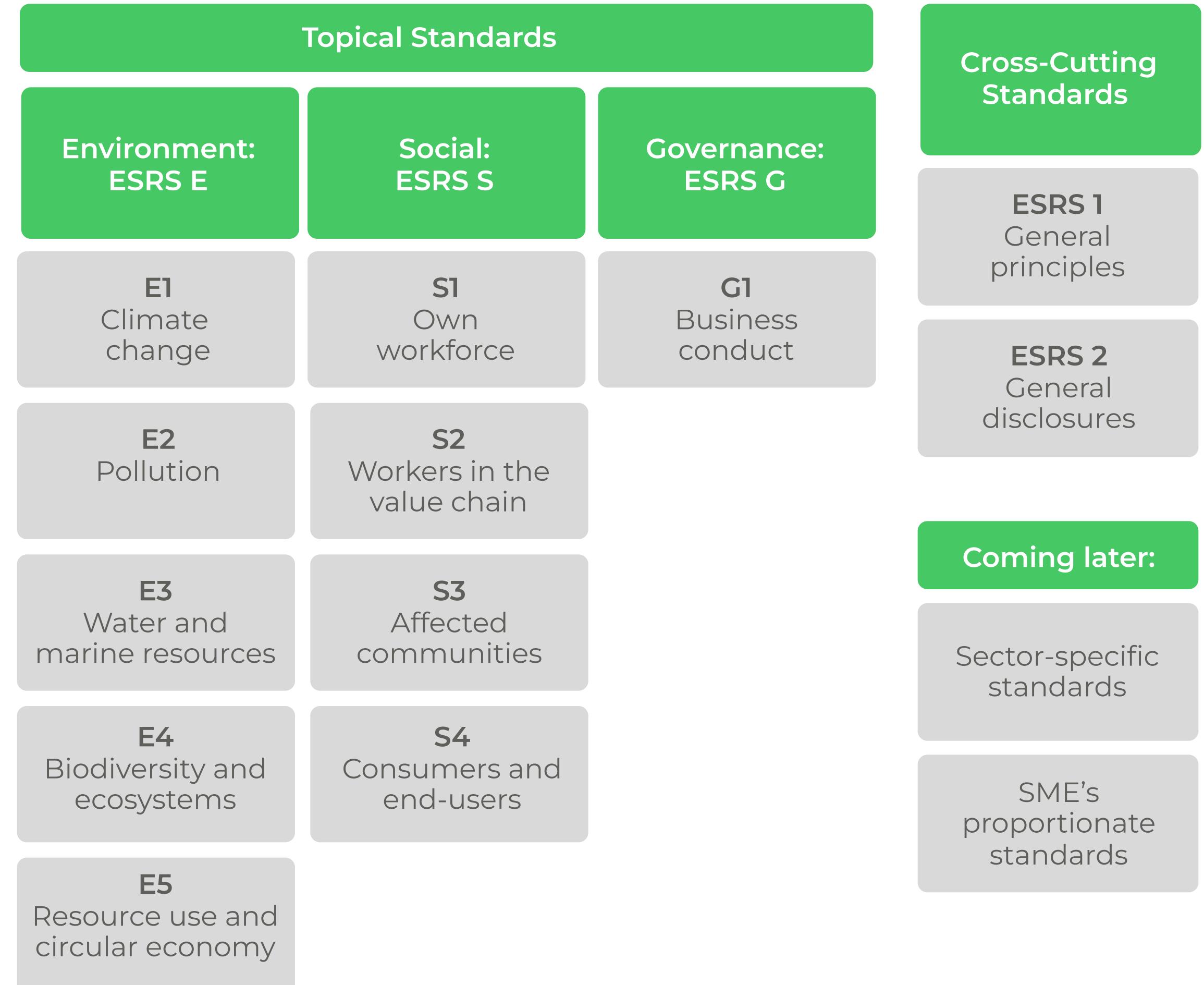
# The alphabet soup of ESG reporting frameworks

> There's no universal standard for ESG reporting. This leads to difficulties in comparability among organizations, and confusion over which standards to adopt. While frameworks like GRI and SASB exist, they are self-regulatory and lack universal metrics.

The absence of globalized, standardized ESG disclosure obligations allows organizations significant discretion in reporting non-financial information, making their reports hard to compare with others.

The main factor driving the adoption of any given framework is compliance, which in turn is usually driven by the jurisdiction where they operate.

## CATEGORIES OF REPORTING UNDER THE ESRS



Source: EFRAG

**In addition to the ESRS framework explained above, here are six more leading ESG reporting Frameworks:**

**1 – Global Reporting Initiative (GRI):**

GRI offers a comprehensive set of standards for sustainability reporting, focusing on economic, environmental, and social impact. It is one of the most widely adopted frameworks globally for disclosing sustainability information. 84% of the world's largest companies apply the GRI guidelines in their sustainable development approach.

**2 – IFC's Performance Standards on Environmental and Social Sustainability or the Equator Principles:**

World Bank's International Finance Cooperation (IFC) Group's risk management frameworks for sustainability used by financial institutions. Specifically, it provides guidance on how to identify risks and impact and can help avoid, mitigate, and manage risk and impact for financial projects.

**3 – Sustainability Accounting Standards Board (SASB):**

SASB provides industry-specific standards that help companies disclose financially material sustainability information to investors. It focuses on issues that affect financial performance and are relevant within an industry.

**4 – Task Force on Climate-related Financial Disclosures (TCFD):**

TCFD offers recommendations for companies to disclose climate-related financial risks and opportunities. Its framework is structured around governance, strategy, risk management, and metrics and targets.

**5 – CDP (formerly the Carbon Disclosure Project):**

CDP runs a global disclosure system that enables companies, cities, states, and regions to measure and manage their environmental impact. It focuses on climate change, water security and deforestation.

**6 – United Nations Sustainable Development Goals (UN SDGs):**

While not a reporting framework per se, many organizations align their sustainability reporting with the SDGs to demonstrate their contribution towards achieving these global goals.

**7 – Taskforce on Nature-related Financial Disclosures (TNFD):**

Like TCFD but focused on nature-related risks, TNFD is developing a framework for organizations to report and act on evolving nature-related risks.



**“84% of the world’s largest companies apply the GRI guidelines in their sustainable development approach.”**

# Key challenges of ESG data and ESG reporting for business

> Since 2009, we've been working on data projects while helping organizations across industries execute their digital initiatives. This has given us unique insight into the factors that determine the data maturity of an organization, and ultimately, the success of a data project. These factors include:

**1 • Data Integration** - Combining data from different sources and formats to provide a unified view, to cater comprehensive analysis.

**2 • Data Quality** - Data should be accurate, complete, consistent, and relevant to provide meaningful insight.

**3 • Data Literacy** - The level of understanding and skills of the team working with data. It's important that team members can interpret and work with data effectively.

**4 • Data Privacy** - Protecting sensitive information and ensuring compliance with data protection laws to maintain trust and legal compliance.

**5 • Data Governance** - Establishing clear policies and procedures for managing data throughout its lifecycle to ensure that data remains secure, private, and of high quality.

**6 • Data Accessibility** - Ensuring that the right people have access to the right data at the right time, while maintaining security and compliance with data governance policies.

**7 • Data interpretation** - The ability to accurately analyze and derive meaningful insights from data, which involves the correct usage of statistical methods and interpretation of the results.

**8 • Infrastructure** - The ability to efficiently handle growing amounts of data and users, which often involves cloud storage solutions, data warehouses, and robust hardware or virtualized resources.

Organizations with high data maturity have consciously developed their competencies in each of these factors, and constantly strive to address any weak points.

On the other hand, organizations with low data maturity are often unaware of their status, or have yet to implement the necessary rigor to consistently adhere to these factors.

Beyond the typical hurdles of a data project, ESG data presents three specific challenges, detailed in the following section...



# 1

## Overarching ESG data management & strategy

Organizations often lack a clear ESG data strategy and taxonomy to identify and agree on the requisite data from data sources. In addition, they have not identified an ESG data and analytics platform (built or bought) that can support their strategic ambition, risk management activity, external disclosures (including regulatory obligations) and public commitments to stakeholders.

Articulating an ESG data strategy, managing the fragmentation of ESG data components, and ensuring data quality are interconnected challenges. Organizations may struggle to integrate ESG data strategy with their overarching data strategy, and to manage their full data lifecycle.

# 2

## ESG data tracking, quality and availability

ESG data quality refers to the condition of data, based on factors like accuracy, completeness, reliability and relevance. It's a measurement of how well-suited data is for serving its purpose within a given context to fulfill the requirements.

ESG data availability is the extent to which data is readily usable and accessible when required by data consumers. It not only refers to the physical presence of data, but also encompasses the ease and reliability with which it can be retrieved and used for a given task.

There are challenges related to the quality and availability of data for tracking ESG. Historically, efforts to measure ESG have relied on what companies disclose in their sustainability reports, which may be biased towards positive information and lack comprehensive coverage of negative aspects.

### Challenges in accessing and digitizing ESG data:

- a** Data may not be available in a digital form or is not accessible at all. For instance, data may not have been exported from accounting software or may be exported in an unusable format.
- b** At times, it can be necessary to "create" data, requiring significant effort. An example we've encountered was around the use of questionnaires to source data about how staff commute between home and work.
- c** Given the reliance on external data, organizations often find themselves constrained by the maturity of the systems and data of their suppliers. Our advice? Get them involved in the process early.

### Differences in data across locations and the importance of sense-making:

- a** There are significant, potential differences in data of the same type across different sites within the same organization. For example, accounting data from different countries within the company may contain entirely different types of information, not to mention different vendors for the same service across locations, and the need for local knowledge to be able to categorize data appropriately.
- b** This process of sense-making goes beyond coding and configuring a query script. Making sense of the data is crucial, and may require skills beyond traditional data-oriented expertise. The ability to interpret data, such as expertise in carbon accounting, can give your ESG project team a head start.

