Guest editorial: Special issue: social innovation

Social innovation has shown to be a potent catalyst for tackling some of the most important issues facing society today, including social justice, environmental sustainability and responsible governance. The idea of environmental, social and governance (ESG) practices, which have grown in significance for corporations, governments and civil society organizations, is situated at the intersection of these three domains. Green technology and circularity integration into ESG processes have drawn a lot of attention as stakeholders demand greater accountability and action on sustainability challenges. Within the context of ESG practices, this essay examines how social innovation is developing circularity and green technology, emphasizing how these ideas have the power to bring about significant change and build a more just and sustainable future.

The term "social innovation" refers to a broad category of actions that are intended to address societal issues by means of creative and efficient methods. Due to the emergence of the concept of social innovation, alongside the traditional concept of innovation, the term is still under development, resulting in ambiguity in its use (Solis-Navarrete *et al.*, 2021). Social innovation creates social change through new processes, products and services. It calls for the use of novel concepts, plans and frameworks that address societal issues in a way that is more just, efficient, sustainable or effective than current approaches. It is by its very nature a collaborative endeavor, frequently involving alliances between the public and private sectors as well as non-profits. Focusing on systemic change – attempting to alter the fundamental relationships, processes and institutions that give birth to social problems – is another characteristic of social innovation. Social innovation is essential for developing new ways of thinking and doing within the framework of ESG principles, as it can support social justice, environmental sustainability and responsible governance.

Circularity and green technology for ESG practices

A crucial idea in social innovation, circularity has grown in importance recently, especially when it comes to environmental sustainability (Popescu *et al.*, 2022). By extending the life of goods and materials, the circular economy model of economics aims to reduce waste and maximize resource utilization. It is a system designed to separate economic growth from resource depletion and environmental degradation (Kandpal *et al.*, 2024). This contrasts with the traditional linear economy, which is based on a "take, make, dispose" or "throwaway culture" model of production and consumption (Gruba *et al.*, 2022). Circularity aims to close the loop on resource use by promoting practices such as recycling, reuse, remanufacturing and sustainable design (Van Langen *et al.*, 2023; Jawahir and Bradley, 2016). By reducing the demand for virgin materials and minimizing waste, the circular economy has the potential to significantly reduce environmental impacts and contribute to the achievement of global sustainability goals (Babkin *et al.*, 2023).

Green technology, also known as clean technology or environmental technology, refers to the development and application of technologies that are designed to mitigate or reverse the environmental impacts of human activities (Sahoo *et al.*, 2023). Green technology encompasses a wide range of innovations, including renewable energy, energy efficiency, water purification, waste management, carbon emissions reduction and sustainable agriculture (Yuksel *et al.*, 2024; Popescu *et al.*, 2022). The adoption of green technology is a critical component of ESG practices, as it enables organizations to reduce their environmental footprint, enhance resource

International Journal of Innovation Science
Vol. 16 No. 5, 2024
pp. 793-800

1757-2223
DOI 10.1108/IJIS-10-2024-288

efficiency and contribute to the transition to a low-carbon economy (Popescu *et al.*, 2022). Moreover, green technology can drive social and economic benefits by creating new jobs, improving public health and supporting the development of sustainable communities.

The integration of circularity and green technology into ESG practices represent a powerful approach to addressing the complex and interconnected challenges of environmental sustainability, social equity and responsible governance (Wamane, 2023; Popescu *et al.*, 2022). By incorporating these concepts into their ESG strategies, organizations can not only reduce their environmental impacts but also create social value and enhance their long-term resilience (Serafeim, 2020a, 2020b). This is especially crucial given the increased awareness of the dangers posed by resource depletion, social inequity and climate change. Adopting green technology and circularity can give businesses a competitive edge by showcasing their dedication to sustainability and ethical business practices, which is something that stakeholders are increasingly demanding of them (Kadimov, 2023).

Promoting cross-sector collaboration and partnerships is one of the main ways that social innovation can develop circularity and green technology within ESG practices. Because of the complexity of the issues surrounding sustainability and ESG, many different stakeholders, including corporations, social enterprises, governments, non-profits and civil society, need to be involved (Corral-Marfil *et al.*, 2021). Social innovation can assist in identifying and putting into practice ideas that are both scalable and effective by bringing together a variety of viewpoints, areas of expertise and resources (Zhang *et al.*, 2017). For example, public-private partnerships can play a crucial role in supporting the development and deployment of green technologies, such as renewable energy infrastructure, efficient value chains or sustainable transportation systems (Koppenjan, 2015; Kandpal *et al.*, 2024). Collaboration between businesses and non-profit organizations can also help to promote circular economy practices, such as product take-back schemes or recycling programs, by leveraging the strengths of each sector (Bellemare *et al.*, 2022).

