AI through the lens of ESG

corporate sustainability

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About the authors

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1. Introduction:

The proliferation of artificial intelligence (AI) is reshaping how businesses operate in the sustainability and compliance space, with this technology completely transforming approaches to tracking, managing, and meeting regulatory requirements.

However, environmental, social, and governance (ESG) is often an overlooked area of compliance. With the use of AI becoming more widespread as a mechanism to stay ahead of the evolving regulatory landscape, these intuitive technologies can either help or hinder businesses in meeting their sustainability goals, regulatory standards, and reporting requirements.

In this eBook, Enhesa's EHS and Sustainability Regulatory Consultant, Louisa Meliksetyan, analyzes the intersection between AI and ESG, detailing how the rapid integration of artificial intelligence across multiple varied industries and sectors enables both opportunities and risks for environmental, social, and governance goals.

This comprehensive and in-depth analysis also covers:

- Why companies must work to align AI deployment with legal requirements, ethical standards, and sustainability objectives
- The relationship between AI and ESG, including the risks, challenges, and frameworks
- The real-life application of AI for ESG, outlining its sustainable use and practical employment
- The presence of AI across the pillars of ESG, covering Environment, Social, and Governance

2. The relationship between AI and ESG

AI is becoming deeply embedded across a wide range of industries, sectors, and operational functions, extending from manufacturing processes and financial services to healthcare operations and logistics data.

AI in its current format functions as a double-edged sword for ESG practices. While it can bring transformative benefits, such as significantly enhanced environmental efficiencies across departments and governance processes, its sudden and immediate integration also introduces complex risks, from environmental costs, energy consumption, labor displacement, algorithmic bias, ethical concerns, and governance failures.

These growing challenges make it increasingly necessary to examine the application of AI through the lens of ESG, ensuring its ongoing development and deployment remains aligned with sustainable and responsible business practices, and monitoring its impact across the value chain.

In light of this examination, a key question arises:

Do existing ESG frameworks adequately capture the risks and opportunities associated with AI?

Some aspects of AI, such as cybersecurity and data privacy, are already addressed within governance-related ESG disclosures, but these frameworks often fall short in encapsulating AI-specific concerns.

Whether AI should be addressed across existing ESG categories or given its own separate metric remains an ongoing debate.

Is AI a material topic?

Impact materiality = the actual or potential impacts on people or the environment

Financial materiality = likely to affect the company's financial position, development, or performance

Even though AI is not yet currently listed as a standalone disclosure requirement under the European Sustainability Reporting Standards (ESRS), its material impacts are becoming increasingly evident in both financial and impact terms.

For companies whose operations rely heavily — or even exclusively — on AI systems and tools, this reliance may already meet both materiality thresholds.

AI can become a material topic even in businesses that use it sparingly if, for example, its application results in adverse outcomes, such as:

- Discrimination
- Labor displacement
- Excessive resource use
- Stakeholder concerns
- Reputational risks
- Compliance risks

The practical application of AI

With its universality of functions, AI can impact all three pillars of ESG — environment, social, and governance.

Read on to see how businesses should consider the application of AI across each of these elements of ESG.

3. AI in the environmental pillar

The environmental pillar of ESG addresses the company's impact on natural resources, ecosystems, and the climate.

This pillar presents a dual challenge for AI. While AI can significantly enhance environmental performance, its use is followed by an environmental footprint comprised of energy, water, and emissions.

Using AI sustainably

AI, especially large language models (LLMs) and generative AI require huge amounts of electricity and water for model training and interference, with PWC estimating AI may be responsible for **up to 15% of global greenhouse gas emissions by 2040**.

It's therefore crucial for companies to evaluate whether they need AI for their tasks. Not all roles will require large, complex models. Smaller, more efficient algorithms or classical machine learning (ML) methods may suffice for most tasks like data extraction and trend analysis.

AI use should follow a "sustainability by design" principle, whereby companies actively choose models based on their energy efficiency. This decision will require close collaboration between sustainability officers, legal teams, and technical developers.

Practical use of AI

AI technology offers a wide range of opportunities to support environmental compliance.

