From industrial revolution to responsible finance

The role of GenAI in tracking ESG performance in financial services

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aws

From industrialization to modern sustainability challenges

The emergence of Environmental, Social, and Governance (ESG) principles within financial services is a response to the increasing awareness of the interconnectedness between human activities and the planet's health. Historically, humanity's interaction with the environment was primarily focused on survival and the fulfillment of basic needs. For thousands of years, this interaction was relatively balanced and minimally invasive, allowing ecosystems to remain largely intact. However, the industrial revolution marked a turning point, significantly intensifying the exploitation of natural resources and leading to widespread environmental degradation.

The industrial revolution brought numerous advancements, such as medical and scientific breakthroughs, mass production, and improved infrastructure. While these developments contributed to job creation, better sanitation, and enhanced communication, they also accelerated land-use changes, urbanization, and the release of greenhouse gases (GHGs). The consequences of these activities are now starkly evident: declining air and water quality, more frequent and severe natural disasters, and the loss of biodiversity. In the current technological era, the strain on global resources has only intensified, prompting a call for action from various stakeholders, including financial institutions.

Financial services, particularly banks as capital allocators, have been identified by governments and regulators as key players in driving a sustainable future. As gatekeepers of capital, they are uniquely positioned to influence the flow of funds towards environmentally and socially responsible projects. ESG principles have emerged as a guiding framework to help financial institutions mitigate the negative impacts of their operations on the environment and society. By adhering to ESG guidelines, banks can not only reduce their carbon footprint but also encourage businesses in their portfolios to adopt sustainable practices.[1]

Many countries now mandate that financial firms report on their GHG emissions and the environmental impact of their activities, following frameworks like the Task Force on Climate-related Financial Disclosures (TCFD) and the Task Force on Nature-related Financial Disclosures (TNFD). These frameworks ensure that companies are held accountable for their environmental impact and are encouraged to make data-driven decisions that prioritize sustainability.

Moreover, the adoption of ESG principles is not just about regulatory compliance; it also presents a significant opportunity for financial institutions to innovate and differentiate themselves in a competitive market. Investors are increasingly prioritizing ESG factors when making investment decisions, recognizing that environmental and social conditions can directly impact a company's performance and resilience. This shift reflects a broader societal expectation that businesses should not only contribute to the well-being of the planet and its inhabitants but also adapt to and mitigate the risks posed by environmental changes.[2]

Navigating the complexities of ESG data

Achieving ESG goals in the financial services industry is an increasingly complex and multifaceted challenge, driven by the need for transparency, accurate data management, and seamless integration of sustainability insights across all business operations. As financial institutions strive to reduce environmental impact, promote net-zero targets, and combat greenwashing, they face significant hurdles in managing and correlating large quantities of ESG data from diverse sources. The complexity is further amplified by the overlapping nature of emerging data streams, making it difficult to identify anomalies and build the necessary trust in the insights generated.

One of the primary challenges lies in the integration and correlation of ESG data, which encompasses a broad spectrum of environmental, social, and governance factors. For instance, financial institutions must analyze extensive historical emissions data, often drawn from various sources with inconsistent calculation methodologies. This is crucial for ensuring the accuracy and trustworthiness of current ESG performance insights and their seamless integration into decision-making processes. Additionally, conducting comprehensive assessments such as the TNFD requires evaluating over 40 attributes related to biodiversity risk and 30 attributes linked to water risk.[3] These assessments demand granular, geospatial data at the asset or facility level, which is often fragmented or inaccessible. The absence of a unified data source forces reliance on multiple data-gathering methods, complicating the process further.

Furthermore, the dynamic nature of ESG factors necessitates continuous updates, adding another layer of complexity. Financial institutions struggle to keep their data current and accurate, hindering their ability to make consistent, sustainable business decisions. The industry must overcome these challenges by effectively correlating diverse data sources to detect anomalies, enhance trust, and integrate actionable sustainability insights into financial operations, products, and customer interactions. Addressing these challenges is critical to avoiding greenwashing and achieving genuine ESG progress.

To assess the biodiversity impact of a global mining company with assets across different regions, an investment banker or insurance underwriter needs precise geolocation data for each site, combined with relevant ecological information. This analysis requires integrating multiple data sources, as no single source can provide the comprehensive geospatial and environmental data necessary for a thorough evaluation.

Harnessing Generative AI to overcome ESG challenges

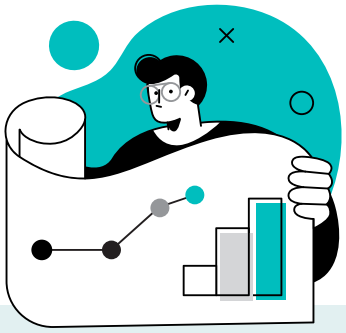
The integration of Generative AI (GenAI) into ESG data management offers a transformative approach to overcoming the complexities and challenges associated with ESG measurement and performance. As financial institutions grapple with the enormous, fragmented data landscape inherent in ESG reporting, GenAI provides an innovative solution to streamline processes, enhance data accuracy, and facilitate more informed decision-making.