In terms of circularity and green technology, developing new business models that comply with ESG guidelines is another important facet of social innovation (Popescu *et al.*, 2022). Conventional business models frequently place a higher priority on immediate financial gain than long-term sustainability, which results in actions that are detrimental to society and the environment (Fatimah *et al.*, 2023). Nonetheless, social innovation has led to the development of new business models that place equal weight on social and environmental benefits as well as financial gains. For instance, the sharing economy, which is predicated on the idea of lending out resources and assets as opposed to buying them, can cut down on waste and the need for new items. Likewise, businesses that maintain ownership of their products while offering them as services through product-as-a-service models have the potential to prolong product lifecycles and encourage circularity. Organizations may align their operations with ESG principles and help create a more equitable and sustainable economy by implementing these creative business models (Carayannis *et al.*, 2021).

Education and capacity-building are also aspects of social innovation that can facilitate the incorporation of green technology and circularity into ESG practices. Organizations must equip themselves with the abilities and skills, know-how and resources required to innovate and create change to successfully apply these ideas (Popescu *et al.*, 2022). This necessitates funding educational and training initiatives that provide participants the skills necessary to develop and carry out sustainable solutions (Fahrenwald *et al.*, 2021; Katsamakas *et al.*, 2022). Moreover, it is important to foster a culture of innovation within organizations, where experimentation and learning are encouraged, and where employees are empowered to take initiative and contribute to the development of new ideas (Slade, 2020). By building the

capacity for innovation, organizations can enhance their ability to respond to emerging challenges and opportunities in the sustainability and ESG landscape.

For social innovation to successfully advance circularity and green technology within ESG practices, measurement and evaluation are essential (Popescu *et al.*, 2022). It's critical to create reliable techniques for monitoring and evaluating the results of these projects to make sure they are having the desired effect. (Eccles and Serafeim, 2013) This involves measuring both quantitative and qualitative indicators, such as reductions in carbon emissions, improvements in resource efficiency or changes in social and environmental behaviors (Falsarone, 2022). In addition, it is important to continuously learn and adapt based on these evaluations, ensuring that social innovations remain relevant and effective in addressing evolving challenges. Impact assessment frameworks, such as the Global Reporting Initiative (GRI) (Gutiérrez-Goiria *et al.*, 2021) or the Sustainability Accounting Standards Board (SASB) (Aksoy *et al.*, 2022), provide valuable tools for organizations to measure and report on their ESG performance, including their progress in implementing circularity and green technology.

Challenges

There are obstacles to overcome when incorporating circularity and green technology into ESG processes. One of the biggest hurdles involves the fundamental mindset shift and cultural change of ownership consumption patterns that are deeply engrained in society (Kandpal *et al.*, 2024). Another obstacle to overcome is the physical transition to sustainability (Popescu *et al.*, 2022). The requirement for large investments in R&D, infrastructure and infrastructure to facilitate the shift to a circular economy and the adoption of green technologies is one of the primary obstacles. Small and medium-sized businesses (SMEs), who do not have the financial means or technological know-how to put these policies into place, may find this especially difficult. More specifically in the urban context of water use and urban circularity, Oral *et al.* (2021) brings seven challenges posed to that can be addressed with nature-based solutions (NBS). The adoption of circular and green technology can also be hampered by a number of policy and regulatory obstacles, such as out-of-date laws that support linear economic models or a dearth of incentives for sustainable innovation (Schönwälder, 2021). Governments, corporations, social enterprises and civil society must work together to overcome these obstacles and establish supportive conditions for the growth of circular and green innovations (Riazi *et al.*, 2023). On the other hand, small local businesses that have the green economy at their core are being stifled by the commercial interests of large corporations. The challenge is to strengthen the collaboration between small green businesses and large corporations in a win-win relationship.