# 3

## ESG metrics & reporting platforms

Creating regulatory analysis, reporting and metrics linked to effective data and ensuring traceability is a key challenge. The overarching difficulties in measuring ESG include:

**a • Lack of standardized metrics:**

The measurement of ESG impact is an imperfect science due to the absence of standardized metrics and criteria for evaluating environmental, social and governance factors across companies.

**b • Subjectivity in measurement:** The process of measuring ESG has historically involved compiling data from various sources, including company reports and questionnaires, which can introduce subjectivity and bias into the measurement process.

**c • Complexity and multidimensionality:**

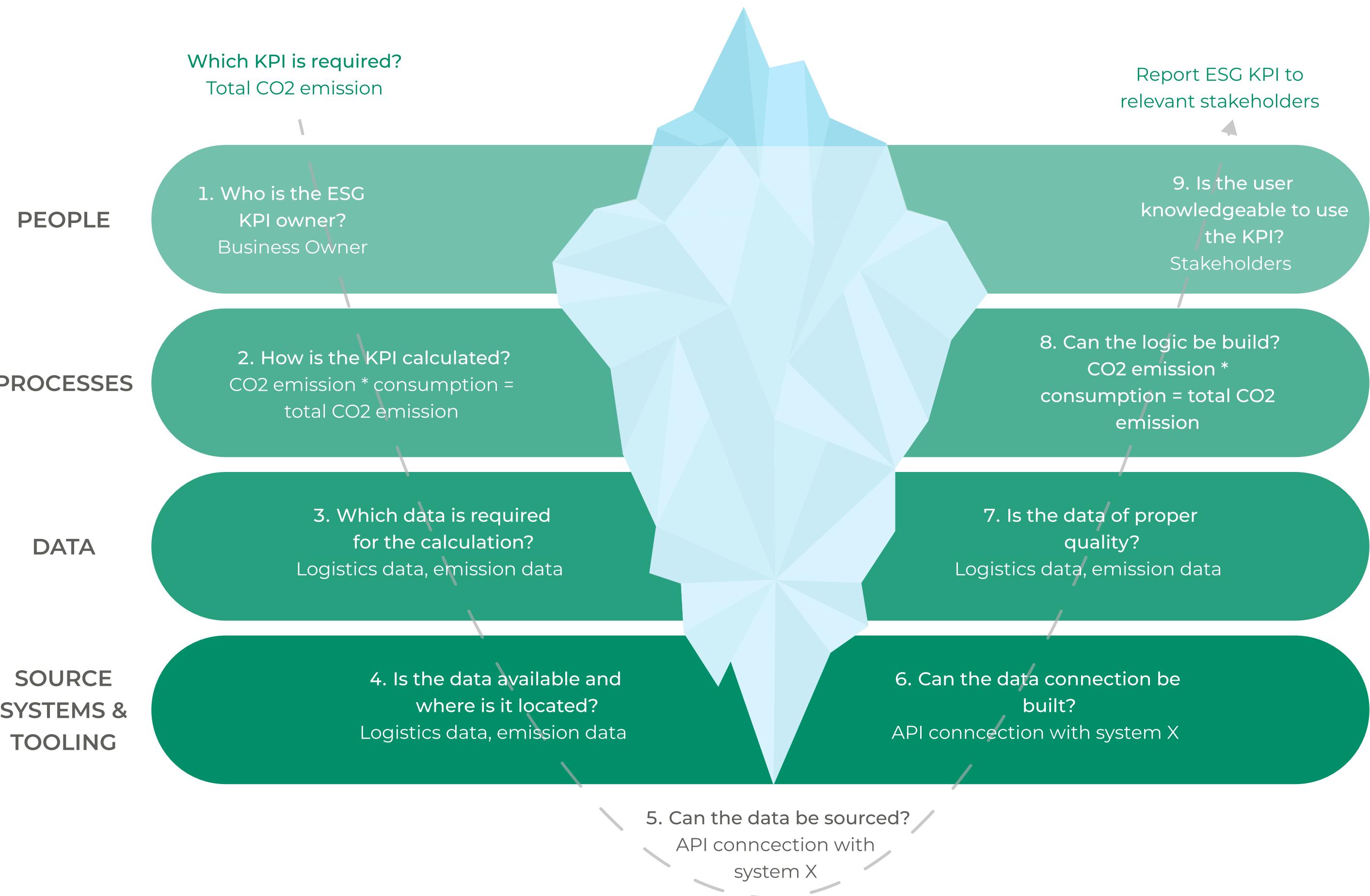
Measuring ESG is a multidimensional space, and aggregating this information into a single score or set of scores can be challenging due to the complexity of ESG factors and the diverse nature of the underlying data for different firms.

**d • Lack of consensus on measurement methodologies:**

There is no universal agreement on the most effective methodologies for measuring ESG, leading to variations in approaches and resulting scores from different rating agencies and data providers.

**e • Lack of data demonstrating due diligence process and impact:**

According to the UN Guiding Principles on Business and Human Rights (UNGPs)—and potentially the new EU Corporate Due Diligence Directive—companies should also provide data that can validate their due diligence process and its impact for stakeholders, which requires specific data analysis, impact assessments, and data collection over a longer course of time, with more stakeholders involved (e.g. employees, supply chain employees, partners and communities).



The actual reporting on ESG key performance indicators (KPIs) is often only a small step in an extensive process – the “tip of the iceberg”. What’s underneath the water, is where the challenges arise. ESG reporting spans a complex variety of people, processes, data and systems.

Luckily, recent advances in technology—notably in data engineering—have made it easier to ingest, store and report ESG data. Cloud-powered technologies like these can help companies navigate the evolving environment of sustainability targets and regulations.

# The importance of Agile data infrastructure & data governance in ESG reporting tools

> Before embarking on an ESG data project, it's essential to develop an ESG data strategy that is nested within your overarching data strategy, or at least takes your tech priorities and constraints into consideration.

To clarify this process, you should also define the data governance, data security and data taxonomy (aka data dictionary) based on various internal and external sources. This is crucial for maintaining the integrity and quality of ESG data, which is essential for accurate reporting.

ESG reporting frameworks are still evolving. As such, your data and reporting solutions should incorporate flexibility to be able to adapt to change. Modern data architecture provides this flexibility and typically includes a data lake and purpose-built data services to provide analytics with speed and agility at scale.



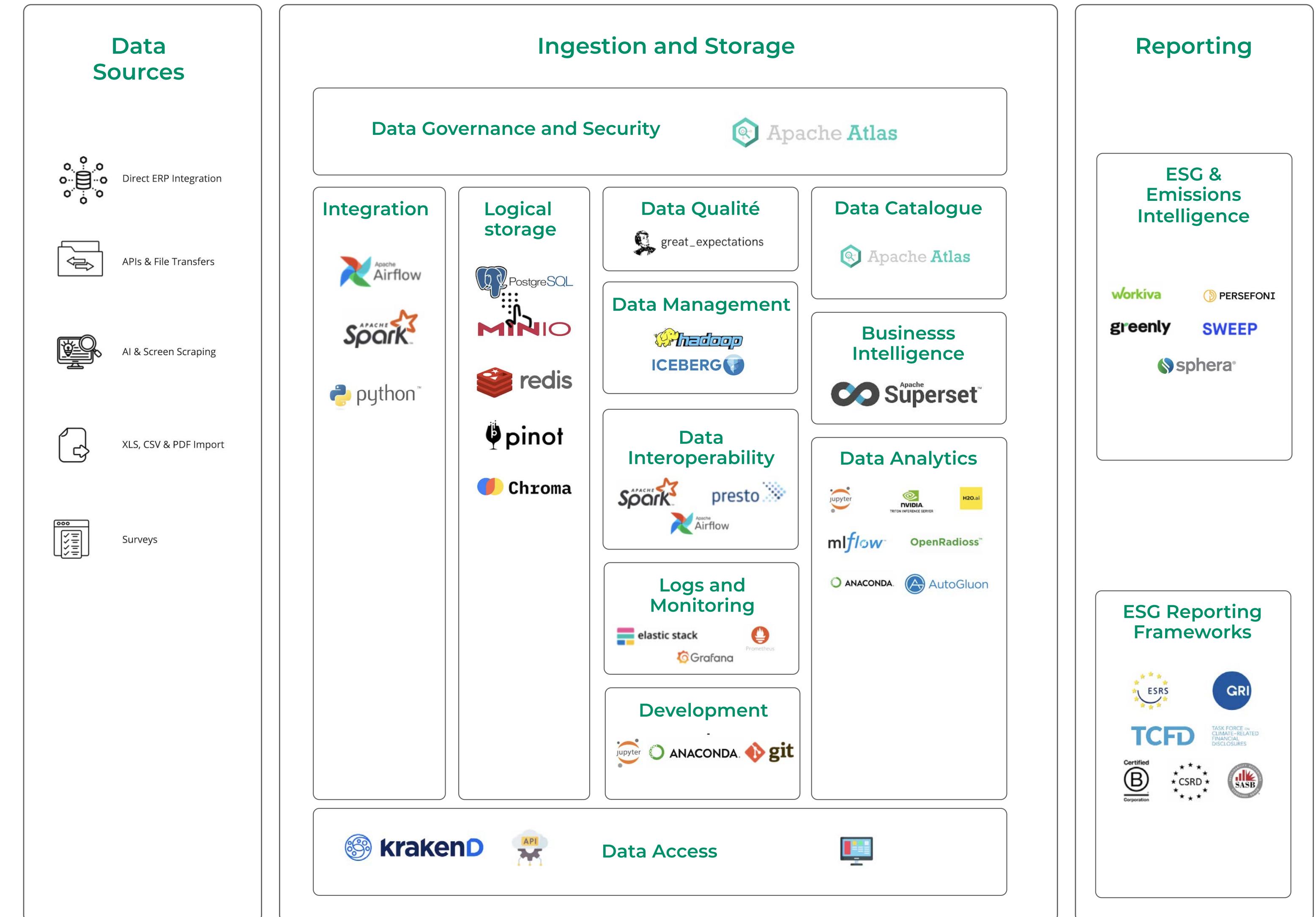
## Modern data platforms mainly consist of the following components:

- 1 • **Integration:** This is about bringing data from various sources into the platform. It often involves ETL (extract, transform, load) processes or data pipelines that can handle different formats and sources, ensuring that data is correctly imported into the system.
- 2 • **Logical storage:** This refers to how data is organized, accessed, and managed within a data platform. Logical storage doesn't necessarily concern the physical storage devices, but rather how data is structured – such as in databases, data lakes, or data warehouses.
- 3 • **Data quality:** Ensuring data quality is critical for accurate analysis. This includes processes and tools that clean, standardize, deduplicate and validate data to maintain accuracy, consistency and reliability.
- 4 • **Data management:** This encompasses the practices of collecting, keeping and using data securely, efficiently and cost-effectively. It includes data governance, data stewardship and data lifecycle management.
- 5 • **Data interoperability:** This aspect ensures that data systems can communicate and exchange data with one another effectively. It involves standardizing data formats, protocols and APIs so that different systems and applications can use and understand the shared data.
- 6 • **Logs and monitoring:** This part of the platform tracks data access, performance and activities within the system for security and compliance purposes. It helps in understanding how the platform is being used and can flag potential issues or inefficiencies.
- 7 • **Data catalogue:** A data catalogue is an organized inventory of data assets within an organization. It helps users find the data they need and understand its context, which is critical for data discovery and governance.
- 8 • **Business Intelligence (BI):** BI tools help in creating reports, dashboards and data visualizations. These tools allow businesses to make sense of their data and gain insights that can inform decision-making.
- 9 • **Data analytics:** This involves analyzing raw data to make conclusions about that information. Data analytics can include advanced data modeling, predictive analytics and machine learning, all designed to provide deeper insights and foresight for business strategies.
- 10 • **Data governance and security:** Data governance involves managing and overseeing an organization's data to ensure it's reliable and used appropriately. Security is a big part of this, protecting data from unauthorized access or alterations. Together, they maintain the integrity and confidentiality of data, aligning with business goals and compliance requirements.
- 11 • **Data gateway:** A data gateway acts as a bridge that safely transfers data between different systems, e.g. from on-premises servers to cloud services. It ensures the data that's moving is secure, often using encryption and other protective measures. Gateways are crucial when different parts of a system need to share data securely.

The following figures serve as examples of data platforms that could be built in-house, or by leveraging cloud services, as well as the tools that can be used for each component of the data platform.

In-house development provides comprehensive control and swift data access, essential for meeting stringent security demands and custom specifications.

However, the cloud alternative brings remarkable scalability and cost-effectiveness, along with the luxury of outsourced maintenance, although it may introduce concerns over data sovereignty and compliance intricacies. Both methods stand as viable strategies, each with distinct implications for an organization's data analytical capabilities and ESG forecasting.

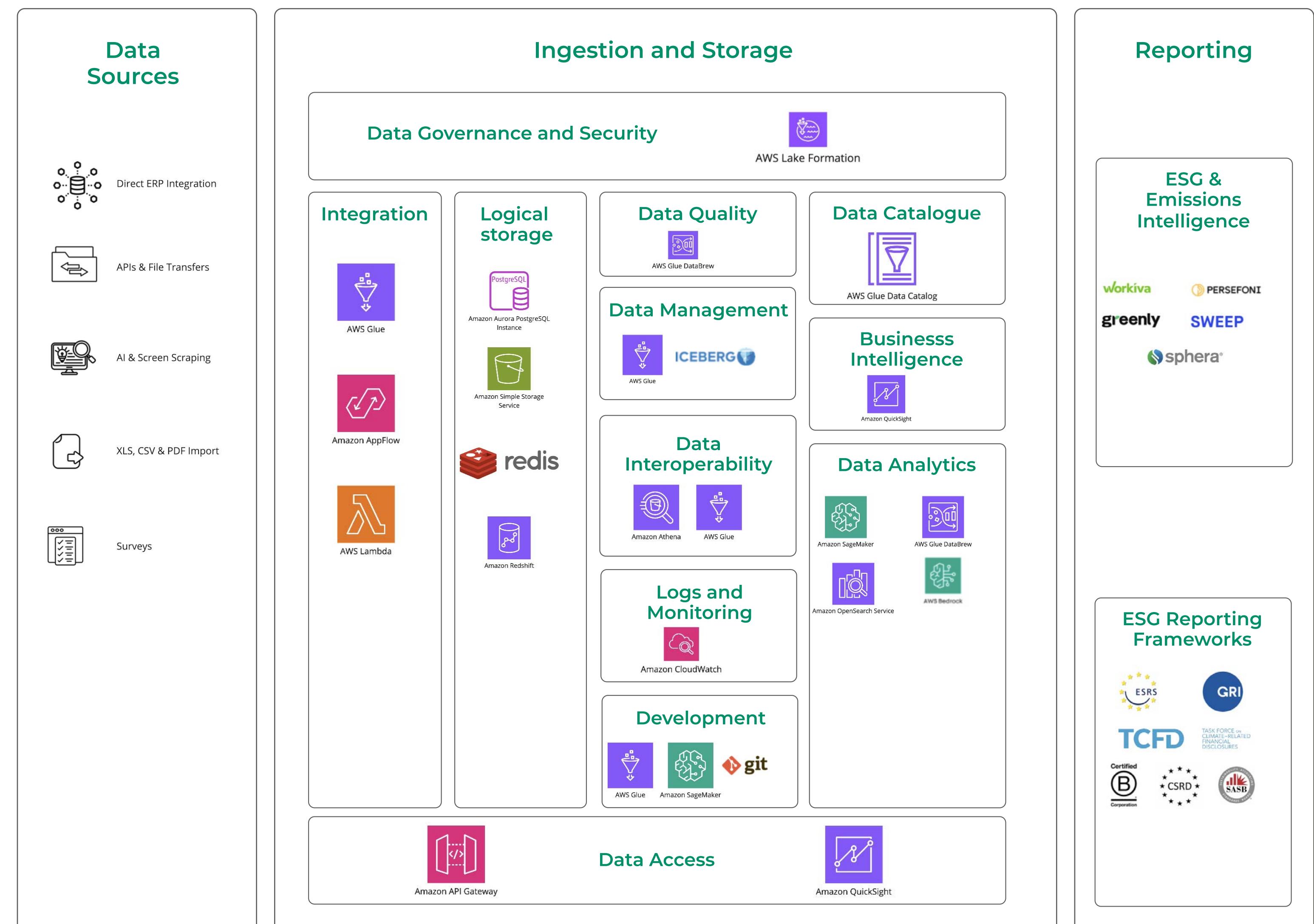


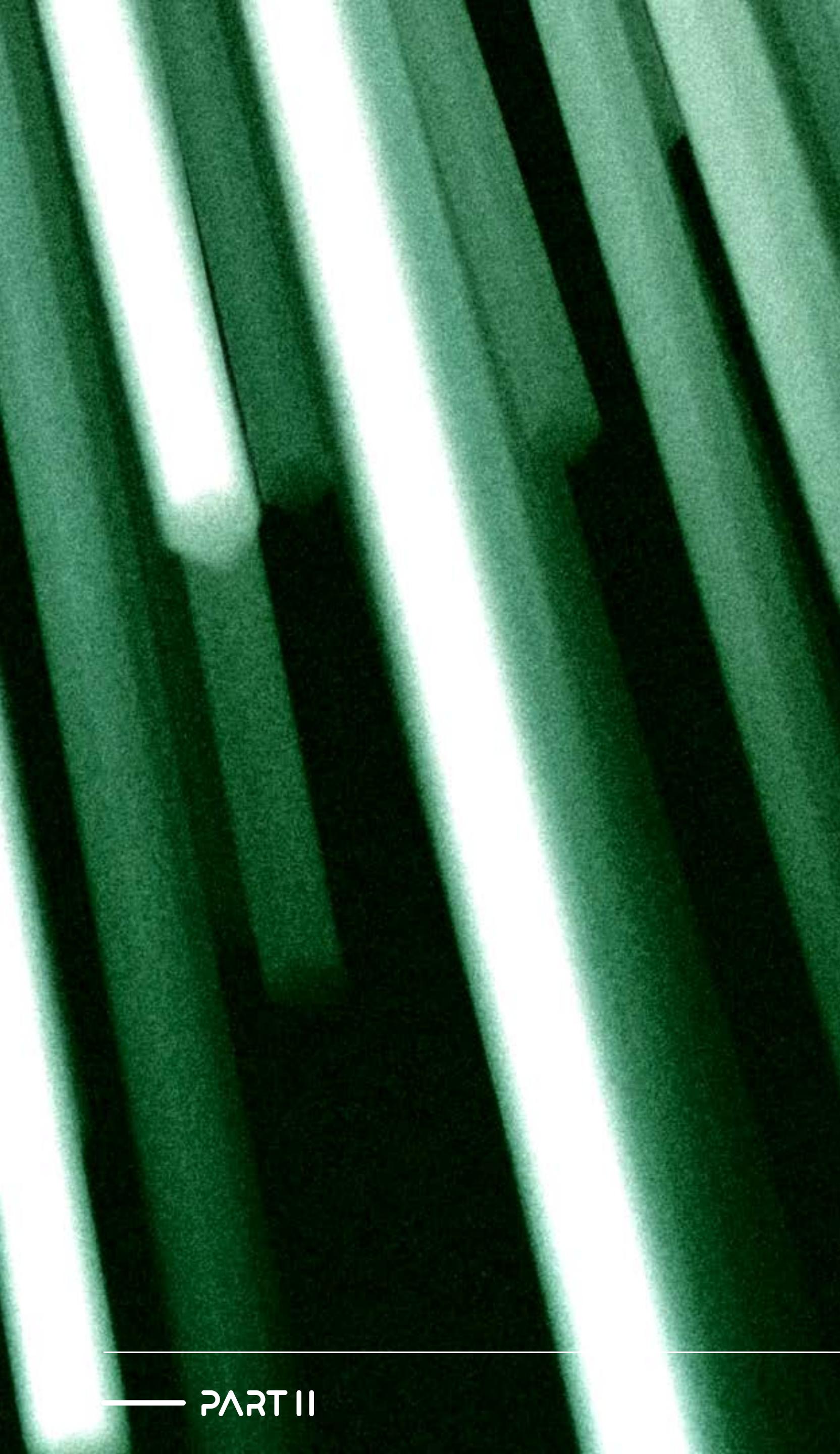
## EXAMPLE OF A MODERN DATA PLATFORM BUILT ON AWS CLOUD

This infrastructure allows for data insights, on-demand data retrieval, data search, data analytics and integration from various systems, which are critical for diverse ESG reporting. Audit firms emphasize the importance of strong internal controls for investor-grade ESG reporting and the need for complete, accurate and reliable ESG data to satisfy regulatory requirements.

