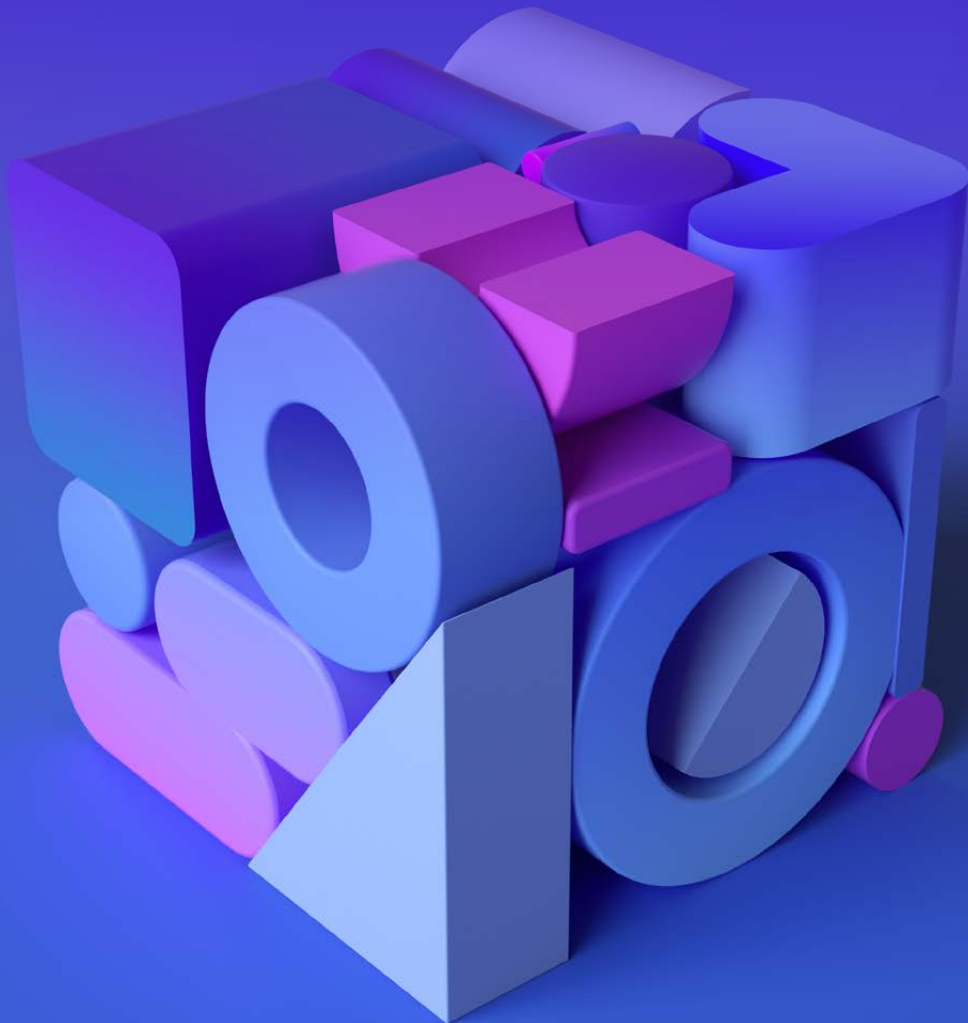




# Unscramble the ESG data puzzle





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## Executive Summary

**As of today, over 70 countries have pledged for net zero** and over 3000+ businesses and financial institutions have already embarked on their ESG transformation journey with Science-based Targets Initiatives to reduce their emissions.



With new regulatory pressure in Europe, coming from directives such as the CSRD, SFDR and TCFD. ESG reporting is not just discretionary but a mandate. This thought leadership aims to discuss the practical challenges organisation face with their ESG data transformation journey, such as supply value chain data gaps, metrics definition, siloed reporting along with the best practices to address these challenges.

Organisations should take an integrated approach to ESG and corporate reporting. They can embark on a ESG transformation journey and fast track their path to success through key strategic enablers such as ESG Data Transformation Framework and technical enablers such as Ethical AI.