KPMG's report on **ESG in the age of AI** highlights multiple ways AI can support short and long-term ESG goals by:

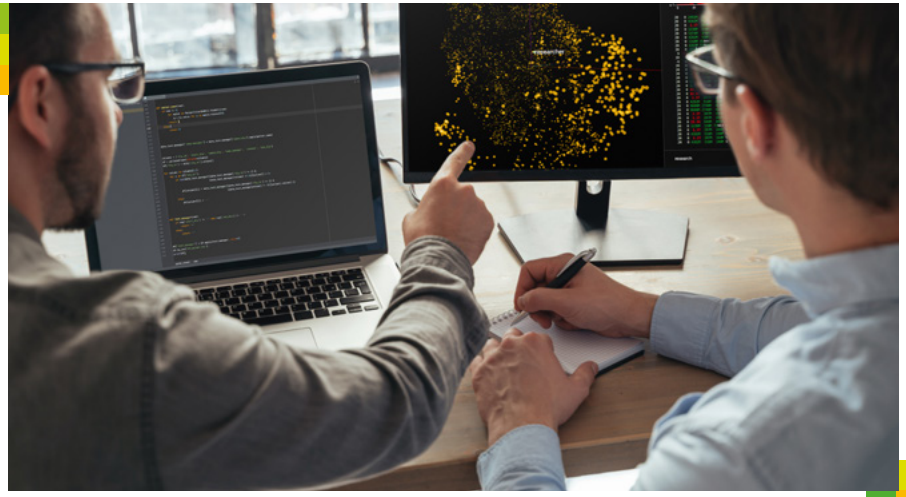
- Collating ESG-related data
- Forecasting emissions
- Linking environmental data to financial growth
- Conducting climate risk assessments

Using AI to track

Some companies use AI to track and analyze Scope 1 and Scope 2 carbon emissions by integrating energy, logistics, and production data to improve the accuracy of ESG reporting. AI also supports pollution control through models that detect and predict pollutant levels, comparing these against compliance thresholds, and triggering alerts when limits are approached.

In infrastructure-heavy sectors, companies apply AI to analyze weather patterns and vegetation growth to manage trees and plants around sites in the least disruptive and most environmentally conscious manner.

When AI is used sustainably for these goals, it can significantly amplify environmental benefits while minimizing the technology's own resource footprint.



4. AI in the social pillar

The social pillar of ESG concerns how a company impacts people, employees, consumers, communities, and others affected throughout the supply chain.

This pillar enables a dual role for AI to enhance social responsibility efforts, but introduces ethical risks that must be governed.

Practical use of AI

AI can be applied in a number of ways to support social responsibility and protect workers to transition from a reactive to proactive approach to safety management. For example, AI can monitor the presence of personal protective equipment (PPE) at hazardous job sites and deploy drones to identify potential hazards.

Human rights risks

Due to its ability to scan and analyze large volumes of data, AI can monitor labor conditions and human rights risks among suppliers by automatically reviewing supplier audit reports and records. This enables earlier identification of unethical practices and supports responsible supply chain oversight.

AI also improves consumer safety and product integrity by detecting contaminants or quality issues on production lines, such as spoilage, mislabeling, and defective safety seals.

Detection

Further, social listening tools powered by AI can help companies prepare for public hearings during environmental impact assessments for large infrastructure or industrial projects.

Lastly, AI is being increasingly relied upon for detecting fraudulent activity to ensure fair, non-discriminatory customer interactions. These AI algorithms can analyze consumer complaints to identify recurring issues with products or suppliers, enabling faster resolution and continuous improvement.

Legal and ethical compliance of AI

Applying AI in any social context must comply with evolving legal and ethical ESG frameworks.

EU AI Act

Among other rulings, the EU AI Act is the first regulation on artificial intelligence. It prohibits the application of AI systems in specific contexts, including the classification of individuals based on their social behavior or known, inferred, or predicted personality traits.

Despite Europe's Act being the current, most comprehensive legislation on the use of AI, it's limited by geographical and jurisdictional restrictions, with its enforcement mechanisms tied only to EU institutions and legal frameworks, thus preventing the deployment of AI systems across other regions or global platforms.

It therefore becomes incredibly vital for companies to progress beyond legal compliance to embrace a proactive ethical approach to AI application. Relying on regulatory grey areas in cross-border digital services and e-commerce may expose businesses to reputational, operational, and legal risks. Ethical AI use should be a core corporate priority, driven by internal accountability rather than external enforcement alone.

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Data protection

Companies should also remain aware of the legal constraint surrounding regulating data protection. Under the General Data Protection Regulation (GDPR), individuals have the right to human oversight in relation to decisions made solely through automated data processing. Companies should be aware that any affected employee or customer can challenge an AI-driven decision if it significantly impacted them.

Employee turnover

Lastly, AI's expansion inevitably reduces business reliance on human labor, which can result in progressive layoffs. Reporting companies, and particularly large employers, must recognize that their organization shapes not only the economy, but also the labor markets of the communities in which they operate. This, in turn, creates a responsibility to manage workforce transitions ethically and sustainably. Reskilling or upskilling employees is an effective method to ensuring companies continue to contribute positively to their social environment.

5. AI in the governance pillar

The governance pillar of ESG demonstrates the transparency, accountability, and integrity of decision-making at the board and executive levels.

With companies increasingly expected to disclose how sustainability matters are integrated into their governance structures, AI aids in achieving the necessary oversight of material ESG risks and opportunities to report — supported by data, metrics, and measurable impacts.