No matter how good your data is, there will always be a level of exception management and data quality checks required. This is where good data governance makes its mark, and involves data assurance to maximize the quality of internal and external sources, establishing data pipelines, and promoting data quality as much as possible.

More than just completing a report or integrating a SaaS tool, implementing ESG data management is a company-wide project. Dedicate enough team capacity, train them, and don't underestimate the effort needed to prepare your data. We believe that tackling this will require internal and external cooperation so that data experts, auditors and sustainability experts can help you navigate this project.





## INGESTION: How Cloud-powered technologies are facilitating ESG data ingestion

> When your data & infrastructure are in the cloud, it becomes much easier to leverage cutting edge technologies that make ESG reporting easier.

Using cloud-powered technologies can enable the use of multiple services for retrieving internal data (such as CRMs, ERPs and accounting systems) and external sources (such as supplier systems, media, and websites) that can facilitate compliance and reporting.

Where primary data sources are not currently available, AI and ML technologies can suggest secondary sources and generate estimations<sup>1</sup>.

In addition to assisting with reporting and compliance, cloud-powered technologies can establish realistic sustainability targets that are grounded in important internal and external data. Reliable target setting will help companies avoid overshooting and greenwashing claims.

<sup>1</sup><https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/cloud-powered-technologies-for-sustainability>



**“Once a CSRD tool is in place,  
the end-to-end process for data  
connection and output review  
can be reduced from several months  
to 1-4 weeks, potentially saving  
up to 70% in costs and time.”**

- McKinsey estimates that the data ingestion and extraction capability of cloud-powered technologies reduces the time for emission baselining **from six to eight weeks, to one week**. Connecting internal enterprise resource planning (ERP) and management information systems to the cloud allows for the retrieval of activity data (the amount of activity that is the source of emissions, such as liters of fuel consumed, kilowatt-hours of electricity used, etc.) and generate estimates for baseline projection. A dashboard that is linked to the data ingestion module and measures the amount of activity and associated emissions can also automatically update to track the emission trajectory.
- For these reasons, cloud-powered technologies will be an important accelerator of reporting and compliance in relation to regulatory developments such as the European Union’s Corporate Sustainability Reporting Directive (CSRD). CSRD requirements are complex and cut across multiple business units. McKinsey estimates that once a CSRD tool is in place, the end-to-end process for data connection and output review can be reduced **from several months, to one to four weeks**, potentially saving up to **70% in costs and time**.

# Leveraging non-traditional sources & physical sensors for ESG data sourcing

> Where systems integration cannot provide the necessary data, technology platforms such as e-government and social media sites can help.

Scraping information from publicly available government databases can help track down filed lawsuits, workplace injuries, reports of environmental pollution and other indicators of ESG risk.

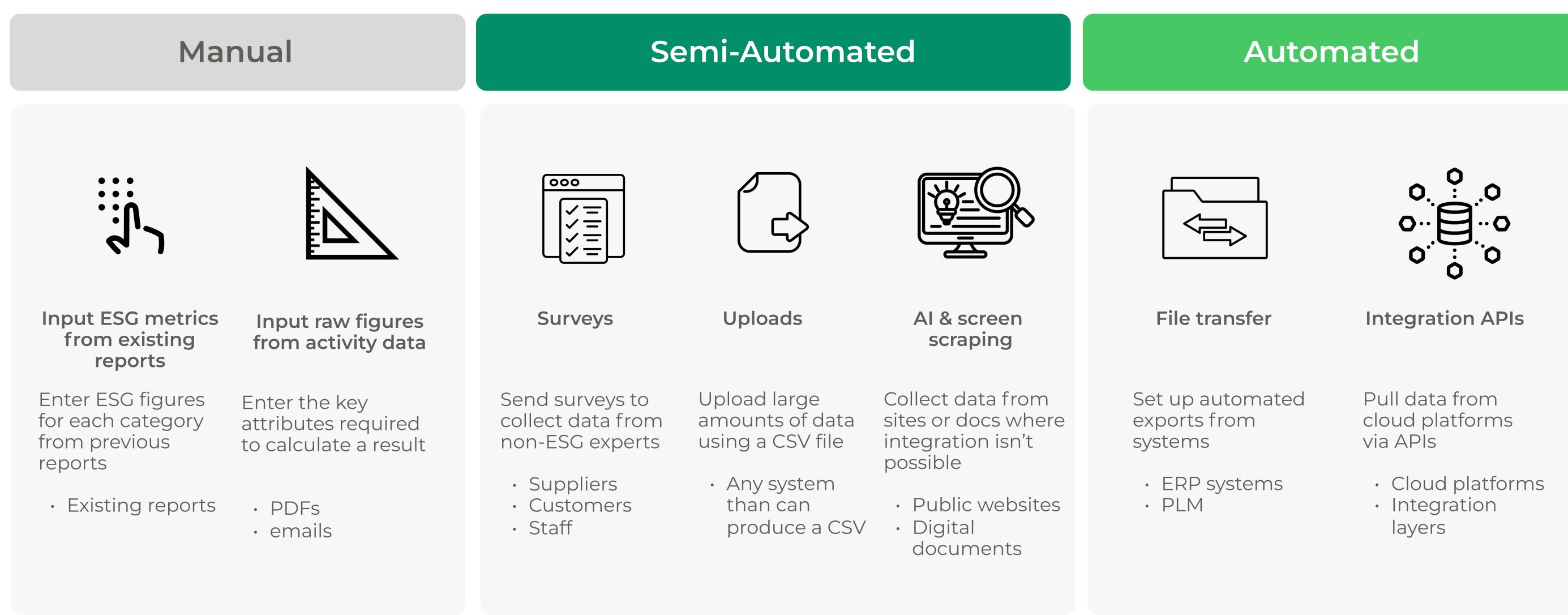
Meanwhile, social media services like Twitter, LinkedIn and Glassdoor (as well as blogs and traditional news sources) are available for data scraping and natural language processing that can identify the prevailing sentiment about firms among current, prospective and former employees, as well as customers and investors.

Integrating these insights with the GDELT dataset<sup>2</sup>, which captures global societal trends from media sources, can enhance the depth and scope of ESG risk assessment by providing a broader context of societal and media-driven perceptions.

Valuable analytics become possible from combining self-reported information from the organization with organic data from sources like those mentioned here.

<sup>2</sup> <https://www.gdeltproject.org/>

DATA COLLECTION, INTERNAL OR EXTERNAL, IS POSSIBLE THROUGH MANY DIFFERENT METHODS



Machine learning algorithms can identify and predict ESG risks using an array of physical, social media-based, and reported data with greater reliability than any single data source. This can help investors and other stakeholders maximize the benefit of available ESG information and identify the social and environmental hazards most likely to occur.

In addition, advances in physical sensors which power the Internet of Things, satellite imagery, and remote sensing capability, more generally can provide additional data.

For example, satellite images of flaring at oil and gas company operations can be used to detect and ultimately eliminate this wasteful and polluting phenomenon, which is a prominent source of greenhouse gas emissions.

Another example is the use of equipment tracking systems coupled with satellite imagery to monitor illegal fishing and track biodiversity, such as coral and/or rainforest health.

Satellites equipped with high-resolution imaging technology can be used to detect concentrated sources of methane emissions from livestock—a significant cause of harmful global warming—and problematic areas of fossil fuel extraction. In addition, small robotic sensors can be deployed to patrol sewage systems near corporate facilities, and identify disease outbreaks or even opioid use among employees.

# STORAGE: The value of building an in-house ESG data lake for improved ESG data management

> A centralized repository (aka Data Lake) allows you to store all your structured and unstructured data at any scale. It's a key component for storing ESG data given the various formats and different sources that are prevalent.

Building an ESG data repository offers numerous benefits, including improved data management, enhanced analytics, and the ability to maintain control over your data. The longevity of "off-the-shelf" ESG reporting platforms, particularly start-ups, and the possibility of them being acquired, are valid concerns for enterprise architects aiming to implement an ESG data solution.

Irrespective of whether you choose to use a third-party reporting platform, we advocate for creating an in-house data repository for ESG data that provides greater control and stability; irrespective of what happens in the future.

A data lake is a key component of your data architecture and will give you the ability to remain in control of your data and remain agnostic of any reporting tool or downstream system you choose to use.

EY has highlighted the importance of a centralized data repository for ESG reporting, emphasizing that investors are seeking simultaneous and real-time access to ESG data for effective decision-making<sup>2</sup>. This highlights the significance of robust data management and the potential value of an in-house ESG data repository in meeting investor demands.

