

Advancing Sustainability: A Comprehensive Review of Environmental, Social, and Governance (ESG) Practices

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Abstract

Environmental, Social, and Governance (ESG) frameworks have emerged as critical pillars guiding sustainable business practices and responsible investment decisions. This review explores the multifaceted role of ESG principles in promoting environmental stewardship, advancing social equity, and ensuring ethical governance. Environmentally, ESG focuses on combating climate change, conserving biodiversity, and managing resources through renewable energy adoption, waste reduction, and carbon emission control. Socially, it emphasizes employee well-being, diversity, community engagement, and ethical supply chains, fostering stakeholder trust and societal value. Governance principles underpin transparency, accountability, and ethical decision-making, which are essential for long-term organizational integrity. While ESG implementation offers transformative potential, challenges remain. High costs, lack of standardized frameworks, and regional regulatory disparities hinder widespread adoption. Complex global supply chains and the risk of greenwashing further complicate ESG integration. Despite these barriers, the study highlights how technological innovations, supportive regulations, and increasing stakeholder awareness are accelerating ESG adoption. ESG-aligned organizations benefit from operational efficiencies, enhanced brand reputation, investor appeal, and improved risk management. The study underscores the alignment of ESG goals with the United Nations Sustainable Development Goals (SDGs), illustrating how businesses can drive positive environmental and social change while securing competitive advantage. Additionally, ESG research continues to evolve, with growing emphasis on performance metrics, sectoral applications, and data-driven evaluation frameworks. The analysis concludes that ESG is not merely a compliance tool but a strategic imperative fostering resilient, ethical, and future-ready enterprises. As sustainability becomes a core expectation from stakeholders, integrating ESG across business functions is essential for global progress and equitable development.

Keywords: ESG, sustainability, environmental stewardship, social equity, ethical governance, climate change, corporate responsibility, Sustainable Development Goals (SDGs), renewable energy, stakeholder trust

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Received Date: May 05, 2025

Accepted Date: May 20, 2025

Published Date: June 18, 2025

Citation: Rupesh Kumar Malviya, Anupam Vijay, Aman Kumar Singh. Advancing Sustainability: A Comprehensive Review of Environmental, Social, and Governance (ESG) Practices. Journal of Thermal Engineering and Applications. 2025; 12(2): 1–9p.

INTRODUCTION

ESG criteria have become the backbone of sustainability over the last few decades and have provided a structured framework for businesses and investors evaluating risks, impacts, and opportunities beyond traditional financial metrics to enable more informed business and investment decisions. In a world in which climate change, social equity, and ethical governance are fast becoming some of the greatest drivers for change, applying ESG principles facilitates the aligning of businesses' operations with sustainability goals on a global scale, leading to carbon emission reductions, biodiversity preservation, and dealing

with employees and stakeholders on an ethical basis. A company’s ESG metrics enable investors, lenders, and stakeholders to make better-informed decisions based on the company’s environmental impact, its social responsibility, and its good governance practices [1]. It has also been found that using these criteria would serve to allow organizations to mitigate risks, identify future opportunities, and also empower consumers and advocates in coming to informed decisions which would lead to sustained value creation and a greater sense of responsibility for the company.

There are three major components of the ESG framework that relate to environmental issues. The first component is focused on environmental concerns. The study mentions issues such as climate change, biodiversity, carbon management, water and waste management, energy usage, and land use [2]. Note, the social dimension would include employee relations, workplace conditions, and a more general examination of how the companies’ products, services, and activities impact a broader society. As part of the governance component of sustainability, we speak of transparency, ethical behavior, and the role of responsible management in a company. Together, they give the whole view about the sustainability efforts of a company and how much it has been integrated into more general social and environmental objectives.

Due to ESG, investors, employees, customers, and communities can achieve transparency and trust that build sustainability. Investors make the investment, identifying firms that maintain risks with effective management and contribute in a positive way to society, and consequently, become able to earn an increasingly stable and longer-return on the investment. Customers are also increasingly leaning towards and supporting businesses that value high and truly put into practice ethics and protect the environment. Through social initiatives such as community engagement, diversity and inclusion, and ethical supply chains, companies can be assured of positive impact in society while being responsive to pressing social needs [3]. As a result of this alignment, stakeholder relationships are strengthened, which is crucial for long-term success.

