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## Environmental, Social, and Governance (ESG): A holistic approach to sustainability

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Environmental (E), Social (S), and Governance (G)—collectively known as ESG- serve as three main pillars of an organization and institutions. It reflects an organization's commitment to environmental sustainability, social responsibility toward employees and stakeholders, and transparency and ethics at the governance level. As the world currently faces global challenges of ecological degradation and climate change, corporations worldwide are integrating ESG indicators into their mandatory reporting. Although JEB primarily publishes manuscripts from an environmental biology background, to provide a holistic overview of the ESG theme in this special issue, we have also invited and included manuscripts from business management and environmental sustainability backgrounds.

Pollution, mismanaged municipal solid waste, carbon emissions, climate change, zero-waste initiatives, net-zero goals, and untreated waste discharge have emerged as critical issues from both public and environmental health perspectives. As per the New Nature Economy Report of the World Economic Forum, over half of the world's GDP is moderately or highly dependent on natural resources. Ecosystem services, including the hydrological cycle, pollination, pollutants degradation, and biogeochemical cycling of materials, are crucial for a good economy and a healthy environment. Consequently, businesses are increasingly exposed to risks from ecological degradation.

Sustainable ecosystem practices, judicious use of natural resources, and minimizing ecological degradation are thus crucial for sustaining economic productivity. No organization can imagine its long-term success without integrating environmental considerations into its core operations.

Employee satisfaction plays a crucial role in the growth and development of any organization. Furthermore, the well-being of other stakeholders, including suppliers, customers, distributors, and the broader community, must be considered. These are the key points considering that an organization can contribute positively to society while fostering growth and ensuring sustainable operations. Transparency and ethics in governance, using fair policies and unbiased decisions, promoting diversity, and prioritizing employee welfare are fundamental to building an organization's reputation, resilience, and long-term sustainability.

Institutions of higher education, such as universities and research centers, are the grooming grounds for future human curricula resources. Thus, integrating ESG principles into academia is crucial for developing high-quality human resources and fostering unbiased future leaders who can guide the world toward sustainable, responsible economic growth. In recent years, many universities have introduced courses on sustainability and ESG that focus on social and environmental responsibilities, including ethical and transparent governance for national and institutional development. These courses are proving effective across all disciplines, including medicine, engineering, and social sciences. Considering the growing interest in ESG practices, a session was planned on this concept for the conference SYM-EMERGE-2025 organized by the Symbiosis Institute of Business Management, Symbiosis International (Deemed University), Pune in 2025. The contents of this special issue included contributions from researchers who participated in this conference as well as from other authors interested in publishing under this theme. Engaging a wide and diverse audience was the objective of this Special issue. To achieve that, the research article were collated from academicians and researchers



working across environmental, social, and management disciplines. To sustain reader interest and enhance the reach of this issue, we carefully selected manuscripts that promote an in-depth understanding of environmental, social, and governance dimensions.

The first section of this issue focuses on key environmental challenges. It covers topics such as pollution, intellectual property rights in environmental research, and the role of microorganisms in pollution management. Furthermore, articles exploring the management and marketing aspects of environmental issues and their potential solutions were selected. This section highlights the significance of the circular economy and the 5R principles, including Refuse, Reduce, Reuse, Repurpose, and Recycle—for future sustainability. Moreover, emphasis was laid on marketing perspectives and consumer behavior as fundamental drivers of environmental responsibility and sustainable consumption.

This special issue features articles from environmental biology, management, and related fields that connect the societal and environmental impacts of human activities. It is also highlighting the significance of effective governance and policy interventions in addressing these challenges. For instance, it includes an article highlighting the importance of plant diversity for medicinal use (Kale *et al.*), a study on how hospital wastewater contributes to the spread of antimicrobial resistance in the natural environment (Gautam *et al.*), and research on the potential of natural bioresources such as endophytic fungi isolated from aquatic plants for biosurfactant production (Singh *et al.*). Other contributions explore the application of iron oxide nanoparticles in agriculture (Singh *et al.*), the role of rock-inhabiting fungi in soil mineralization and formation (Sharma *et al.*), and the biodegradation efficiency of *Streptomyces albogriseolus* for low-density polyethylene (Yagnik *et al.*). Furthermore, this issue features an article analyzing the patent landscape of deep learning models (CNN/LSTM) for air quality forecasting (Gandhale *et al.*). Deteriorating air quality is an emerging societal concern that demonstrates how technological innovations can support the monitoring and management of this problem. Considering the increasing contamination and degradation of urban river ecosystems, a study on the degradation of river ecosystems and an overview of global management strategies to protect aquatic ecosystems and prevent further contamination (Bedarkar and Dhiwar) was also this issue. On the same line to attract the attention of readers, we also included a research article on how hospital-contaminated river sediment impacts chemistry and microbial community structure of contaminated river sediments (Thakur *et al.*)

Furthermore, the articles were selected from the management domains which are based on areas related to circular economy, marketing, consumers' behaviours, and governance. These are areas that play a crucial role in mitigating environmental challenges and shaping effective policies for sustainable development. For instance, the section includes an article on customer perception and purchase intention toward packaged food products as a means to reduce solid waste generation (Sharma *et al.*), a study related to the impact of Environmental, Social, and Governance (ESG) disclosures on financial performance (Gedam *et al.*), and an analysis of circular economy practices and environmental issues in the handmade paper industry (Goenka and Kulkarni). Other contributions examine environmental risk resilience through microinsurance (Jain and Panse) and the role of social media in influencing consumer psychology and purchase behavior toward recycled products for environmental sustainability (Sakthivadivel *et al.*). Additionally, this section highlights discussions on environmental governance in the context of achieving Sustainable Development Goals related to climate change (Pharate and Ramanathan), and an evaluation of the integration of ESG principles in India's construction sector and its impact on environmental sustainability (Abhyankar *et al.*).

In conclusion, this special issue highlights the growing recognition that sustainability cannot be achieved through fragmented efforts. Articles in this volume highlight how environmental stewardship, social responsibility, and ethical governance are highly interdependent areas of sustainable development. As global economies, institutions, and communities move towards complex transitions—from climate action to equitable growth—ESG aligns purpose with performance. The articles challenge us to move beyond compliance and reporting, toward systemic change that integrates values, vision, and verifiable outcomes. By engaging diverse disciplinary and regional perspectives, this issue invites scholars, practitioners, and policymakers to reimagine sustainability not as an obligation, but as an evolving practice of collective accountability and long-term resilience.

As environmental challenges increasing and social inequalities persist, corporate governance standards are facing increasing scrutiny. The need for evidence-based, holistic approaches to ESG is becoming increasingly imperative. The articles presented in this collection offer valuable subject matter for scholars, practitioners, and policymakers to refresh their knowledge in a short time. We hope this collection stimulates further dialogue and collaborative research that bridges the disciplinary boundaries and advances both the theory and practice of sustainable business in an increasingly interconnected world.