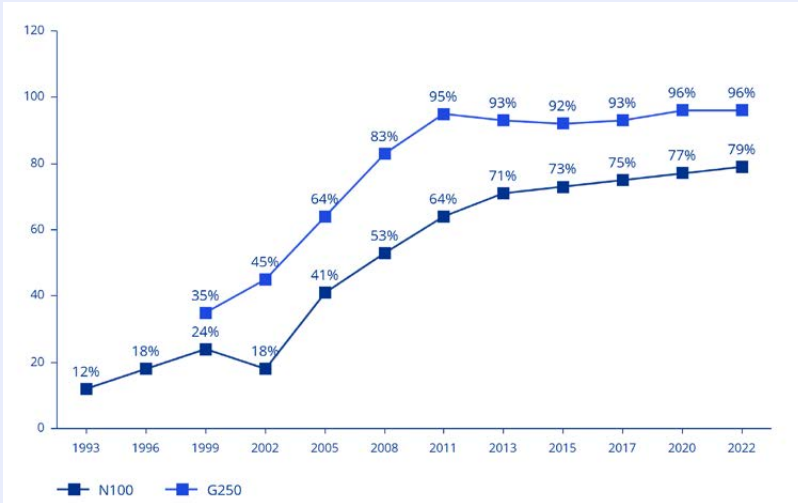
**ESG reporting is not just discretionary but a mandate”**





# Why ESG Data transformation now?

Global sustainability reporting rates (1993–2022)



Base: 5,800 N100 companies and 250 G250 companies  
Source: KPMG Survey of Sustainability Reporting 2022, KPMG International, September 2022



Everyone wants to do ESG now”

## Shifting Mindsets, shifting preferences

Organisations are focussed on declaring their ESG performance and commitments, with the key driving factor being shifting consumer behaviour and purchase patterns. There is an increasing demand for sustainable products and services in market. As per a Forbes survey<sup>1</sup>, **GenX consumers preference to shop for sustainable brands increased by 25% and willingness to pay more for environmentally friendly products increased by 42%** in the last 2 years. Nearly 90% of Gen X consumers are ready to pay **10% extra** for sustainable products as a **green premium**.

## Regulation – Optional to Mandatory

In Europe, compliance with Environmental, Social, and Governance (ESG) frameworks is **shifting away from discretionary reporting** and becoming **mandatory** for businesses. According to a long - running KPMG survey, 96% of the largest companies in the world now report on sustainability, up from 35% in 1999 as shown in Fig 1.1. EU’s Corporate Sustainability Reporting Directive (CSRD) is coming into legal effect in FY2024, requiring all large EU companies to publish regular reports on their environmental and social impact.

## AdvantageX – Sustainable practices

Global First-mover organisations have realised that the shift towards sustainability and a circular economy comes with some considerable economic advantage.

- US conglomerate, 3M, documented \$2.2b cost savings through implementation of its Pollution Prevention Pays program over the course of 45 years.
- Walmart is benefitting from significant cost savings by pressuring suppliers to redesign their packaging to reduce waste.
- PepsiCo has slashed manufacturing water consumption and has saved more than \$80 million between 2011 and 2015 alone.

## Green Tech Innovation pushing ESG agenda

Technologies such as Internet of Things (IoT), digital twins, AI and data analytics are making the road smoother for organisations to fast track their or organisations to realise value from their ESG transformation journey. Not only are the companies able to bring data transparency but also, identify their call for action. In the case of PepsiCo, new water-saving technologies, hitherto unavailable, were employed in its end- to end manufacturing process.

<sup>1</sup> Source(s): [Consumers Demand Sustainable Products And Shopping Formats - Forbes](#). [Survey of Sustainability Reporting 2022 - KPMG](#). [How Ford, PepsiCo Plan to Slash Manufacturing Water Use](#). [Pollution Prevention Case Studies - US EPA](#).



# Tactical to Transformational

**Most organisations only work to disclose minimal or mandatory ESG performance metrics, but forward-thinking organisations are going beyond this with their ESG reports by integrating ESG into their corporate strategy, unlocking not only reputational benefits but also economic value. The time is now to go from Tactical to Transformational ESG reporting. The key to this potential value is to establish an ESG Data Transformation Framework.**