ESG practices encourage innovation and make companies leaders in sustainability. By adopting ESG principles, businesses can find new opportunities for efficiencies, such as moving towards renewable



Figure 1. Relationship between ESG (Environmental, Social, and Governance) and renewable waste disposal [4].

sources of energy, reducing waste, or optimizing their supply chains which may open savings and improvements in competitiveness. Strong ESG practices also help companies meet current regulatory requirements and be ready for future policies, which will ultimately reduce compliance risks [5]. Demonstrating a company's interest in sustainability differentiates it in the competitive market, attracts the best talent, and contributes to an increasingly more equitable and sustainable global economy.

The three core pillars of ESG Principles consist of Environmental, Social, and Governance, as shown in Figure 1. In the Environmental pillar, renewable energy waste is managed, resource conservation promoted, and recycling maximized. As a part of the social pillar, waste disposal is emphasized, community engagement encouraged, and community benefits delivered. Governance focuses on ensuring compliance with set regulations, keeps operations transparent, and does reporting. These elements constitute a complete framework for sustainable and responsible business operation.

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE PILLARS

Environmental Pillar

An important component of the ESG framework is the environmental component, and it refers to determining how a company interacts and influences the natural environment. This report examines efforts toward fighting climate change, especially through the reduction of carbon emissions, the widespread adoption of renewable sources of energy, and the development of energy-efficient technologies to combat this. For example, companies are also assessed in this process for protecting biodiversity, managing water usage, minimizing waste and pollution, among other aspects. This step does not only reduce the company's ecological footprint but also epitomizes the commitment of the company towards sustainability and resilience while dealing with regulatory challenges and ecological issues. There are so many business-related benefits that come with prioritizing environmental sustainability [6]. To achieve these objectives, you should embrace sustainable resource management which may help in lowering the costs of production, risk reduction, and also respond to global efforts aimed at handling climate change, the case of the Paris Agreement. It is worth noting that environmental strategies can boost innovation and innovative solutions minimize the risks of litigation as well as reputational risks, proving leadership in an ever-changing global context. This process, therefore, adds value to both society and to the future [7].

Social Pillar

Social dimension of sustainability (ESG) refers to how a business handles relationships with its clients, staff, and the community. DEI are pillars that ensure that there is a concern for employee's welfare. It ensures that there is a safe and moral working condition; and maintains diversity and equity in the workplace. It also evaluates how a business socially contributes, including involvement in the community, ethical supply practices, and social impact, among others [8]. Businesses can benefit greatly from addressing social issues. These initiatives demonstrate a company's commitment to building a just and moral presence in society. By putting this pillar first, companies increase stakeholder trust, improve their brand's reputation, and promote positive social change. Through programs like these, businesses end up being able to raise customer satisfaction and employee loyalty levels within a socially conscious world, while cementing their position as a responsible and socially conscious organization [9].

Governance Pillar

Governance basically refers to the knowledge of internal procedures and rules that determine how a business is run and held accountable. This therefore includes regulatory compliance, encouragement of moral decision making at every level within the organization, and transparent financial reporting. Governance comprises board of directors' structure, diversity of the leadership team, and mechanisms for preventing conflict of interest and corruption. Due to a well-structured governance system, companies are answerable to their stakeholders in addition to shareholders, thus minimizing the risks of bad governance and unethical practices [10]. Companies more likely to win over investors and succeed over the long term adhere to strong governance procedures.

CHALLENGES IN ESG IMPLEMENTATION

Evaluating ESG concepts is very complicated as the balance between several businesses and regions related to environmental, social, and governance objectives makes its implementation very difficult. The lack of defined frameworks and measures is an important issue in evaluating ESG performance. Differences in reporting and evaluation arise due to varying methodologies utilized by different organizations and countries [11]. Based on this point, the lack of constancy undermines the ESG as a tool for decision-making, hence making it not useful as a decision-making tool and therefore the companies cannot be evaluated fairly by the stakeholders and investors.

