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ESG IN LIVING LABS: CORPORATE CO-CREATION FOR SUSTAINABLE INNOVATION

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Abstract

Despite the increased interest in Environmental, Social, and Governance (ESG) and Corporate Social Responsibility (CSR) frameworks, companies face challenges in translating these commitments into impactful, community-centered, and scalable initiatives. This study explores the transformative potential of Living Labs—collaborative spaces for testing and refining innovations—to serve as an effective platform for incorporating ESG principles into corporate practices, resulting to meaningful sustainability outcomes. With the aim to investigate how living labs enable companies to co-create sustainable ESG projects with diverse stakeholders, fostering measurable environmental and social impact. The study takes a qualitative approach, examining ESG-focused Living Labs in Europe and Southeast Asia. Thematic analysis of ESG as a concept in Living Labs and reviews of project outcomes are used to understand how co-creation within Living Labs advances corporate ESG goals. Findings reveal that ESG initiatives developed through co-creation in Living Labs yield stronger stakeholder engagement, transparency, and scalability. Involving local communities, NGOs, and government entities in the design and implementation phases, companies achieve not only verifiable sustainability outcomes but also build trust and accountability in their ESG practices. Living Labs also provide companies with an environment to test and improve initiatives before wider implementation, effectively mitigating risks. The study concludes that Living Labs offers a dynamic and replicable model for companies aiming to advance ESG goals in diverse contexts. By embedding co-creation into their sustainability strategies, companies can make valuable contributions to sustainable development, offering a pathway for systemic change through responsible and inclusive innovation.

Keywords: Environmental Social Governance (ESG); Corporate Social Responsibility (CSR); Living Labs; Co-creation; Sustainability; Stakeholder Engagement

INTRODUCTION

As global challenges related to climate change, social equity, and responsible governance intensify, companies are pressured to act responsibly, therefore, are increasingly committing to Environmental, Social, and Governance (ESG) goals. ESG frameworks have

evolved from a tool for assessing company behavior into an essential corporate strategy, driving companies to adopt practices that address both local and global challenges which prioritizes environmental stewardship, social responsibility, and sound governance. Increasing evidence suggests that companies, guided by their ESG frameworks, have significantly contributed to addressing pandemic crises and advancing carbon neutrality efforts (Gao and Geng 2024; Macchiavello and Siri 2020). However, while companies progress in incorporating ESG targets, the challenge of translating these goals into measurable, context-specific outcomes remains significant. Many companies struggle to bridge the gap between high-level ESG commitments and on-the-ground implementation, particularly in diverse and complex socio-economic environments (Ahmad, Yaqub, and Lee 2024; Al Amosh and Khatib 2023).

Companies face pressures from investors, government, employees, and the local communities to engage in environmentally and socially responsible investments. This study proposes that living labs represent an innovative form of ESG performance, particularly for companies. Living labs offer a novel ESG approach by fostering innovation through real-world experimentation and user involvement. This concept supports open innovation, where enterprises and communities co-create, ensuring solutions align with local social, environmental, and economic needs (Nyström et al. 2014). In the context of ESG, co-creation involves companies working alongside local communities, government agencies, research institutions and various stakeholders to design and implement solutions that not only meet business objectives but also address societal needs. This approach could ensure that ESG initiatives are responsive to the specific social, environmental, and economic challenges faced by the local communities. By fostering mutual understanding and expertise, co-creation enhances the alignment between corporate ESG goals and the actual needs of the communities in which companies operate.

This study aims to fill this research gap by exploring how Living Labs could enable companies to better align their ESG goals with local needs through co-creation. By analyzing insights from each region, this research examines companies leveraging the Living Lab model to engage with communities, address regional priorities, and create sustainable, inclusive solutions that resonate within different cultural and regulatory contexts. The study sheds light on the unique advantages of Living Labs and co-creation in advancing corporate ESG initiatives. It offers insights into how companies can adopt similar approaches to improve the effectiveness and impact of their sustainability efforts.

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) INCORPORATE STRATEGY

Environmental, Social and Governance (ESG) where it refines Corporate Social Responsibility (CSR) by categorizing three measurable pillars Environmental, Social and Governance. These pillars assess a company's sustainability practices and performance. ESG principles have emerged as a vital component of corporate strategy, shaping how companies operate and influence their relationships with stakeholders, regulators, and society at large. The ESG framework guides responsible business practices, encouraging companies to minimize their environmental impacts, uphold social responsibilities and adhere to ethical governance standards. ESG has gained significant importance since the 2015 Paris Agreement as countries began implementing carbon neutrality plans to achieve net-zero targets. Countries are mandating ESG reporting for businesses. The Corporate Sustainability Reporting Directive (CSRD), which builds upon the Non-Financial Reporting Directive (NFRD), came into effect in January 2023. Starting in fiscal year 2024, around 50,000

companies, including small and medium-sized enterprises across the EU, will be required to report on their sustainability practices under this directive (Shin and Li 2023).