Another challenge is ensuring that the benefits of circularity and green technology are distributed equitably across the civil society. While these innovations have the potential to create significant social and environmental benefits, there is a risk that they could exacerbate existing inequalities if they are not accessible to all or if they disproportionately benefit certain groups (Yamoah *et al.*, 2022). For example, the transition to a low-carbon economy could lead to job losses in certain sectors, such as fossil fuel industries, if not managed carefully. Similarly, the adoption of green technologies could create new divides between those who have access to clean energy or sustainable products and those who do not (Yamoah *et al.*, 2022; Oral *et al.*, 2021). To address these issues, it is important to adopt a just transition approach that ensures that the transition to a circular and green economy is inclusive and fair, and that the benefits are shared widely across society.

Opportunities

Apart from these challenges, social innovation can also be leveraged to promote the incorporation of green technology and circularity into ESG practices (Popescu *et al.*, 2022). Growing consumer, investor and demand for sustainable goods and services is one of the main potential opportunities (Pinheiro *et al.*, 2022). Businesses and organizations are becoming more aware of their responsibilities to act in socially and environmentally responsible and sustainable ways as public knowledge of environmental issues rises (Falsarone, 2022). As a result, there is now more interest in ESG investing, which takes governance, social and environmental concerns into account when making investments. Companies can increase their reputation, draw in investment, increase financial performance and develop long-term resilience by integrating circularity and green technology into their operations (Habib and Mourad, 2024; Alkaraan *et al.*, 2022).

Additionally, there is potential to advance circularity and green technology within ESG practices due to the rapid speed of technological innovation. Emerging technologies, such as artificial intelligence (AI), blockchain and the Internet of Things (IoT), have the potential to revolutionize the way we manage resources, reduce waste and monitor environmental impacts (Pinheiro *et al.*, 2022; Ajwani-Ramchandani *et al.*, 2021; Yadav *et al.*, 2020; Kumar *et al.*, 2023). For example, AI can be used to optimize supply chains, improve energy efficiency and develop new materials that are more sustainable (Gamberini and Pluchino, 2024). Blockchain technology can enhance transparency and traceability in supply chains, ensuring that products are sourced and produced in ways that align with ESG principles (Mesjasz-Lech *et al.*, 2024; Ghobakhloo *et al.*, 2023; Leng *et al.*, 2023). IoT devices can provide real-time data on energy use, waste generation and environmental conditions, enabling organizations to make more informed decisions and improve their sustainability performance (Eriksson, Olsson, and Carlsson, 2024). By harnessing the power of these technologies, social innovators can drive the adoption of circular and green practices and contribute to the achievement of ESG goals.

Frameworks for laws and policies are also essential for encouraging the incorporation of green technology and circularity into ESG practices (Schönwälder, 2021). By passing laws that encourage innovation, offering financial incentives and taking down obstacles to it, governments and legislators can foster an atmosphere that is favorable to social innovation (Carayannis and Morawska-Jancelewicz, 2022). Extended producer responsibility (EPR) legislation, for instance, can incentivize manufacturers to create products that are simpler to recycle, repair or repurpose since they hold manufacturers responsible for the end-of-life management of their goods (Dawson, 2019). In a similar stream, firms may receive financial incentives to lower their carbon emissions and make investments in environmentally friendly technologies through carbon pricing mechanisms like carbon taxes or cap-and-trade schemes (Ghobakhloo *et al.*, 2023). Governments can encourage the adoption of ESG practices and facilitate the shift to a green and circular economy by putting these and other legislative measures into effect.

Conclusion

It is impossible to overestimate the contribution civil society makes to the advancement of green technology and circularity in ESG practices. Social companies, community organizations and nonprofits all contribute significantly to social innovation by promoting change, increasing public awareness and enlisting support. Civil society organizations frequently serve as a bridge between many parties, encouraging cooperation and guaranteeing that the voices of vulnerable and marginalized groups are heard. Social enterprises are leading the way in creating and executing cutting-edge solutions that are in

line with circularity and green technology concepts. Social enterprises are firms that place a high priority on social and environmental goals in addition to financial rewards. Businesses and governments can improve the effectiveness of their ESG practices and help the development of a more equitable and sustainable society by collaborating with and supporting civil society groups.

Social innovation is a powerful driver of circularity and green technology within the framework of ESG practices. By fostering collaboration, developing new business models, building capacity and creating enabling environments, social innovation can contribute to the transformation of our economy and society in ways that are more sustainable, equitable and resilient. While there are challenges to overcome, there are also significant opportunities for advancing circular and green practices, particularly in light of the growing demand for sustainable products and services, the rapid pace of technological innovation and the increasing recognition of the importance of ESG principles. By harnessing the power of social innovation, we can create a future where environmental sustainability, social well-being and responsible governance are at the heart of our economic and social systems.

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