The high cost of ESG implementation is another major hindrance. Majority of the early investments would involve infrastructure, training, and technology to help transition into sustainable practices. Such costs are probably very steep for smaller businesses or firms in developing countries, which may deter their efforts to fully implement ESG ideals. The company could also be forced to incur operational costs in terms of compliance, reporting, and audits running periodically. This would further stress the company’s resources, going forward, particularly in sectors of high thinning margins.

Adoption of ESG by the company is further complicated by the complexity of its operations and supply chain relationships. The fact that most companies have numerous suppliers and operate in many different countries can make it extremely challenging for them to ensure that every aspect of their operations complies with ESG guidelines [12]. It should be noted that problems like unethical labor practice or environmental infractions inside a supply chain can damage the brand of a company even when they are not under a company’s direct control. Thus, it is worth underlining how hard it is to apply ESG principles on a very large, distributed network.

Differences exist in culture and regulations in each country, which makes it challenging to introduce ESG worldwide. Environment preservation takes precedence in some countries, while others might focus more on social or governance matters. Due to the disparity arising from this, international companies face challenges in making an integrated ESG strategy work in line with the regional laws and expectations of various stakeholders [13]. This, therefore means that inferior regulatory systems may allow firms in certain markets to circumvent ESG standards, allowing for different rates of adoption and implementation.

Table 1. Challenges and outcomes in ESG implementation across regions and businesses.

References	Study	Challenges	Outcomes
[11]	Examination of ESG performance frameworks across businesses and regions.	Lack of standardized frameworks and metrics leading to inconsistent reporting and evaluation.	Difficulty in fair evaluation of businesses by stakeholders and investors; reduced efficacy of ESG as a decision-making tool.
[14]	Financial implications for implementing ESG practices.	High upfront costs for infrastructure, training, and technology; continuous expenses for compliance, reporting, and auditing, especially for smaller businesses.	Restricted ability of smaller or underdeveloped organizations to fully adopt ESG practices; strain on resources for businesses in low-margin sectors.
[12]	ESG compliance within complex operations and global supply chains.	Challenges in ensuring ESG compliance across multiple suppliers and global operations; risks of unethical practices within supply chains.	Potential brand damage from supply chain issues; complexity in applying ESG principles across decentralized networks.
[13]	Analysis of regional cultural and regulatory variations in ESG application.	Disparities in regional focus on ESG pillars (e.g., environmental, social, governance); weak regulatory frameworks in some areas.	Difficulty for multinational corporations in creating cohesive ESG strategies; varied adoption rates and effectiveness across regions.
[15]	Examination of greenwashing risks in ESG initiatives.	Misrepresentation of ESG efforts undermines stakeholder trust and program legitimacy.	Calls for increased accountability, transparency, and regulatory oversight to ensure credibility and meaningful impact of ESG initiatives.

Moreover, there is a probable risk of greenwashing against businesses since they have been inflating or misrepresenting their initiatives as related to environmental, social, and governance in order to project them as being more sustainable than they actually are. This may make ESG programs lose credibility, potentially hurting stakeholder trust [15]. For the fact that businesses are going to support their claims, environmental, social, and governance ones, through tangible activity coupled with a quantifiable output, there is a need for more accountability, openness, and stricter regulatory monitoring. Until these things are done, ESG's ability to bring about necessary change stands fully constrained in its ability to bring about the changes needed to be made. Table 1 shows the challenges and outcomes in ESG implementation across regions and businesses.

IMPACT AND FUTURE TRENDS IN ESG

Organizations benefit significantly by increasing resilience and fostering long-term sustainability if they include Environmental, Social, and Governance (ESG) principles into their operations. Businesses can greatly increase their operational efficiency through efficient ESG practices within the organization. Among the very common examples of the same include reduced energy use through energy-efficient technologies, reduced waste management expenses through adoption of recycling and waste reduction techniques, and improved resource utilization through adoption of sustainable supply chain procedures [16]. Apart from saving them some dollars, such moves set up businesses as sustainability iconoclasts and commit to vital global issues such as resource preservation and climate change. This corporate reputation for sustainability helps it attract clients and investors who care about moral behavior and good environmental stewardship, which can only strengthen the position of the company in the market.