Furthermore, the need for organizations to improve their data analytics capabilities to produce trusted ESG data, and the growing demand for deeper and more credible ESG performance data and insight, emphasize the value of maintaining control over ESG data through an in-house repository.

This approach can help ensure the quality, reliability and security of your ESG data, addressing concerns about the risk or potential disappearance of an ESG platform provider.

<sup>2</sup>[https://www.ey.com/en\\_us/assurance/is-your-esg-data-unlocking-long-term-value](https://www.ey.com/en_us/assurance/is-your-esg-data-unlocking-long-term-value)



## AN AGNOSTIC DATA ECOSYSTEM

### 1. Extract



Direct ERP Integration

APIs & File Transfers

AI & Screen Scraping

XLS, CSV & PDF Import

Surveys

Manual Entry

### 2. Consolidate

**PALO IT**  
Impact Tracker



Structure vast amounts of data to more easily complete ESG reporting

### 3. Report

#### ESG & Emissions Intelligence



#### ESG Reporting Frameworks



### 4. Use

Investor Relations

Procurement

ESG Reporting

Marketing and Comms

Sustainability

Human Resources

## PALO IT's Impact Tracker is customizable ESG data repository & orchestration platform to help pilot a sustainable transformation.

### > WHAT DOES IT DO?

Our Impact Tracker is an easy to deploy, modular tool to monitor carbon emissions, energy consumption, costs, SDG maturity, environmental impact awareness, and key sustainability and compliance metrics. We've built the Impact Tracker so it's simple for our clients to use existing modules—or create new ones—to meet their specific needs.

### > WHY DID WE CREATE IT?

As organizations seek to improve their sustainability maturity, ESG reporting is often the first step. However, we've found that businesses exhaust themselves trying to accomplish this, given their low data maturity, the complexity of sourcing ESG data, and the lack of proper tools to help track progress over time.

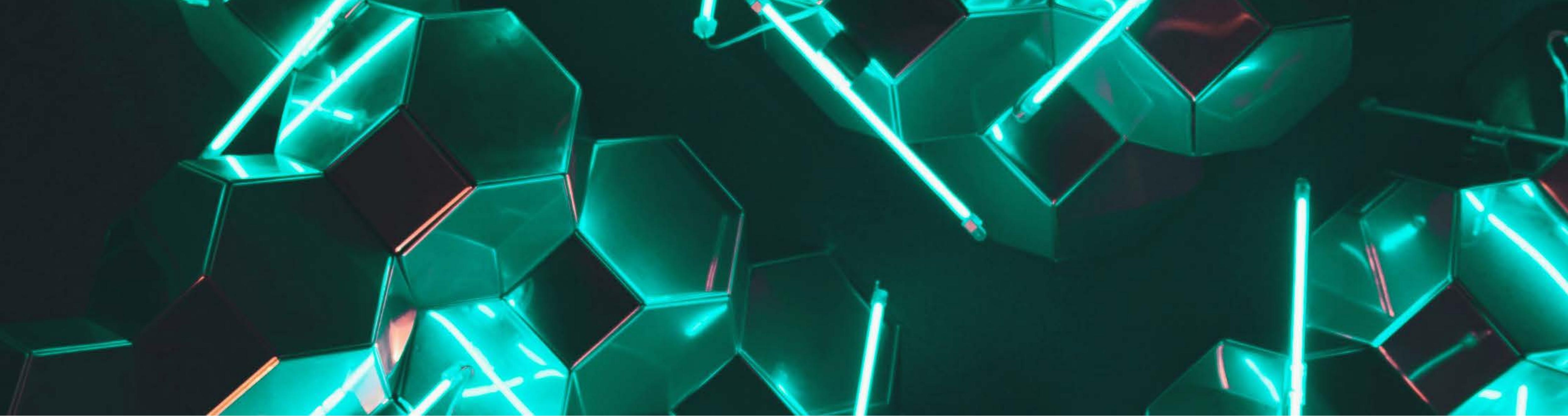
To accelerate the delivery of ESG data projects, we've built an open-source, AI-powered data repository that centralizes ESG data for reporting purposes – either through a SaaS vendor or an in-house analytics tool – and help oversee sustainable transformation.

### > HOW DOES IT WORK?

Step 1 - **Collect data from disparate sources:** Data collection, internal or external, is possible through automated methods including direct integration, APIs, transfer by SFTP, CSV/PDF uploads, questionnaires, or manual entry.

Step 2 - **Clean and prepare data:** AI and ML models help clean up and categorize vast amounts of data and centralize into data repository which enables integration with any reporting tool.

Step 3 - **Present data for decision making:** Dashboards and reporting are vastly improved through conversational AI and data visualization tools.



---

## REPORTING: The role of ESG reporting platforms

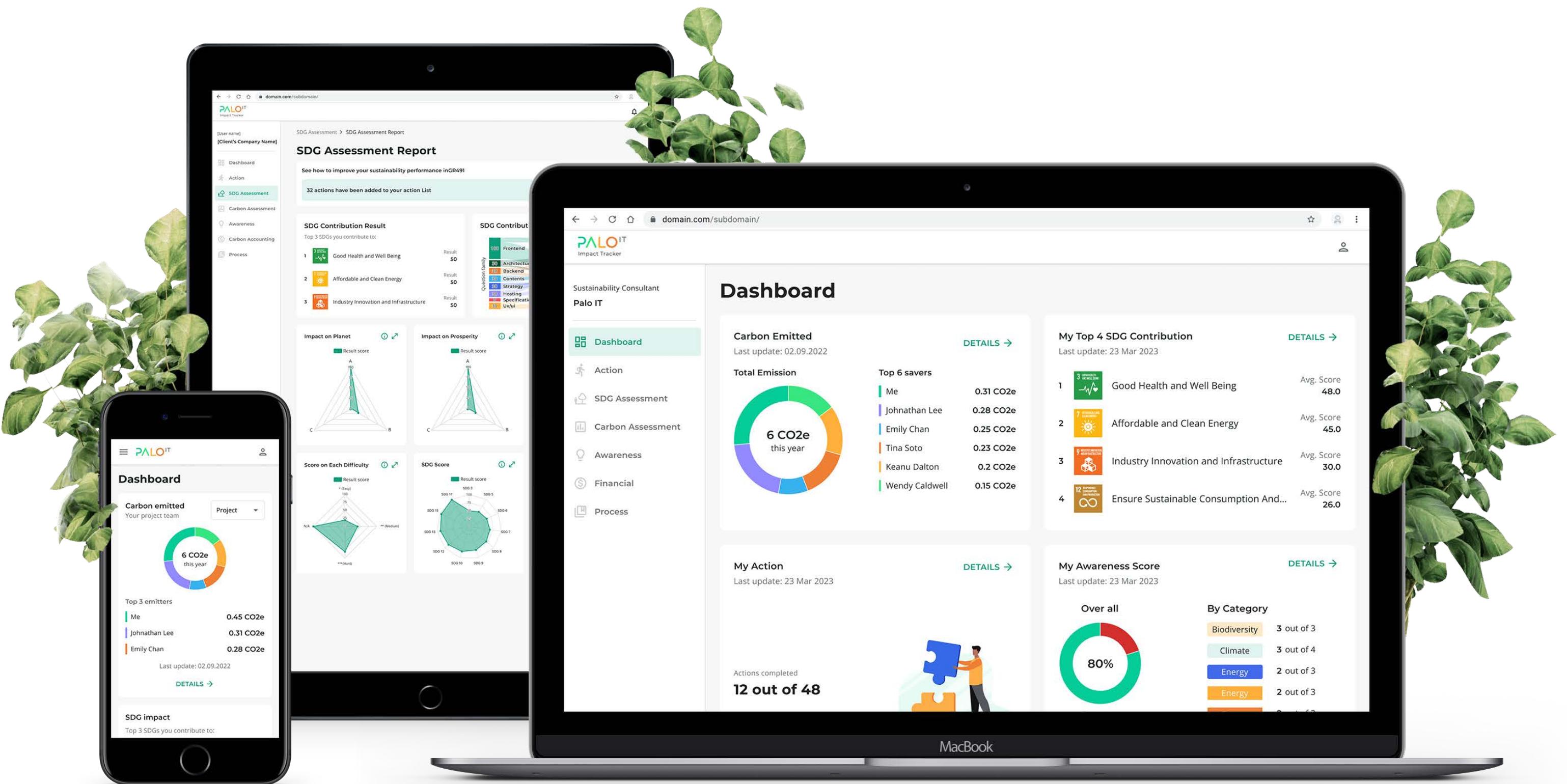
>A 2023 KPMG survey found that 47% of companies are completing ESG reporting manually using a huge and painstaking spreadsheet. Whether you're just getting started, or are already implementing your ESG strategy, a reporting platform can help make the process much easier. If you are getting started in 2024, don't use a spreadsheet!

There are hundreds of ESG reporting platforms on the market today. We are solution-agnostic and can work with you to help select and integrate a suitable SaaS vendor, or custom-build an ESG reporting solution. Irrespective of what you choose, your ESG reporting solution needs to be able to explain in detail how the conversion of your activity data into environmental (carbon, biodiversity, water, waste, etc.), social (diversity and inclusion, human rights, employee welfare, etc.) and governance (executive remuneration, ethical conduct, etc.) data has happened.



**47% of companies are completing  
ESG reporting manually  
using a huge and painstaking  
spreadsheet.”**

## THE PALO IT IMPACT TRACKER



Some off-the-shelf reporting solutions might not be right for what you're trying to achieve (e.g. not right for your jurisdiction, not aligned with the reporting standard you want, or simply too expensive).

In these cases, we often build a custom, **in-house ESG reporting and data analytics platform** that leverages leading data tools. It all depends on your objectives. Whether you choose an off-the-shelf SaaS vendor or decide to build in-house, you'll have a dashboard to produce regulatory reporting and start tracking your sustainable transformation.