GenAI leverages natural language processing (NLP) to automate the collection, verification, and analysis of ESG data. By doing so, it significantly reduces the time and resources required for these tasks, allowing organizations to focus on higher-level strategic activities. For example, GenAI can identify and pull accurate data from diverse sources, perform preliminary data screening, and manipulate data sets to ensure they meet the stringent requirements of ESG frameworks including TCFD and TNFD. GenAI also enhances the ability to correlate disparate data sets, identify anomalies, and elevate trust in the resulting insights. This capability addresses the key challenge of fragmented and inconsistent data, which has traditionally been a significant barrier to effective ESG reporting.

In addition, GenAI's ability to process large datasets rapidly allows financial institutions to stay current with evolving ESG trends and regulations. This is particularly important in an environment where ESG factors are dynamic and require continuous monitoring and updates. By employing machine learning algorithms, GenAI can conduct advanced risk analysis and generate predictive forecasts, enabling organizations to anticipate and mitigate ESG risks more effectively. Such capabilities are essential for integrating sustainability insights into financial operations, products, and customer interactions, helping to combat greenwashing and making consistent, data-driven decisions.

Capgemini and AWS have developed several innovative solutions that demonstrate the potential of GenAI in ESG management. This includes a machine learning-based anomaly detection tool that identifies irregularities in ESG data, highlighting potential risks or opportunities. The Sustainability Data Hub powered by an ESG assistant aggregates and organizes ESG data from various sources, generating comprehensive reports based on real-time data analysis. Additionally, the Net Zero & Decarbonization Monitoring tool helps organizations track their progress toward sustainability goals, providing actionable insights that drive responsible business practices.

Machine learning-based anomaly detection



Our cutting-edge machine learning-based anomaly detection tool was designed to address the increasingly complex challenges financial institutions face in managing large, fragmented, and inconsistent ESG data. Traditional rule-based systems are quickly becoming obsolete, often missing low-frequency, high-risk anomalies that can significantly impact decision-making. Leveraging GenAI, our solution automates the correlation and analysis of diverse data sources, enabling organizations to detect anomalies with greater accuracy and efficiency. By streamlining data processing and enhancing the reliability of insights, the tool significantly increases trust in the ESG data used for reporting and compliance purposes.

The solution's ability to process large datasets in real-time is particularly crucial in an environment where ESG factors are dynamic and continuously evolving. By integrating advanced machine learning algorithms, the tool not only identifies current anomalies but also predicts emerging risks, providing deep insights essential for proactive and informed decision-making. This capability is invaluable for financial institutions striving to comply with stringent ESG frameworks while avoiding greenwashing, ultimately supporting more consistent and sustainable business practices.

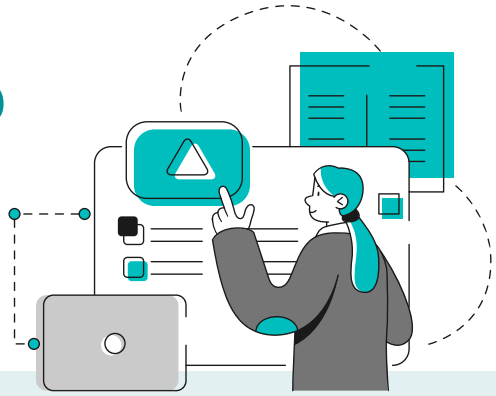
Additionally, our tool offers customizable root cause analysis by utilizing supervised, semi-supervised, and unsupervised machine learning models, helping sustainability leaders pinpoint the underlying drivers of anomalies. This reduces the manual effort required for data analysis and enhances the detection of emerging risks. With seamless integration into existing financial systems and adaptability to evolving data patterns, this solution is an indispensable asset for maintaining financial integrity and ensuring ESG compliance in a rapidly changing regulatory landscape.

Benefits of implementing machine learning-based anomaly detection:

- **Enhances flexibility:** Supports a broader array of variations and complexities in business rules across multiple dimensions, offering superior adaptability compared to traditional rule-based systems.
- **Saves time:** Effective root cause analysis saves valuable time for business experts by allowing the machine learning system to learn directly from data, which is subsequently validated by these experts. This process reduces the reliance on rigid rule-based models.
- **Minimizes intervention:** Requires minimal to no manual adjustments to adapt to changes in underlying data, significantly reducing system downtime compared to rule-based solutions.
- **Improves accuracy:** Significantly cuts down on false positives and negatives, which not only streamlines operations but also reduces the potential costs associated with these errors.
- **Enhanced user interaction:** Our solution offers intuitive interaction capabilities using natural language, facilitated by GenAI, enhancing user experience and accessibility.

Access additional insights, case studies, and get in touch with our experts here.