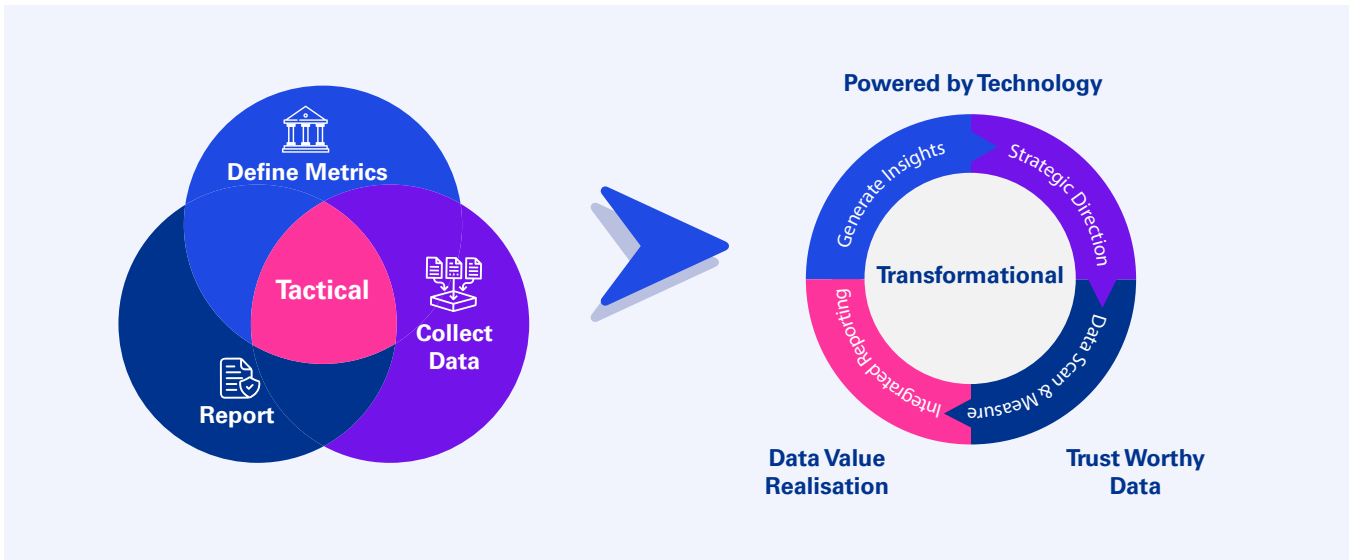


Fig 1.2 : ESG Data transformation Framework

At this juncture, organisations taking the transformational view will have the competitive advantage. ESG data transformation is an integrated framework in which an organisation actively responds to sustainability aspects while taking a holistic view of the organisation’s broader ecosystem and end to end supply chain, which includes business models, materiality, data sources, data quality, technology, platforms integration, up and downstream operations, and architecture. Following the ESG Data Transformation Framework above, can enable the organisations to seamlessly navigate through the ESG space, integrating ESG performance into corporate strategy. Organisations looking to transform should pursue ESG Data transformation framework’s four key stages:

01	02	03	04
<p><b>Set ESG Strategic Direction</b></p> <p>Scan wider corporate strategy and ensure ESG strategy aligns well. Understand what investors and consumers consider important when considering ESG performance to set a direction for ESG reporting. Embed ESG Data Governance at an early stage of ESG data strategy creation</p>	<p><b>Data Scan &amp; Measure</b></p> <p>Gather and analyse the firm-wide and external data relating to the material metrics. Ensure data quality and validity checks are in place. Measure organisational performance.</p>	<p><b>Integrated Reporting</b></p> <p>Siloed non-financial and financial reporting won’t do justice to large organisations, impactful integrated reporting is the key to success. Ensure to produce comprehensive reports in a clear and transparent manner, providing information to all stakeholders. Ensure reports are user friendly</p>	<p><b>Generate Insights</b></p> <p>Extract insights and actionable recommendations using data analytics, which will enable an evolution of corporate-wide strategy.</p>

# Our Recommendations



# Embed ESG Data Governance in ESG Data Strategy

- **ESG Data governance refers to the overall management of the availability, usability, integrity, and security of ESG data. It aids organisations to ensure that their data is accurate, consistent and secure, which is critical when using data for informed decisions, complying with legal and regulatory requirements, and avoiding the negative consequences of poor-quality data.**
- **In this section, we will discuss governance aspects to be considered while formulating ESG Data Strategy which will help minimise the challenges during ESG transformation journey**

## Minimise Data Governance pitfalls

**Organisations are adopting cutting-edge technologies with their digital transformation initiatives, to improve and automate ESG data management processes.** Different tools & processes used across business units for data collection, storage and reporting can create silos, making it complex to understand and access all useable ESG data within the organisation. Organisations often have a different process for ESG reporting than other corporate reports, where the same governance standards are not in place.