Implementing ESG frameworks and initiatives brings significant benefits but is not without challenges. ESG assessments are frequently criticized for their lack of standardization, transparency, and inconsistent methodologies, which can lead to varying results and may confuse true performance (Boiral, Brotherton, and Talbot 2020). These discrepancies complicate benchmarking, comparisons across industries and reliability for investors and stakeholders to use. When businesses execute ESG initiatives, additional challenges arise. Lack of community engagement making it difficult to align actions with local needs therefore reducing the effectiveness of these programs. Scalability is another obstacle, especially when applying ESG initiatives across regions with complex local regulations, diverse cultural expectations, and varying resources. For instance, in developing economies, limited infrastructure and inconsistent levels of regulatory compliance add significant difficulty (Fresto 2024).

Companies' focus was primarily to satisfy the need of one stakeholder which is the shareholder until the mid-1990s (Clarkson 1995). CSR initiatives and philanthropic activities emerged as companies' efforts to address societal concerns; however, these initiatives do not always align with the broader needs and expectations of all stakeholders, therefore limiting their effectiveness. Studies have shown that companies that integrate ESG goals with stakeholder-centric approaches tend to achieve meaningful impact and sustainable outcomes (Alessa et al. 2024; de Souza Barbosa et al. 2023). When companies engage with the local communities, governmental organizations, NGO's, research institutions, and numerous key stakeholders as collaborators in their ESG initiative, they gain valuable insights into the unique environmental, social, and economic challenges that these stakeholders experience. This approach supports the companies to tailor their ESG initiatives to local needs, making them effective and socially relevant.

LIVING LABS AS PLATFORM FOR CO-CREATION

Living Labs originated in Europe and have gained traction worldwide as platforms for open innovation. These environments encourage collaboration between companies, local communities, governments, and research institutions, creating a fertile ground for co-creation. It has a focus on public value generation and place-based center with an objective to provide innovative and developmental improvements. Living Labs presents great work in addressing sustainability challenges particularly in social issues, energy efficiency, waste management, urban flooding, etc. It is induced by the organizational approach “quadruple helix” which is based on the collaboration of the public authorities, research organizations, businesses, and the citizen. Living Labs is known for its “PPP” public-private-people partnership (Battaglia and Tremblay 2011).

Co-creation in through experimentation of real-life projects have become a vital concept for Living Labs as its co-produce knowledge, results and lesson learnt while assessing impacts on the society and sustain long-term partnership. It democratizes science and close the gaps between stakeholders—gather multitude of actors with various agendas to reflect, learn and examine processes whether in workshops, focus groups, etc. with active engagement and empowerment of citizens in collaboration with actors, and designing with people. Co-creation is co-creating, co-producing, and co-implementing with various stakeholders, when used with public policies coupled with active participation, it yields better collaboration process and enhance the know-how in the decision-making process (Voorberg, Bekkers, and Tummers 2015).

Successful ESG outcomes depend on how well companies can align their goals with the socio-cultural and economic contexts of the regions in which they operate. Co-creation allows companies to move beyond top-down ESG approaches and engage in mutual learning with stakeholders. By co-creating solutions with communities, companies gain insights into local priorities, enabling them to design ESG strategies that are realistic, inclusive, and sustainable.

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG)RELATION TO LIVING LABS

Table 1 provides an overview of the characteristics of Living Labs and ESG-driven Living Labs, it illustrates their distinctive and share attributes. The similarities highlight the interplay between innovation, stakeholder involvement and sustainability goals in both approaches. This study suggest that Living Labs and co-creation process is a great advantage for companies whose true aim is to deliver and scale their ESG goals to the community as the ideas of the participants are incorporated to the project and are tested, endless knowledge transferring and exchange between the actors, fostering learning-by-doing. ESG Living Labs while maintaining the foundation elements of Living Labs, explicitly align activities with Environmental, Social and Governance objectives to address broader corporate and social priorities.

Table 1. Overview of Living Labs and ESG Living Labs Characteristics (Source: Author’s own editing based on Ciasullo et al., 2020; Kopyciński, 2018; Puzzonja, 2018).