At present, the use of AI in corporate governance is largely focused on serving as an analytical assistant to boards, helping them process information and make more informed decisions. As for its future application, some authorities have raised the prospect of involving AI tools in governance processes.

Using AI for decision-making

One of the most strategic advantages of AI lies in its ability to process and analyze large volumes of data to uncover patterns and insights that human analysis may overlook.

With minimal manual effort, AI can instantly analyze geopolitical news, real-time environmental data, legal developments, and public disclosures.

Flagging compliance risks

For reporting companies, AI can identify inconsistencies across datasets, anticipate future logistical or operational needs, flag legal compliance risks, improve resource allocation, and generate recommendations for future actions.

AI can also identify potential fraud, discrimination, or conflicts of interest by cross-referencing contracts and payment records with public or third-party data, taking on a compliance and oversight role.

Risks of data quality and decision transparency

While AI can help inform more effective decision-making and identify gaps in compliance, its usage sparks particular concerns in relation to risks associated with data quality and transparency.

Types of data

AI models are highly dependent on the data they're trained on, so the quality, diversity, and availability of this data is crucial.

Companies must consider the differences in the social development of countries, in addition to the variable availability of relevant and representative data. Many models are predominantly trained on information sourced from the developed world, meaning they may not analyze or interpret data related to developing regions with equal accuracy.

This disparity could lead to social and cultural biases, and omissions of ethically sensitive or locally significant topics.

Moreover, the training data used by most LLMs remains undisclosed, protected as a trade secret. Companies must therefore be vigilant and cautious when relying on these systems, particularly in regulated or ethically complex contexts.

Disclosing decisions

A crucial part of ESG reporting is the requirement to disclose the basis on which decisions are made, including information provided to the board, as is the case under ESRS GOV-1 and GOV-2.

Detecting biases or factual errors can be exceptionally challenging, given that the reasoning behind AI outputs is not readily explainable.

To ensure transparency and diligent reporting, companies should establish efficient human oversight mechanisms when using third-party AI tools and LLMs, such as a dedicated AI ethics officer or cross-functional committees to review high-risk AI deployments.

The role of responsible AI policies

Adopting comprehensive AI policies is a vital step toward demonstrating the responsible and sustainable use of AI.

Having an AI policy is a key indicator of corporate accountability, particularly for companies working with large volumes of data. While not yet universally mandatory, an increasing number of businesses are now developing and implementing these strategies, aligning them with the core principles outlined in the EU AI Act.

Yet a critical question remains:

Is having a policy enough to ensure the sustainable and ethical use of AI tools?

Although having core principles is a good foundation, without clear implementation methods, the policies risk becoming symbolic and falling into the trap of **"ethical greenwashing"**.

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To avoid this, companies need to go beyond high-level commitments and build robust internal governance structures, including tailored operational policies that:

- Reflect internal processes
- Assess specific risks
- Define mitigation strategies, such as:
  - Mapping data flows
  - Applying purpose limitations
  - Restricting model types and data categories in LLMs

Embedding these practices into daily operations will be essential to ensure that AI use remains aligned with sustainability and human rights values.

6. How AI accountability will influence the future of ESG

As AI becomes a core part of business operations, its impact on ESG is clear and growing.

While it can help companies meet sustainability and governance goals, it also brings serious risks that current ESG frameworks don't fully address.

To use AI responsibly, businesses need to go beyond basic compliance to a more proactive approach by:

- Putting proper human oversight in place to mitigate potential AI errors
- Following legal requirements for the use of AI in specific contexts
- Ensuring transparency in data and decision-making
- Creating clear internal policies to implement throughout the business

Adopting these steps will help businesses leverage AI to its fullest capacity while remaining aligned with their ESG commitments and preparing for future developments, including the potential integration of AI as a distinct ESG metric.

7. How Enhesa is managing the emergence of AI

At Enhesa, we take the use of AI very seriously. After all, data and its analysis is the cornerstone of what we do for our clients. That's why our in-house AI team works to create AI tools that will have direct benefit for our experts and solutions, and thereby our customers — all done safely and ethically.

Learn more about our in-house AI team, including the trends in the use of AI for sustainability and compliance and how they impact the work that we do.

Using AI to enhance Enhesa services

enhesa.

Keep up to date with ESG regulations

Businesses should ensure they remain informed on developing policies, regulatory amendments, and new laws in their regions of operation to reduce the risk of non-compliance as ESG and AI converge.

With Enhesa Corporate Sustainability's comprehensive suite of solutions, you can stay abridged of the latest regulatory developments and changes affecting jurisdictions in which you operate.

Explore Enhesa's sustainability solutions

Achieve compliance, manage risk, and drive sustainability.