A trustworthy and connected Data architecture and central data repository with defined Data governance is needed where all, including ESG, data resides should be established. All processes for data collection, data flows and reporting should be standardised across business units, where enhanced technology to replace manually inputted reports should be considered.

## Avoid Greenwashing traps

**Greenwashing refers to the practice of making misleading or false claims about an organisation's environmental state. Green washing is often unintentional, where organisations are not fully informed on what to report or how accurate their energy data is.**

Establish **clear and transparent** ESG performance metrics and standards, such as the CSRD European Sustainability Reporting Standards (ESRS) metrics, and the Global Reporting Initiative's (GRI) sustainability reporting guidelines. Ensure ESG **data lineage** is carefully mapped and recorded. **Implement thorough data verification processes** to ensure environmental claims are accurate and based off concrete data, such as 3rd party audits before publishing reports.

## Include Privacy by Design

**When reporting on an organisation's social & governance impact, it is necessary to ensure the privacy of personal and sensitive information of employees and stakeholders.**

- **Privacy by design** states that any activity involving the processing of personal data must be done with data protection and privacy in mind at every step. This reduces the risk of privacy being an after-thought or installed into a system at a later stage.
- Review and update data privacy/GDPR policies regularly, where these policies are explicit and easily accessible by all within the organisation. Compliance should be monitored and regularly audited.

## Adopt Ethical AI

**As the ESG space is evolving, so are the associated risks and vulnerabilities. AI has many transformational benefits for ESG reporting, such as real time analytics to analyse sensor data, predictive analytics to understand future trends and track net zero targets, or AI algorithms to analyse unstructured data. While these transformational solutions show many benefits, they also come with some risks and ethical concern.**

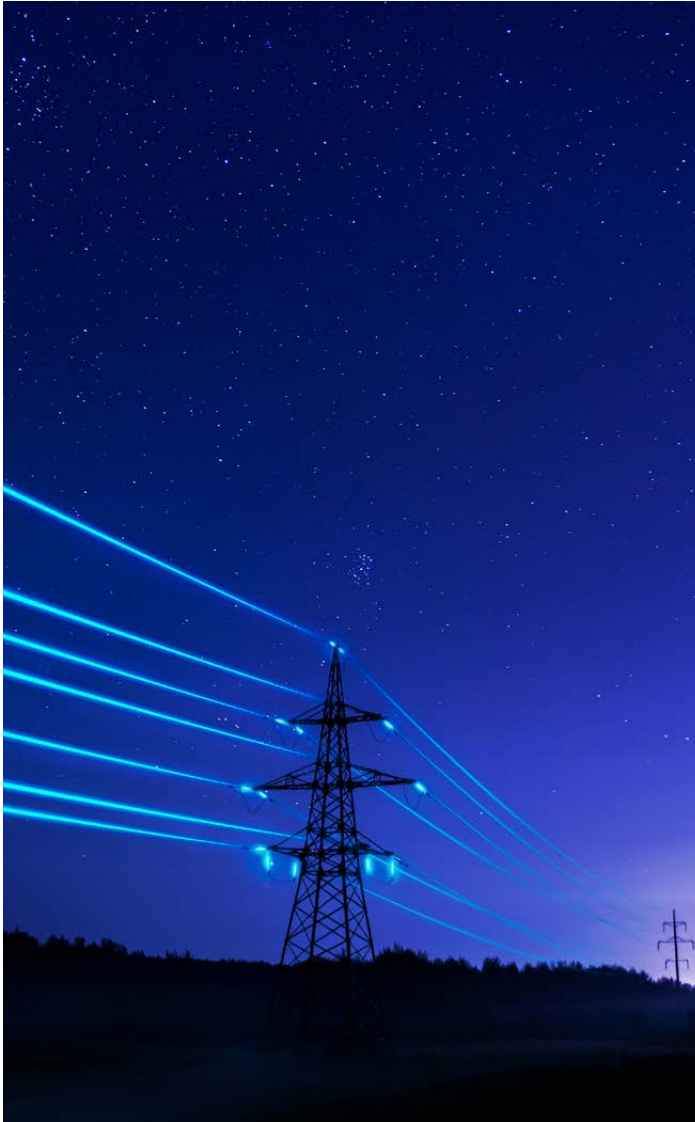
**Bias** - AI algorithms can be prone to bias due to the data they learn from, understanding where bias is coming from, testing and tweaking models or using synthetic data can help reduce bias in AI.