Use of an ESG framework will thus enable organizations to better anticipate and address the risks associated with social and environmental challenges. Companies may leverage such standards to align with the same levels of governance, thereby implementing more robust governance systems that prevent non-compliance with regulations, financial losses in the form of penalties, or reputational losses from unethical or unsustainable practices [17]. Note that these frameworks also help companies meet stakeholder expectations by promoting transparency and accountability, thereby enhancing a company's ability to build trust and loyalty among its customers, investors, and other business partners. As they proactively manage these risks related to ESG issues, this can safeguard the organization from possible interruptions and at the same time contribute to the financial stability and performance of the company. Companies that show a commitment to their ESGs are better placed to respond and address new emerging challenges, which makes them more attractive to investors seeking to invest for the longer term. The organizations that form these categories normally have easier access to capital and investment chances. This is likely the very reason for higher integration of ESG principles by businesses, allowing them to enhance operational efficiency while mitigating risks and positioning themselves to lead in the sustainability game, building a solid foundation for long-term growth and success within an increasingly conscientious market landscape, allowing them to enhance operational efficiency, mitigate risks, and become leaders in the sustainability game.

Besides these positive impacts on society, ESG principles even have a direct benefit to organizations. Social parts of ESG result in actions that improve working conditions, hence offering employees a secure, just, and equal working environment. It is when businesses express diversity and inclusion that opportunities are offered to underrepresented groups, thus improving equality in the workplace and innovation. Socially, ESG's activities improve the standard of living within communities in which the enterprises operate, helps grow communities beyond the workplace by providing infrastructure, health, and education [18]. On the other hand, the environmental aspect of ESG addresses problems that face the world, including climate change. ESG principles assist businesses to preserve ecosystems and natural resources for future generations through such channels as the reduction of carbon footprint, transition to renewable energy sources, and biodiversity conservation. Apart from reducing waste and promoting sustainable resource management, these initiatives have a greater environmental impact because of their encouragement of circular economies.

Since these initiatives are carried out in a transparent and ethical manner based on the governance pillar of ESG, all the parties involved, including clients, workers, and investors, can build trust among themselves because accountability, openness, and moral decision-making are highly placed in governance procedures. Organizations would be able to keep unethical behavior at bay and promote the integrity of their operations if they strictly adhere to international sustainability standards and regulatory frameworks [19]. Notably, organizations whose businesses are aligned to ESG also play a significant role in enabling the achievement of such global sustainability objectives as the United Nations SDGs. At the heart of these aims, such as climate action (SDG 13), reducing inequality (SDG 10), and affording energy through renewable sources (SDG 7), like organizations' efforts to combat social injustices, foster environmental stewardship, and promote ethical governance. Because of embracing ESG, businesses do ultimately benefit both the immediate local community and the larger global ecosystem, in addition to positioning themselves as important contributors toward the creation of a more sustainable and just global future through the production of positive social and environmental outcomes [20].

This study looks at how environmental, social, and governance standards are incorporated in the European energy industry to provide recommendations on how to improve Ukrainian energy laws. It ranges from socially responsible investing to a holistic model that integrates financial analysis with ethical and environmental considerations regarding the development of ESG. The report analyzes how ESG is applied to energy projects in Europe, compares industry norms and finds trends and best practices [21]. Based on this knowledge, practical recommendations are made to improve Ukraine's Energy Strategy 2050 as well as international sustainability goals by aligning its energy policies in line with European norms.

From 1991 to 2023, this study examined how ESG research developed, evolved, and organized based on bibliometrics and content analysis derived from the Web of Science database. ESG research has been gaining notable attention worldwide, especially within the industrialized economies; it has been further reinforced by heavy-scale studies demonstrating its potential [22]. There is tremendous research focused on ESG, ranging from the theoretical underpinnings to the interdisciplinary applications and themes including sustainable development, corporate social responsibility, and responsible investing. Social and governance aspects, such as ESG investing and disclosure, are expected to be the thrust of future studies, which are emerging trends. The study provides much-needed insights into the present state and direction of ESG knowledge in micro, meso, and macro contexts.