Characteristics	Living Labs	ESG Living Labs
Focus	Innovation, testing, and prototyping	Sustainability, environmental, social responsibility, and governance
Primary Goal	Develop solutions for real-world challenges	Create ESG compliant solutions with a focus on environmental, social, and governance impact
Stakeholders	Companies, Research Institutions, Public Authorities, Intermediaries	Companies, Local Communities, Government, NGOs, Universities
Scope	Broad range of sectors (technology, health, urban planning, etc.)	Primarily focused on ESG sectors (climate, social justice, governance)
Collaboration Model	Open innovation, participatory design	Multi-stakeholder partnerships with a focus on sustainable growth
Outcome	Practical solutions and new innovations	Solutions addressing local/global sustainability challenges
Testing Environment	Real-world, experimental environments	Real-world testing with emphasis on sustainability and governance standards
Measurement of Success	Product innovation, market relevance	Positive environmental and social impact, governance transparency

When ESG principles are integrated into Living Labs, it provides a structured approach to ensure that initiatives and innovations align with broader sustainability goals. For example, a Living Lab project addressing urban water scarcity might involve diverse stakeholders collaborating to develop and implement sustainable water management systems. Projects like this achieve multiple objectives such as advancing environmental sustainability, improving community well-being, and creating opportunities for businesses to contribute technical expertise and explore innovative solutions. By integrating ESG considerations into the Living Labs, stakeholders particularly the companies can ensure that the initiatives align with measurable environmental, social, and governance standards while fostering participatory processes. This approach can collaboratively drive sustainable innovation and create shared value for all participants.

ESG POTENTIAL: INSIGHTS FROM LIVING LABS PROJECTS

This chapter examines the integration of ESG principles in living labs. Three living labs projects were selected: Torino City Lab, CSR4Tourism Living Labs and MOICA ESG Living Labs (MekongLink). These projects provide valuable insights on how living labs can play a pivotal role in embedding ESG considerations, highlighting the challenges, success, and lesson learned from these projects and explore potential for advancing inclusivity and sustainability.

The Municipality of Turin started the **Torino City Lab** in 2018 an urban living lab which offered a simplified conditions for the companies to use the city as an urban experimentation to test their products or services before it commercializes. It brings together private sector partners, local government, research institutions and local community to test and implement new technologies and solutions for smart cities, with a particular focus on improving environmental and social outcomes.

Environmental Integration: Focuses on urban ecosystem improvements venturing through various innovative fields such as smart city, sharing and circular economy, etc. that are tested through pilot trials. **Social Integration:** The lab supports projects aimed at improving urban living conditions for vulnerable populations, including marginalized communities. **Governance Integration:** Fosters governance transparency and collaboration by bringing together a diverse set of stakeholders.

Depending on the project citizens engaged in the testing phase could be volunteer or are selected by professionals. The lab in District 4 Turin city, is based on Smart City Strategy that promotes environment and social sustainability. Businesses and the citizen were invited to submit their ideas in line with Smart City and the municipality goals. 32 projects were selected between 2016 to 2017, by the multi-entities and municipality and were implemented. Ranging from testing control unit to monitor pollutions and involving the citizen in the co-production process such as app improvements, low-cost portable sensors to collect environmental data, etc. The labs are overseen by Department of Innovation, Municipality of Turin and the entities involved in the experiments. The selected projects implementation was said to have positive results, running smoothly and decreased red tape. Active citizens that are participating in the projects are satisfied accounting to 5% of the population in the city (i.e., 1000 out of 20,000 per district) (Cuomo, Lambiase, and Castagna 2021).

The **CSR4Tourism** established six Living Labs in Norway, Spain, Italy, Croatia, Cyprus, and Bulgaria to tackle ESG challenges in the tourism industry. The project focuses on integrating CSR practices into tourism through living labs. Participants included SMEs in tourism, vocational education, and training (VET) institutions, local and regional authorities, as well as business organizations.

Environmental Integration: Environmental efforts centered on reducing CO2 emissions across the tourism value chain, with strategies such as transitioning to renewable energy in hotels, adopting waste reduction measures and implementing sustainable tourism practices. **Social Integration:** Accessibility for individuals with disabilities inspired the creation of inclusive tourism experiences, including tailored accommodations and activities. **Governance Integration:** fostering CSR cultures within organizations by implementing training programs, launching awareness campaigns, and promoting leadership involvement.

Key results included tools for monitoring carbon emissions, guidelines for inclusive design, mental health support initiatives, and CSR-focused training materials. These outcomes contributed to several Sustainable Development Goals (SDGs), such as SDG 3 (Good Health and Well-Being), SDG 10 (Reduced Inequalities), and SDG 13 (Climate Action). Ultimately, the project illustrated how Living Labs can serve as catalysts for systemic transformation, embedding ESG principles into the tourism sector while driving innovation and sustainable progress across various regions (CSR4Tourism Project 2024).

The **MOICA ESG Living Labs** project, focuses on addressing sustainability challenges in the ASEAN region. The project uses living labs to integrate ESG principles into regional development, sustainable resource management, community well-being, and governance in the context of rapid economic growth and environmental pressures.