**Explainability** – Explainability is necessary to gain trust from investors and consumers. When decisions or targets are published, so must the reasoning of the decision-making process behind them.

**Accountability** - The fact that AI systems are capable of acting autonomously raises important issues about who should be held responsible when something goes wrong. Careful oversight of the algorithm integrity should be carried out by an appointed owner.



# Demystify your Data Gaps – Faster the better



Having visibility into all possible carbon emissions allows a company to make informed decisions in regard to their ESG strategy. However, obtaining a holistic view of all your company's emissions can be a challenging and time-consuming task.



### As defined in Global ESG Frameworks, Scope 1 and 2 Emissions

- Scope 1 refers to direct greenhouse gas (GHG) emissions that occur from sources that are controlled or owned by an organisation.
- Scope 2 emissions are indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling.

Scope 1 & 2 emissions typically account for 10-20% of GHG Emissions.



### Scope 3 Emissions

Scope 3 refers to all indirect emissions (not included in scope 2) that occur in the supply chain of the reporting company, including both upstream and downstream emissions. Examples of Scope 3 emissions for a service-based organisation include business travel, waste generated in operations, purchased goods such as IT equipment, etc.





## Challenges

- Typically, Scope 1 and 2 data is sourced from an organisation's energy consumption bills, which is often recorded manually for financial purposes or internal reporting. The data can be scattered and inconsistent, stored in siloed spreadsheets across the business. When data is collected in this way, there is a high risk of both human error and incompleteness.
- **Scope 3 Data is a lot more challenging for organisations to capture.** It can be difficult to map out all possible sources of carbon emissions in your upstream and downstream supply chain. Some of these emissions may be direct emissions of an external supplier or consumer, who may not disclose or provide this data. Since the pandemic, emissions from staff working at home may also be very difficult to capture

## Best Practices

**Strategy before execution:** It is necessary to get a view of what ESG data is readily available in your organisation. A first step to this is to run an organisation wide drive to identify all available ESG data sources within the organisation.

**Benchmark and Baseline:** Be clear about what you're measuring and get those ESG baselines in place across the organisation. A standardised approach to recording ESG data across the organisation should be introduced.

**Corporate wide Data Transparency instead of siloed execution:** For Scope 3, before actually recording any data, take a step back and map out your supply chain, brainstorming all possible upstream and downstream emissions.

**Measure what matters:** Conduct a materiality assessment, where a trade-off is considered between which emissions require higher quality data and which emissions can be obtained quickly accurately.



# Think Integrated Reporting

## Why ESG Reporting is Important

- ESG Reporting is evolving fast from a “nice to have” extra to an essential asset for both regulatory compliance with EU directives such as CSRD, as well as attracting and maintaining investors and consumers.
- Most organisations only disclose metrics that are mandatory, or disclose year-end reports that are unreliable or prone to greenwashing. These are deemed insufficient in assessing an organisation as a potential investment.
- Front-runner organisations are now producing detailed, data-backed, illuminating reports, that clearly illustrate their ESG state and targets to their business operations. Investors understand all ESG-related risks and the potential long term value with these organisations, differentiating them from others.

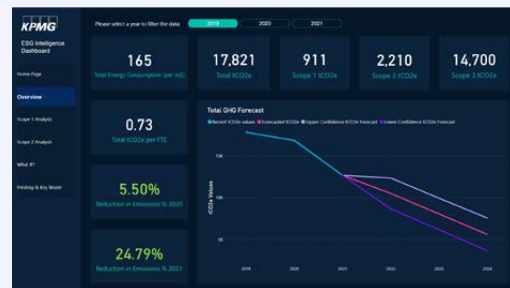
## How to Make ESG Reports Impactful

- Impactful ESG Reporting is necessary, where vague targets and metrics do not provide value.
- Metrics and your ESG story should be carefully decided upon. Leading companies are choosing additional, non-regulatory aspects from various frameworks that specifically suit their business strategy and investors needs.
- To understand these needs, organisations will have to communicate with their investors and consumers to see what is of value to them.
- Telling a compelling story that is detailed, includes metrics that are of value to consumers and investors, and is compliant with mandatory regulation should be the ultimate goal of your organisation’s ESG Reports.
- Storyboarding is a useful tool that can help here, where feedback from your organisations ESG leaders and partners can be incorporated.