# Transforming retail sustainability: A case study on an ESG data platform for carbon tracking

## The Challenge

Concept 4, a global sourcing company located in Asia, was facing increasing demand for ESG transparency from their roster of 45 clients. As part of their commitment to sustainability and their USP, they embarked on their Science Based Targets initiative (SBTi) journey.

This strategic move necessitated the automation of their current method of carbon accounting, to better support ESG-related, strategic decision-making. PALO IT was brought into the fold to assess their current state of affairs and help develop a solution to automate processes.

## KEY FIGURES

**45**

CLIENTS

**2,500**

PRODUCTS

**16,000**

TONS OF EMISSIONS  
FROM MANUFACTURED  
PRODUCTS AND WASTE

**2,500**

TONS OF EMISSIONS  
FROM TRANSPORT

**5,600**

TONS OF REDUCTION  
IDENTIFIED

PLANNING THE  
TRANSFORMATION

**250+**

SUPPLIER CONTRACTS

The objective from the onset of the project was to generate reports and provide a 360° view of environmental performance to teams (purchasing, logistics, and product) for evaluation.

## Scope of the Project

The project focused on four dimensions of carbon:

- 1 • Manufactured assets
- 2 • Logistics and transport
- 3 • Own operations (other than products and logistics)
- 4 • Use of sold products
- 5 • Lifecycle analysis: End of life

## Approach

After a rapid discovery phase, PALO IT vouched to develop a product-based approach – a bespoke ESG data platform aligned to Concept 4's unique context. The tool—developed within PALO IT's in-house ecosystem—would be capable of calculating the company's carbon impact in terms of physical assets and internal office operations, per year, categorized across the 15 subcategories of Scope 3 defined in ISO14064 – a widely used international standard for quantifying and reporting greenhouse gas emissions.

After the initial discovery phase, a three-part approach was mapped to develop the solution itself:



**"In today's world, sustainability is no longer a choice, but a necessity. To shape a better tomorrow, we must recognize the value of data and the power it holds. By implementing the Impact Tracker, Concept4 can now pave the way for meaningful action and create a sustainable future that benefits us all."**



Pascal Vieilvoye, CEO/CFO & FOUNDER, Concept4



After the initial discovery phase, a three-part approach was mapped to develop the solution itself:

#### Part 1: Identifying data sources

The team first referred to the prior year's environmental reports calculation method and met all stakeholders behind the necessary data. The output was a list of data points from systems such as ERP, accounting, supply chain system(s), and the PLM system, including **16,000 tons of emissions** from manufactured products and waste, and **2,500 tons of emissions** from transport.

This provided a quick snapshot of current maturity level, an indication of where to dive deeper to gather more data, and a path for defining clear KPIs in line with sustainability targets.

### **Part 2: Ingesting data into the repository**

The PALO IT team then reviewed the full breadth of Concept 4's data sources, created **800 data transformation rules across 10 countries**, and managed inconsistencies and quality issues present in the current data sets. A group of stakeholders PALO IT trained in using the tool was established to define recurring, matching rules between the data and the output result.

Thanks to this full review, Concept4 was able to improve data quality, switching for most of their spend data to average and supplier data having Scope 1 and 2 for supplier of 90% of their turnover calculated.

### **Part 3: Building dashboards and automating processes.**

To outfit Concept 4 for long-term success, the team built numerous dashboards with both automated functions (ERP, PLM), manual functions where necessary, and surveys to source further data from staff, customers and their suppliers. This multi-faceted view equipped the company to painlessly monitor metrics across **2,500 products** and properly align their business with CSRD reporting frameworks.

They're now not relying simply on last year's carbon emissions calculation, but use a monthly report of their emissions for the current year, tracking their emissions budget just as they do their financial budget.

**Outcome:** When all was said and done, Concept 4 was able to automate their carbon accounting process, providing them with long-term visibility of their performance across various carbon subcategories, and clearly identifying projects and business cases (among their supply chain and operations) where carbon reduction was well within their grasp. This has enabled the business to better meet demands for ESG transparency for their own clients, spur the transformation of 250+ of their supplier contracts, and support their own ongoing sustainability initiative.

With strong historical data and analysis in tow, **Concept 4** is now able to forecast carbon emissions in its product lifecycle management for all products they develop, and can provide information to their clients across several dimensions (e.g. price based on material emissions/supplier emissions) paving the way for informed decisions based on their yearly carbon budget.

# Empowering financial services: An ESG data management platform for sustainable carbon tracking

## KEY FIGURES

50

SUBSIDIARIES

2,000

PEOPLE GLOBALLY

US\$  
600M

YEARLY TURNOVER

### The Challenge

Financial institutions currently face a long list of challenges when it comes to ESG and carbon reporting. These challenges include accurately collecting and analyzing vast amounts of data from different sources, ensuring data integrity and quality, establishing standardized reporting frameworks, complying with regulatory requirements, and effectively communicating ESG and carbon performance to stakeholders.

With these hurdles in mind, we're working with a financial institution made up of **50 subsidiaries, 2,000 staff** and with **US \$600M yearly turnover**:

- Deploy a global solution to estimate, report and reduce the company's carbon footprint – with the capacity to support the evolution of carbon data (reprocessing), multiple layers of reporting, and comparability between reports.
- Build easily scalable strategy and functionality to support local specificities, multiple regulations and emission factors, and deliver immediate value to countries where it's integrated.

## **Scope of the Project**

The innovative solution we've framed and deployed is set to:

- Publish all current carbon data available
- Steer emissions reduction by modeling, defining trajectories and reduction scenarios
- Deliver full end-to-end data traceability between reports, reductions and the original data source
- Automate the company's pipeline to capture, standardize and integrate future carbon data

## **Outcome**

Our ultimate goal is to enable the financial institution to understand its environmental impact, streamline processes for their business, adapt to looming regulatory requirements, and expand sustainability initiatives globally across their 50 subsidiaries.

PALO IT's custom data visualization tools will provide real-time insights for informed decision-making and effective communication throughout their business.

**In a nutshell? They'll have the in-house ability to source data and drive change, and the enhanced brand reputation that comes with it.**

# Shaping luxury's sustainable path: An ESG data platform for carbon tracking

## The Challenge

The luxury sector is fast-paced and complex, encompassing a wide range of products and services that pose unique challenges in addressing ESG. Luxury brands often have vast supply chains involving multiple stakeholders and global operations. This makes tracking and measuring the environmental and social impact of digital solutions developed within the industry a formidable obstacle.

What's more, the luxury industry is known for its exclusivity, driven by trends and high-end offerings, which requires a careful balance between sustainability goals, and maintaining brand image and customer expectations. Overcoming these challenges requires a comprehensive and tailored approach that considers the specificities of the industry, while still prioritizing sustainability principles.

## Scope of the Project

Our client operates across **500 shops** in Asia with **5,000 staff**.

PALO IT's objective was to evaluate the organization's current practices and performance in terms of sustainability, and align them with the UN's Sustainable Development Goals (SDGs). From its onset, the project was mapped to cover various aspects including: energy consumption, carbon emissions, responsible production, and social impact.

## Approach

- First, the team conducted an initial assessment to understand the organization's current level of maturity regarding the SDGs, and identify areas for improvement. This assessment covered various families within GR491: governance, strategy, operations, and stakeholder engagement a widely used framework for the sustainable design of digital services.
- Following assessment, PALO IT worked closely with the organization to develop a tailored roadmap for SDG integration. We engaged stakeholders at all levels of the business, fostering a culture of sustainability throughout the process. The resulting roadmap included specific actions and initiatives to address identified gaps and improve performance.