Environmental Integration: In Vietnam, the project led by Mekonglink in Tien Giang Province, focuses on tackling environmental challenges such as riverbank erosion, landslides, and saline intrusion. The project emphasizes sustainable approaches, including the use of biodegradable vegetation mats to stabilize riverbanks, promote plant growth, and safeguard local infrastructure. **Social Integration:** the project emphasizes inclusive development by supporting local communities in adapting to the challenges posed by environmental degradation and economic transition. It focuses on enhancing social resilience, particularly in rural and underserved areas, by promoting social inclusion, education, and health within the framework of sustainable development. **Governance Integration:** Involving local governments, universities, businesses, and solution providers, collaborating to meet the region’s unique needs. The project also advocates for stronger regional cooperation on ESG-related issues, with a focus on creating policies that support sustainable development while addressing cross-border challenges like water management, pollution control, and climate resilience.

The project has achieved positive outcomes, with the implementation of biodegradable mats to stabilize riverbanks, reduce erosion, and protect infrastructure from environmental damage. These efforts would boost agricultural productivity by mitigating the effects of erosion and other environmental issues (Mekonglink 2024).

DISCUSSION

The three living labs Torino City Lab, CSR4Tourism, and MOICA Living Labs share similarities in their integration of ESG principles, despite their different geographical and sectoral contexts. Environmental sustainability, striving to reduce the ecological footprint in their respective areas, from urban innovation to sustainable tourism practices and resource optimization. Social equity and inclusion are also central to each project, ensuring that communities benefit from innovation through education, engagement, and fair access. These labs adopt a collaborative governance model, incorporating diverse stakeholders to ensure that solutions are both sustainable and socially inclusive. Co-creation significantly shown through workshops, trainings, and local events where citizens and users could have an intensive discussion and share their ideas. Torino City Lab where citizens were included from the beginning until the end of the project together with various stakeholders. CSR4Tourism key stakeholders were present to actively determine the challenges and solutions for the

better of the tourism environment. Unfortunately, although it was mentioned that MOICA Living Labs coordinated with the local community and various stakeholders the process was not explicitly laid out.

Despite the effective integration of ESG principles in these living labs challenges persist. Resource constraints, particularly in regions like ASEAN or developing countries hinder the widespread adoption of sustainable practices due to limitations in funding, infrastructure, and technological capacity. Balancing economic growth with environmental and social sustainability remains a challenge, as financial pressures can undermine the adoption of sustainable practices. Cultural and institutional barriers in projects where local governance systems may lack the capacity to enforce sustainability policies, further complicate implementation. To scale these initiatives, opportunities lie in capacity-building, especially in under-resourced regions, fostering cross-sector collaboration to expand the reach of ESG models, and advocating for policy frameworks that incentivize sustainable innovation and provide the necessary regulatory support.

The Torino City Lab, CSR4Tourism Living Labs, and MOICAESG Living Labs illustrate the key role of living labs in driving innovation and integrating ESG considerations across diverse sectors. Although projects face its own set of challenges, it shows the critical importance of collaboration, inclusivity, and transparency in achieving sustainability goals.

CONCLUSION

The assessment of sustainability performance within the corporate landscape has witnessed a transformative shift with the emergence of Environmental, Social, and Governance (ESG). Driven by the increasing pressure from stakeholders for companies to align their strategies with sustainability development goals have pushed companies to incorporate ESG in their business strategy. However, despite companies' increasing efforts, many ESG initiatives fail to produce meaningful, effective, and long-term results.

One key challenges of companies in achieving effective ESG integration is the lack of local context information. This shows the insufficient to absence of collaboration among stakeholders, however, it was also determined challenges exist in the complexity of managing initiatives collaboratively. Therefore, this study explored how Ling Labs as an open innovation approach can offer a promising pathway to effectively translate ESG goals into tangible outcomes. Living Labs concept of co-creation foster innovation, knowledge exchange and active participation, aligning local needs with global sustainability objectives. The selected living labs projects has demonstrated the potential of these approaches to drive ESG outcomes.

While collaboration, open innovation and co-creation have proven to be valuable for achieving positive results, Puerari et al. (2018) stressed the practical difficulty of maintain long-term participatory engagement. This was supported by studies that pointed out the challenges of weak stakeholder and citizen participation bringing the attention to the need for more effective mechanism to involve diverse actors in the process (Ersoy and van Bueren 2020. Georges et al. (2015) stated that in order to motivate active participation providing incentives can increase contribution—it could be non-monetary such as benefit schemes or monetary.

Nevertheless, Living Labs offers a compelling model for integrating ESG considerations into broader innovation and development strategies. When properly supported, ESG initiatives have the potential to create a significant impact across various contexts. The key element for effective and successful implementation will be the continued development of capacity-building initiatives, strengthening of cross-sector partnerships and establishment of robust governance frameworks that ensure ESG principles are integrated in the innovation process.

The study's is an exploratory in nature and are providing recommendations, the findings are not definitive and come with limitations. Further research with broader scope and empirical validation is needed to refine and corroborate the proposed ideas.

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