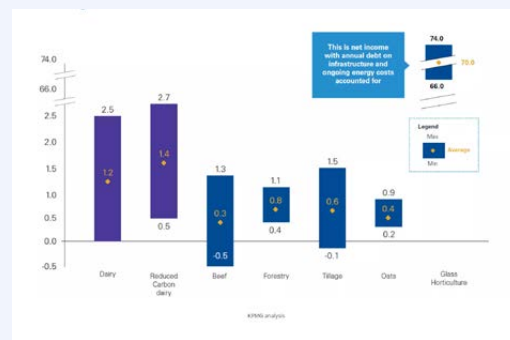
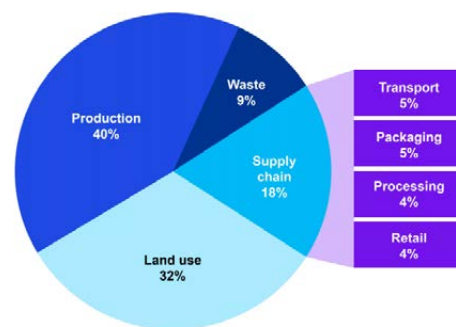
## Go Beyond ESG Reporting

- Smart technology and Machine Learning (ML) modelling can enhance your ESG reports. Innovative organisations have been enhancing their reports using predictive analytics to give insight into how their business will progress in relation to their ESG targets.
- Automation of the reporting pipeline, where data is fed into your chosen reporting tool periodically reduces human error while ensuring reports are always up to date.
- Interactive, user-friendly dashboards can allow investors and stakeholders to seamlessly browse and further analyse ESG trends themselves.

- Leading organisation’s are discovering the competitive advantage of linking ESG reporting to their corporate strategy. Integrating ESG factors into other financial and corporate reports helps organisations understand what drives their success and creates sustainable value in the longer term.



### GHG Emissions from Food Production



Source(s): “The Future of ESG and Sustainability Reporting: What Issuers Need to Know Right Now”; DFIN, “An ESG Reporting Methodology To Support CCS-Related Investment”, Global CCS Institute



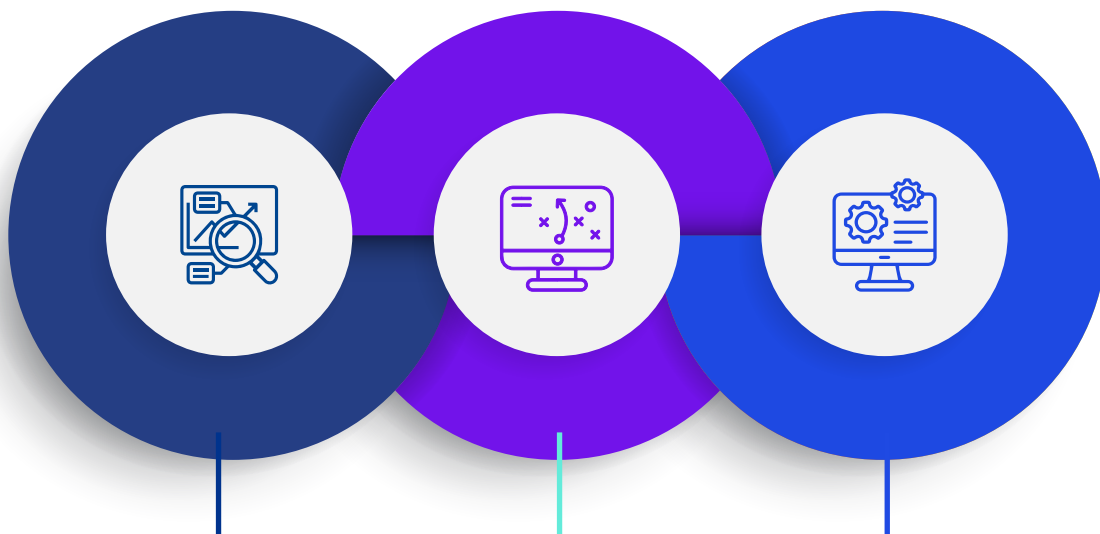
# Use Technology to your advantage – Think Green Innovation

**Accelerate your ESG Data Transformation using AI and emerging technologies.**

**Embedding transformational technology into your ESG Data Framework can provide you with powerful insights to drive evidence-based decisions and predict the most impactful ESG related activities. Leading organisations are implementing AI technology into their ESG data framework not only to ensure compliance and risk management, but also to drive new sources of revenue. Read below about some of the AI & Smart Technologies that are being used in the ESG landscape, with example use cases to demonstrate them in action.**

An example use case where this type of powerful technology is used is in the automation of manufacturing and industrial practices via the use of smart technology, Industry 4.0. Integrating smart technology into production machines and electronic devices provides vast amounts of data, which can be used for predictive analytics to improve processes, reducing waste, resources and energy consumption.