Sustainability Data Hub powered by an ESG assistant



To lead the financial sector toward more sustainable practices, forward-thinking banks and insurers have adopted a Sustainability Data Hub (SDH), a comprehensive data warehouse that serves as the foundation of an organization's innovative ESG architecture. While a traditional SDH stores large amounts of structured ESG data, the integration of a GenAI-enabled ESG assistant significantly enhances its capabilities. It allows for the seamless integration of alternate data from unstructured sources, such as corporate reports, public filings, and news to support advanced calculations, generate insightful visualizations, and deliver actionable intelligence.

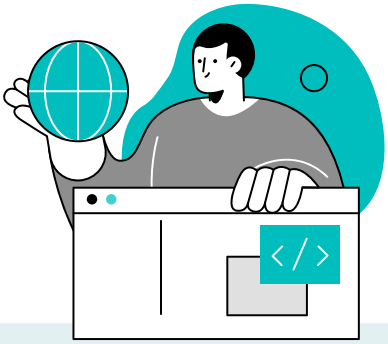
Benefits of implementing an SDH powered by an ESG assistant:

- **Trusted sustainability data:** Enhance ESG data within the SDH by integrating curated alternative data from unconventional sources to bridge data gaps and improve data quality while ensuring full auditability through transparency, context, and lineage. Automation accelerates data integration and processing, reduces the risk of errors, and supports organizational growth.
- **Insights-driven sustainability performance:** The augmented SDH optimizes modeling capabilities, enabling organizations to adopt a common data model and a data-as-product approach for efficient data consumption and sharing. It provides comprehensive monitoring and reporting features that allow firms to track progress and report on their performance. Additionally, it supports the generation of predictive insights to inform strategic decision-making.
- **Transformation at scale:** The SDH with integrated ESG assistant empowers organizations to scale, embrace agility, and gain contextual intelligence necessary for managing the transition to sustainable business models. It also facilitates seamless data sharing with internal and external stakeholders, enhancing sustainability accuracy and fostering new transformative business opportunities.

Looking ahead, banks and insurers can further strengthen the SDH, powered by an ESG assistant, by incorporating advanced modeling capabilities to enhance risk prediction. This proactive approach positions firms at the forefront of sustainable finance, enabling them to navigate the evolving landscape of ESG challenges with greater precision and foresight. By continuously innovating their ESG data strategies, these institutions can address current regulatory demands and set a new standard for sustainability in the financial services industry.

Access additional insights, case studies, and get in touch with our experts here.

Net Zero and Decarbonization Monitoring



We recently worked with a global bank to implement an ambitious project known as Net Zero & Decarbonization Monitoring (NzDM), designed to automate and enhance the bank's internal emissions accounting processes. This initiative leverages advanced data and technological infrastructure to ensure that all data sources are verified and that accurate calculation factors are applied, significantly improving the accuracy and efficiency of tracking and reporting the bank's net-zero commitments. By automating these processes, NzDM streamlines the bank's efforts to meet its sustainability goals, reinforcing its commitment to reducing its carbon footprint.

Our expertise in GenAI and Large Language Models (LLMs) has been pivotal in strengthening the bank's ESG framework through this project. The integration of these advanced technologies supports the bank's leadership in sustainable finance, equips it to navigate the complexities of the evolving ESG landscape, and positions it to meet its decarbonization goals with precision and agility.

Leading financial services toward a *sustainable future*

From the industrial revolution to the present day, the financial sector has played a pivotal role in shaping the global economy. As the impact of human activity on the environment becomes more pronounced, financial institutions are increasingly called upon to lead the charge toward sustainability. Through the adoption of ESG frameworks, these institutions not only mitigate their environmental footprint but also influence the broader business landscape to prioritize responsible practices.

The challenges associated with constantly changing ESG data management principles are substantial, and securing the right data is a crucial enabler. Advanced technologies like GenAI and machine learning provide a clear path forward by streamlining data collection and curation, enhancing accuracy, and enabling real-time analysis—ultimately building trust, combating greenwashing, and empowering organizations to make more informed, sustainable business decisions.

Capgemini and AWS are committed to building a sustainable future by leveraging the power of technology to create innovative and responsible solutions. Together, we enable financial services organizations to embed sustainable practices into their core operations, align with global ESG standards, and lead the way in achieving net-zero goals through advanced cloud services, GenAI, and data-driven insights.

Contact us to schedule a demo, workshop, or consultation to discover how our solutions can empower your organization to lead in sustainable finance.

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Data-powered financial services
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Endnotes

1. https://www.capgemini.com/insights/research-library/wealth-management-top-trends-2024/
2. https://www.capgemini.com/insights/research-library/world-wealth-report/
3. https://tnfd.global/

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Capgemini is a global business and technology transformation partner, helping organizations to accelerate their dual transition to a digital and sustainable world, while creating tangible impact for enterprises and society. It is a responsible and diverse group of 340,000 team members in more than 50 countries. With its strong over 55-year heritage, Capgemini is trusted by its clients to unlock the value of technology to address the entire breadth of their business needs. It delivers end-to-end services and solutions leveraging strengths from strategy and design to engineering, all fueled by its market leading capabilities in AI, cloud and data, combined with its deep industry expertise and partner ecosystem. The Group reported 2023 global revenues of €22.5 billion.

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