## KEY FIGURES

**5,000**

USERS

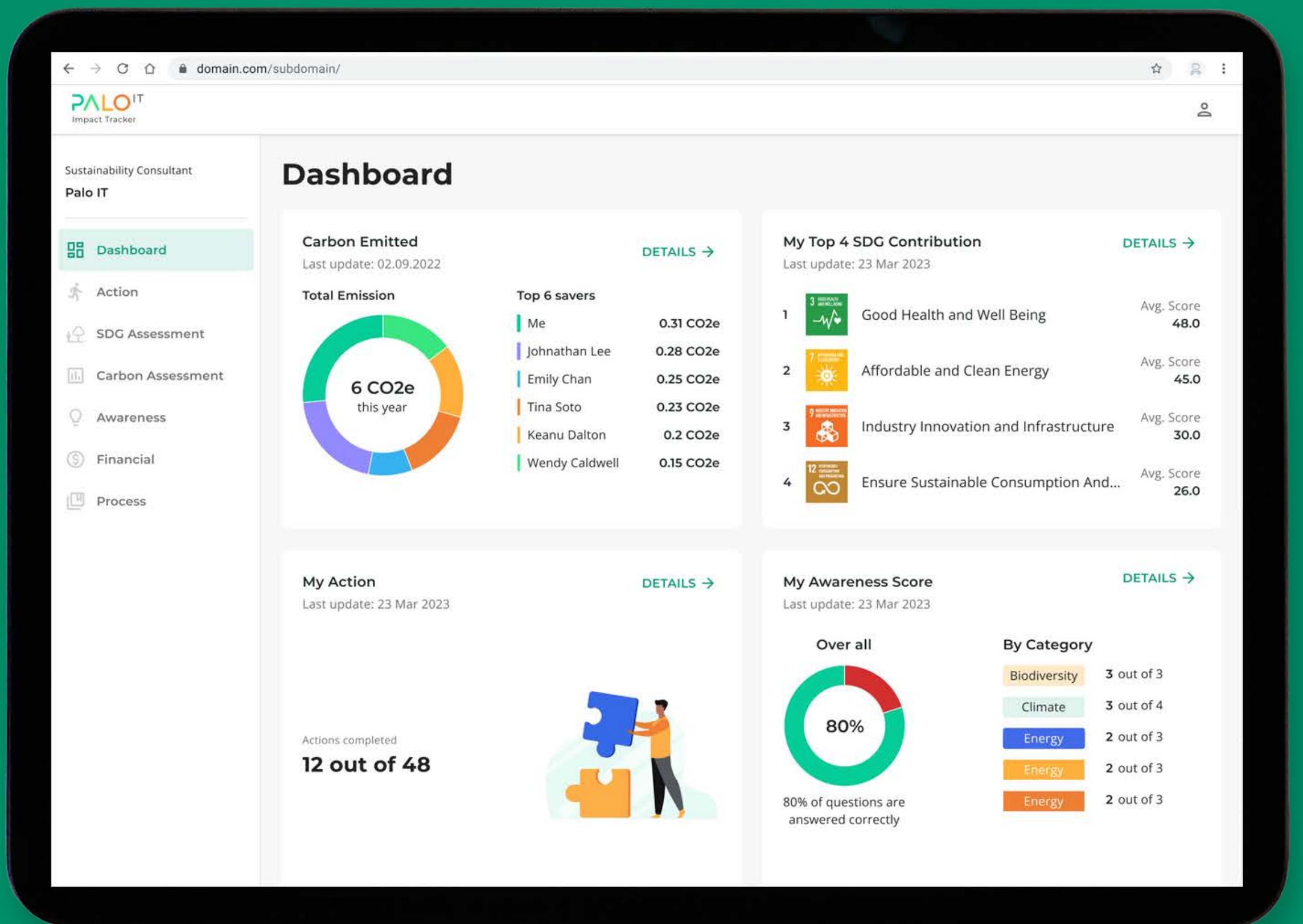
**500**

SHOPS

**20**

FULL TIME  
DEVELOPERS

## A SCREENSHOT FROM OUR SOLUTION: SDG CONTRIBUTION MAPPING



### Outcome

A comprehensive, end-to-end assessment and action plan, with a focus on the lifecycle of the solution.

Based on our findings, PALO IT provided an actionable improvement plan outlining specific measures and strategies to enhance sustainability and SDG alignment. This included recommendations for optimizing energy efficiency, reducing waste, promoting responsible sourcing, and improving stakeholder engagement.

By delivering a full end-to-end assessment and actionable improvement plan, we enabled our client to make informed decisions, implement sustainable practices, and at the end of the day contribute to a more sustainable future.

# PART III

---

Moving forward



To overcome the **key challenges** to complete ESG reporting and help organizations improve their sustainability maturity, we adhere to three guiding principles to ensure the best ROI for your **ESG data project implementation.**



# Guiding principle #1: From point-in-time to ongoing

> Start with a snapshot to give a picture and then move to a higher frequency where necessary. Transitioning from point-in-time assessments to ongoing monitoring is essential for capturing the dynamic nature of ESG performance.

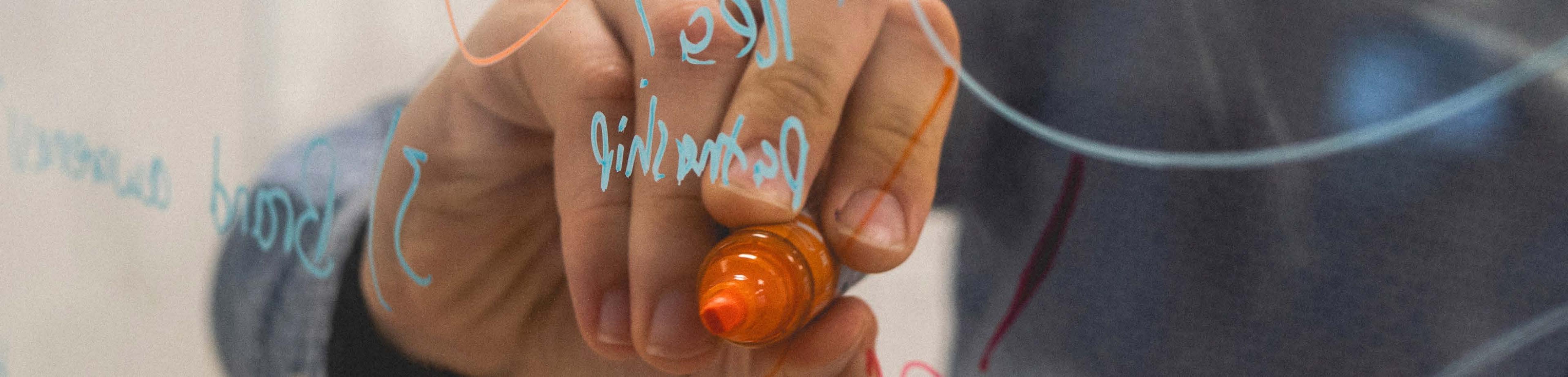
By regularly tracking ESG metrics, organizations can identify trends, assess the impact of initiatives, and make timely adjustments to their strategies. This shift towards continuous monitoring enables proactive management of ESG risks and opportunities, fostering long-term sustainability.

However, when applying this guiding principle, we want to stress “**ongoing**” as opposed to “**real-time**”. In recent years “real-time” has become the de-facto choice for an integration, but this may be overkill and unnecessarily expensive. While it’s true that we should strive to have the most up to date information possible, we don’t believe this translates to real-time polling from a connected system.

For instance, if there is a metric that only changes or is available once a month (like your water bill), it doesn’t make sense and will be a waste of money to build real-time connectivity to record this data source every day.

In some cases, this may mean that it’s cheaper to work with batch files aligned to the source reporting frequency and/or keep some manual data entry intact.





**“In the case of emissions ~70% come from your supply chain (Scope 3), so the real challenge is to get data out of your supply chain to accurately assess your footprint.”**

- **Example:**

A technology firm conducts an annual diversity and inclusion survey to assess workplace representation. As part of its ESG commitment, the company transitions to ongoing diversity tracking using digital platforms. This shift enables the organization to capture real-time data on employee demographics, promptly address emerging concerns, and track the impact of its diversity initiatives on employee representation, thereby fostering an inclusive work environment.

- **Automation is king.** Your systems (ERP, Accounting, PLM, etc) will necessarily be a big source of data, so find ways to automate data extracts (leverage APIs or create CSV files) that can be integrated with your reporting software. You can't automate everything, so to get data from within your value chain, you may need to use questionnaires to collect data from stakeholders. This will involve them in the process and help them get started too.

You also need to look beyond your own systems. For example, in the case of emissions ~70% come from your supply chain (Scope 3), so the real challenge is to get data out of your supply chain to accurately assess your footprint.



## Guiding principle #2: From rough to precise

> Start with rough estimation and, once you've identified the levers, get more accurate by chasing more data and going deeper and further into your value chain.

PwC recommends starting with rough estimation and, once you've identified the levers, get more accurate by chasing more data and going deeper and further into the data sources<sup>1</sup>. This principle emphasizes the iterative nature of data refinement. Begin by identifying key data points and gradually enhance precision by delving deeper into the available data. This approach allows for a more comprehensive understanding of the underlying factors driving ESG performance, enabling informed decision-making and targeted improvements.

**Example:**

A manufacturing company initially estimates its carbon emissions based on industry averages. As part of its ESG initiative, the company identifies the need to improve its environmental impact. It then delves deeper into its data sources, implementing real-time monitoring systems across its facilities to accurately measure and manage its carbon footprint. By doing so, the company can identify areas for improvement and set precise reduction targets, thereby enhancing its environmental performance.

<sup>1</sup><https://www.pwc.com/us/en/services/esg/library/esg-data-collection-reporting.html>



> For emissions measurement, this involves transitioning from initial estimations to more accurate and detailed data. This can be illustrated through the distinction between "carbon diagnosis" and "carbon footprint" in the context of environmental data management.

#### CARBON DIAGNOSIS:

- A company initially conducts a carbon diagnosis after identifying its main sources of emissions. This diagnosis provides a rough estimation of the company's emissions based on monetary data. For instance, it may reveal that a significant portion of the emissions are attributed to suppliers.
- The carbon diagnosis serves as an initial snapshot, allowing the company to identify key areas (i.e. hotspots) for emission reduction without requiring precise, granular data.

#### CARBON FOOTPRINT:

- Subsequently, the company delves deeper into its data to create a carbon footprint, which details the state of the main sources of emissions with more precision. For example, it may reveal that transportation and logistics are the primary contributors to emissions, rather than production processes.
- To create a carbon footprint, the company transitions from monetary data to physical activity data, providing a more granular and accurate understanding of its emissions profile.