The integrated MCDM framework is presented to merge interval type-2 fuzzy combined compromise solution and interval type-2 fuzzy analytic hierarchy process to evaluate ESG sustainable performance. This method ranks options using IT2F-CoCoSo, converts qualitative evaluations into quantitative measurements, and computes weights for criteria through IT2FAHP. This study examines five medical listed companies using 14 ESG dimensions, and finds that risk management, health and safety, and pollution control are the most important factors for companies to consider. In terms of ESG sustainability, Pfizer is the company that performs the best [23]. Moreover, sensitivity analyses and comparisons with current techniques confirm the effectiveness of the suggested method in evaluating ESG performance. These results also confirm the stability and efficiency of the proposed method.

This work examines the impact of ESG policies on the economic growth of the nations within the Gulf Cooperation Council by using data from the ESG Indexes worldwide for 2023. Based on the findings of the study, most of the GCC countries face serious environmental problems that include having high carbon and methane emissions, poor air quality, and lack of access to clean water, except for the United Arab Emirates. The study indicates that environment-friendly policies would require, along with the reinforcement of governance by strengthening the rule of law, fighting corruption, and freedom in both politics and the media [24]. So, for now, future recommendations for research among the stakeholders and GCC nations to make a balance between economic growth and social and environmental obligations include sector-specific analyses, international comparisons, longitudinal ESG studies, and policy assessments to help stakeholders. Table 2 shows insights into ESG research, practices, and their impacts.

Table 2. Insights into ESG research, practices, and their impacts.

Reference	Key findings	Parameters	Outcomes
[17]	Incorporating ESG increases resilience, promotes sustainability, and enhances operational efficiency.	Energy efficiency, waste reduction, sustainable supply chains, resource conservation, risk management.	Cost savings, improved brand reputation, stakeholder trust, and leadership in sustainability.
[18]	ESG fosters social equity and environmental stewardship while contributing to SDGs.	Working conditions, diversity and inclusion, carbon reduction, renewable energy, biodiversity conservation.	Enhanced community growth, preserved ecosystems, sustainable resource management, and global sustainability contributions (e.g., SDG 13, SDG 10, SDG 7).
[19]	Governance pillar ensures accountability, ethical decision-making, and alignment with sustainability goals.	Transparency, anti-corruption measures, regulatory compliance, ethical leadership.	Stakeholder trust, minimized risks of unethical behavior, and alignment with global governance standards.
[21]	ESG integration in European energy projects serves as a model for Ukraine's energy legislation.	Environmental policies, governance structures, social responsibility in energy projects.	Recommendations to align Ukraine's Energy Strategy 2050 with European ESG benchmarks, supporting global sustainability goals.
[22]	ESG research is evolving globally, emphasizing industrialized nations and themes like sustainable development.	Research funding, global interest, interdisciplinary applications, focus on corporate social responsibility, ESG investing, and disclosure.	Future emphasis on social and governance aspects; insights into micro, meso, and macro-level ESG applications.
[23]	Proposed MCDM framework evaluates ESG performance using fuzzy methodologies.	Pollution treatment, health and safety, risk management (14 ESG criteria applied to medical companies).	Pfizer ranked highest in ESG performance; validated stability and efficiency of the proposed approach through sensitivity analysis.
[24]	GCC countries face environmental challenges, requiring better governance and environmentally focused policies.	Carbon emissions, air quality, water resources, governance factors (rule of law, anti-corruption, political and media freedom).	Identified environmental and governance shortcomings; future research recommendations to guide balanced economic growth and sustainability.

CONCLUSION

Future sustainable business practices will integrate several of the concepts developed by the ESG approach for the benefits of both firms and society. The ESG approach combines environmental stewardship, social responsibility, and strong frameworks of governance into a holistic approach toward the attainment of organizational resilience, operational effectiveness, and ethical accountability. With the advances in technology, standardized frameworks, and supportive policies, there is a growing adoption of ESG principles across industries. On the other hand, a few issues remain as barriers in the adoption of ESG principles, such as high implementation costs, inconsistent regulations, and the possibility of greenwashing. One of the key purposes of ESG is in focusing on the United Nations' Sustainable Development Goals and creating a foundation for a more just and sustainable future by addressing global issues such as inequality, climate change, and unethical behavior. Apart from becoming more competitive, businesses that continue to embrace ESG management continue to not only strengthen their society but also create a healthier world by proving that sustainability and profitability can go hand in hand. A number of ESG practices are constantly being developed, which underscores just how important they are for long-term business expansion and forward progress in the world in the long term.

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