Some data vendors have begun using simple regression models or statistical techniques to bridge the gap in scope 3 data. Powerful ML methods can give estimates for the GHG emissions of external companies using publicly available data.



## Big Data Analytics

Using sensors, IoT and smart meters can provide real-time data, which can be analysed using Big Data AI solutions. This enables accurate and dynamic predictions of future trends for enhanced, data driven decisions to be made.

## Artificial Intelligence

AI unlocks the potential to analyse unstructured data. Examples of unstructured data that can be used for environmental opportunities include textual and satellite data. AI can be used to make informed decisions based off this data.

## Machine Learning

ML can be used to forecast your future carbon emissions from historic data. This can be used to give indication into how your organisation is progressing towards your net zero target. ML may also be able to help in estimating your scope 3 emissions.

Textual data is being analysed with the use of natural language processing, to identify ESG controversies relating to an organisation, or important ESG news. NLP can also be used to automate the collection of data from invoices or written statements. This data is converted to structured table data used then for reporting purposes, alleviating potential for human error in the data collection process. The use of impactful AI technology has helped reduce water consumption in the agricultural industry. Satellite imagery and information on precipitation volumes is used to analyse to optimise irrigation.

**Integrating AI solutions into your ESG digital strategy can unlock opportunities for innovation, optimisation and value-add, aligning ESG insights to business strategies**



# How to Get Started?

**The focus of Environmental, Social, and Governance (ESG) data will differ across various sectors, depending on the specific concerns and challenges facing each industry. This, in turn, will guide and shape the transformation process undertaken.**



We can consider four representative industries. In the Financial Services sector, for example, ESG data will be used to assess the financial risks and opportunities associated with any potential investments. In manufacturing, ESG data will be used to evaluate a company's impact on the environment, including its use of natural resources and its production processes. In retail, ESG data might be used to assess a brand's image but could also include an analysis of their climate footprint. In transportation, ESG data might be used to determine a company's impact on air and water quality, as well as their GHG (Greenhouse gas) emissions and sustainability practices. Fig 1.3 provides a snapshot of these four sectors.

In terms of the ESG data transformation framework, all organisations will have baseline regulatory reporting requirements, but then each sector will have its own specific additional metrics and reporting standards, along with its own innovative solutions driving advancement, from Smart Technology and the Internet of Things (IoT), to Robotic Process Automation.

Nevertheless, there is much in common across all these sectors, and much to be gained from engaging in a meaningful transformation of business operations.

Sector	Data	Innovative Solutions
<b>Financial Services</b> 	The focus is on third-party ESG ratings, particularly as regards investment funds (as per SFDR); Scope 3 data from supply chain.	Document Recognition, including KIID and Prospectus data, Robotic Process Automation (RBA), ESG Screening, Blockchain for reporting transparency.
<b>Manufacturing</b> 	The focus is on the manufacturer's in-house data, including a Carbon Footprint Calculator for their own emissions (fuel, electricity, transport, water, waste and refrigerant gases); Scope 1 and Scope 2.	Remote monitoring using IoT, Advanced Analytics (AI and ML), Predictive Maintenance, Real-Time Quality Control Analysis, Supply Chain Optimisation, Inventory Forecasting and Management, Data Process Automation.
<b>Retail</b> 	The focus is on third-party ESG ratings, but also on retail outlet emissions; Scope 1, 2, and 3 data.	Artificial Intelligence and IoT. Automated Data Collection, Supply Chain Optimisation, IoT in Transport and Refrigeration.
<b>Transportation</b> 	The focus is on the transport company's own data collection processes, especially relating to fuel and transport efficiency; Scope 1 and Scope 2.	Autonomous Electric Vehicles, Smart Mobility, Artificial Intelligence in Transport/Logistics management, IoT Deployment, Automated Data Extraction, Geographic Information System (GIS) mapping. Carbon Accounting.

Fig 1.3 : Sector Specific Potential Innovative Solutions



For further information, please get in touch

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