#### INTEGRATION OF APPROACHES:

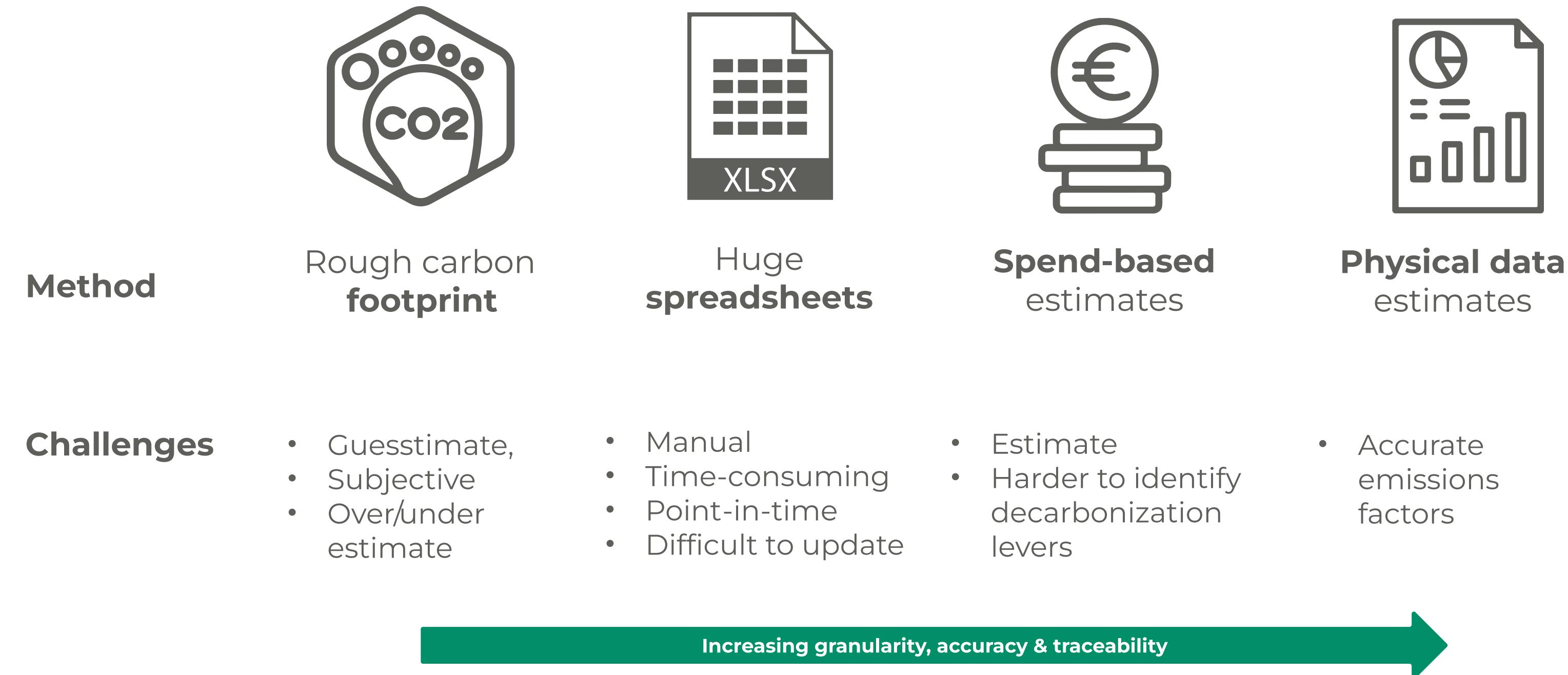
The company integrates manual, monetary, and physical approaches to complement each other based on the specific emission hotspots and decarbonization targets. This integration ensures that the company does not start with unnecessary or unhelpful data, but rather progresses from manual and experience-based insights to more detailed and precise data where needed..

#### CHALLENGES IN SCOPE 3 EMISSIONS:

- The company acknowledges that achieving precision in measuring Scope 3 emissions, particularly when dealing with a complex value chain involving numerous suppliers, can be challenging. However, it recognizes the importance of increasing accuracy by basing calculations on physical data and collecting this data from suppliers and investors as extensively as possible.

Emissions reporting software is the most mature category within ESG data platforms. Most emissions reporting software calculates emissions based on your company's spending data. This is acceptable as a first pass, but has limitations – using spend data won't allow you to know where to act. Where possible, choose emissions reporting software that uses physical data. It's the only way to accurately measure and understand where to act or what levers you can pull.

SEVERAL APPROACHES TO COMPLETING EMISSIONS REPORTING OFFERING INCREASING GRANULARITY, ACCURACY, AND TRACEABILITY. CHOOSE AN APPROACH ALIGNED WITH YOUR DATA AVAILABILITY.



By following the “rough to precise” guiding principle, companies can more easily get started and progressively transition from initial estimations to precise measurements to achieve an understanding of their ESG profile.

## Guiding principle #3: From macro to granular

> To provide audit traceability, you need to be able to track back to any given level of detail. To steer your sustainable transformation, you need to be able to aggregate and view the overall picture.

Balancing macro-level insights with granular data traceability is critical for effective ESG management. Organizations must maintain the ability to drill down to the finest details for audit and reporting purposes, while also aggregating data to gain a comprehensive overview of their sustainable performance. This dual approach supports transparent reporting, informed decision-making, and strategic sustainability planning.

### Example:

A financial institution initially tracks high-level governance metrics such as board diversity. To enhance governance transparency, the institution implements a comprehensive governance data management system.

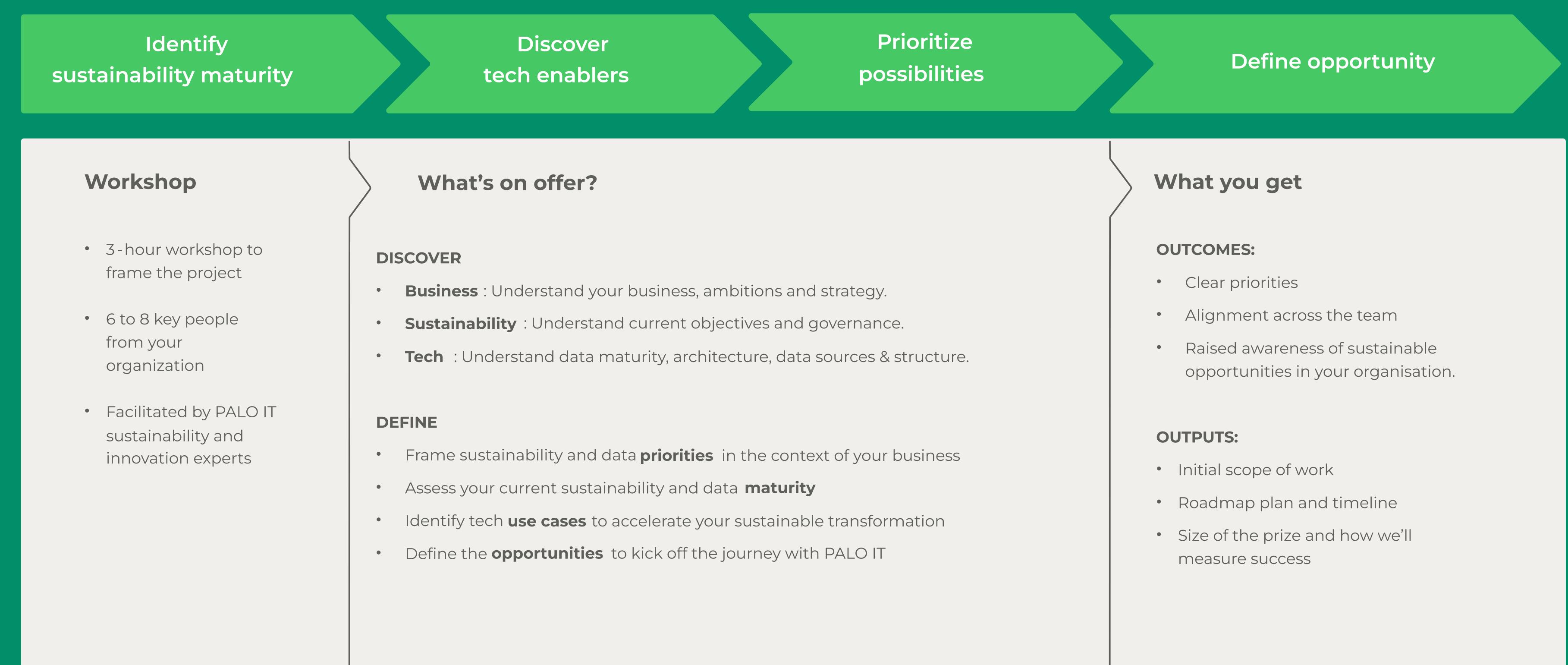
This system maintains detailed records of individual director backgrounds, skills, and committee memberships while also aggregating governance data to provide an overall view of its governance practices. This approach ensures granular traceability for audit purposes and provides stakeholders with a comprehensive understanding of the institution's governance framework and alignment with ESG principles.



# Where to next?

> PALO IT is here to guide you on this journey. Let's leverage ESG data to identify opportunities, set measurable goals, and track your progress. Together, we can unlock the true potential of sustainability and build a business that thrives in the years to come.

To help frame your ESG strategy and move your sustainable transformation forward, we offer a **3-hour consulting workshop** to align your team and identify a plan of attack.



A person wearing a VR headset is shown from behind, looking at a chalkboard. The chalkboard displays a line graph with data points labeled '0.00' and '100'. The background is a blurred office environment.

**PALO IT** is an innovation and Agile  
software development company  
on a mission to craft tech as a force  
for good.

With 650 experts across the globe, we work across industries to help organisations advance their sustainable transformation through tech innovation.

We're a certified B Corp and a member of the World Economic Forum's New Champions Community.

We see emerging technology innovation go through three broad phases:

- Trends emerge,
- Trends are evaluated and brought to market,
- Trends are adopted at scale.

PALO IT has developed its core competencies around these last two phases:

- During the evaluation phase, when organisations have an imperative to experiment and learn through prototyping and tech proof of concepts.
- During the build and adoption at scale phase, when organisations have an imperative to be fast to market and build cutting edge products.

As Sustainable Transformations get underway across industries, organisations face the imperative to protect their revenue today through remediation, and not be left behind in the future by incorporating sustainability into their core business.

We are focused on making tech-led sustainable transformations a reality for enterprises: beyond the compliance anxiety, how ESG can meaningfully help your organisation improve its value.

For more information, visit [palo-it.com](http://palo-it.com)

## The Authors



**Leo  
CERDA**

Chief Product Officer  
PALO IT FRANCE



**Xavier  
RIZOS**

Global Chief Strategy and Impact Officer  
PALO IT AUSTRALIA



**Benoît  
FOUCQUE**

VP Technology and Sustainability  
PALO IT HONG KONG



**Nuran  
KASTHURIARACHCHI**

Senior Data Engineer  
PALO IT SINGAPORE



**Mam  
PATCHAREEBOON  
SAKULPITAKPHON**

Sustainability and Impact Lead  
PALO IT THAILAND

