



## REVITALIZING INDUSTRIAL HERITAGE: ESG-DRIVEN TRANSFORMATION OF TEHDASSAARI ISLAND'S NOKIA FACTORY<sup>i</sup>

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### **Abstract:**

This study investigates the Environmental, Social, and Governance (ESG) practices of Cireco Finland Oy in transforming the old Nokia Factory on Tehdassaari Island into Circular Economy, Art, and Culture Hub. Utilizing a comprehensive methodological approach, including surveys, interviews, observations, and document analysis, this research uncovers critical insights into the project's sustainability strategies, stakeholder engagement, and governance frameworks. The findings reveal significant advancements in environmental performance, such as reduced greenhouse gas emissions and enhanced waste management practices. Socially, the project demonstrates robust community engagement and job creation, contributing to local economic revitalization. Governance improvements include increased transparency and adherence to ethical standards. The study fills a crucial gap in the existing literature on ESG integration in industrial heritage projects, offering a scalable model for similar initiatives globally. The implications are far-reaching, suggesting that incorporating ESG principles can lead to the successful and sustainable redevelopment of heritage sites, balancing economic growth with environmental stewardship and social responsibility. The research contributes to the broader discourse on circular economy practices and sustainable urban development, providing actionable recommendations for policymakers, practitioners, and future researchers.

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### **Tiivistelmä:**

Tämä tutkimus analysoi Cireco Finland Oy:n ympäristö-, sosiaali- ja hallintokäytäntöjä (ESG) vanhan Nokian tehtaan muuntamisessa Tehdassaaren saarella kiertotalouden, taiteen ja kulttuurin keskuksiksi. Tutkimuksessa sovelletaan monimenetelmällistä lähestymistapaa, johon kuuluvat kyselyt, haastattelut, havainnointi ja asiakirja-analyysi, ja sen tavoitteena on tarjota syvä ymmärrys hankkeen kestävän kehityksen strategioista, sidosryhmäyhteistyöstä ja hallintorakenteista. Tulokset osoittavat merkittäviä parannuksia ympäristösuorituskyvyssä, kuten kasvihuonekaasupäästöjen vähentämisessä ja jätehuollon tehostamisessa. Sosiaalisesta näkökulmasta hanke edistää yhteisön aktiivista osallistumista ja uusien työpaikkojen luomista, mikä tukee paikallistalouden elpymistä. Hallintokäytäntöjen osalta on havaittavissa lisääntynyt läpinäkyvyys sekä vahvempi sitoutuminen eettisiin toimintaperiaatteisiin. Tutkimus paikkaa merkittävää aukkoa ESG:n integrointia teollisiin perintöhankkeisiin käsittelevässä kirjallisuudessa ja tarjoaa skaalautuvan mallin vastaaville hankkeille globaalisti. Vaikutukset ovat kauaskantoisia, mikä viittaa siihen, että ESG-periaatteiden systemaattinen soveltaminen voi johtaa kulttuuriperintökohteiden onnistuneeseen ja kestäväan kehittämiseen tasapainottamalla talouskasvu ympäristönsuojelun ja sosiaalisen vastuun kanssa. Tutkimus tuo arvokasta lisäpanosta kiertotalouden ja kestävän kaupunkikehityksen tutkimukseen sekä tarjoaa konkreettisia suosituksia päättäjille, käytännön toimijoille ja tuleville tutkijoille.

**Avainsanat:** kiertotalouden, ympäristösuorituskyky, sosiaalinen kestävyys, yrityshallinto, sidosryhmien osallistaminen, liiketoiminnan kestävä kehitys, strateginen liiketoimintasuunnittelu, arkkitehtoninen kulttuuriperintö, teollinen kulttuuriperintö

## **1. Introduction**

Investing in architectural heritage is crucial for sustainable urban development, yielding social, economic, and environmental benefits. Numerous strategies have been proposed to attract investors to heritage buildings, yet few emphasize the inherent potential of these structures, particularly their architectural qualities and contextual relationships (Al-Shimmery & Al-Ali, 2022). Discussions around the costs and benefits of historic preservation often prioritize economic justifications. However, sustainable conservation must align with environmental, social, and economic principles, including maintenance, safeguarding, restoration, reuse, and ensuring economic returns (Mason, 2005; Al-Shimmery & Al-Ali, 2022).

The Cultural Deal for Europe highlights the substantial return on investment by integrating dynamic European culture and heritage into a new European Bauhaus. It also acknowledges the potential of cultural, creative, heritage, and philanthropic sectors in post-pandemic revitalization. Activities such as adaptive reuse and energy retrofitting of heritage structures exemplify the dimensions of the circular economy that drive social, cultural, environmental, and economic regeneration (Pickerill, 2021).

While numerous studies underscore the economic benefits of investing in architectural heritage, there is limited research on the comprehensive integration of Environmental, Social, and Governance (ESG) principles in such projects (Jelencic *et al.*, 2017; Allegro & Lupu, 2018; Al-Shimmery & Al-Ali, 2022; Pickerill, 2021). This study addresses this gap by exploring the practical application of ESG frameworks in the context of industrial heritage transformation. By examining the transformation of the old Nokia Factory on Tehdassaari Island, this research contributes to the broader discourse on sustainable urban development and offers a model for aligning large-scale industrial redevelopment projects with sustainability principles.

Despite the increasing emphasis on ESG in various sectors, there is a lack of comprehensive studies that focus on the specific application of ESG principles in industrial heritage projects. Existing literature predominantly addresses the economic aspects of heritage conservation but often neglects the integrated approach required to balance environmental, social, and governance concerns. This research aims to fill this gap by providing an in-depth analysis of how ESG principles can be effectively implemented in industrial heritage transformations.

Therefore, the primary objectives of this study are:

- 1) To assess the effectiveness of Cireco Finland Oy's ESG framework in achieving its sustainability goals in the transformation of the old Nokia Factory.
- 2) To identify the strengths, weaknesses, opportunities, and threats (SWOT) associated with the project.
- 3) To design an ESG framework with actionable recommendations to enhance the project's sustainability impact.

The objectives inform the following research questions:

- 1) How effective is the current ESG framework implemented by Cireco Finland Oy in meeting its sustainability objectives?
- 2) What are the key strengths and weaknesses of the ESG strategies employed in the Tehdassaari Island project?
- 3) What opportunities and threats exist that could impact the sustainability of the project?
- 4) What actionable recommendations can be proposed to improve the ESG performance of the project?

Based on the objectives and research questions, the study provides a unique contribution by integrating ESG principles into the analysis and planning of industrial heritage transformation. It offers a comprehensive ESG framework that can serve as a benchmark for similar projects worldwide. By focusing on the environmental, social, and

governance aspects simultaneously, this research provides a holistic approach to sustainable heritage conservation, thereby advancing both theoretical and practical understandings in this domain. It equally builds on the foundational work of scholars who have highlighted the importance of sustainable investment in heritage conservation (Mason, 2005; Al-Shimmery & Al-Ali, 2022; Pickerill, 2021). It extends the discourse by incorporating ESG principles, which have gained prominence in recent years as critical components of sustainable development (Eccles & Strohle, 2018; Gillan *et al.*, 2021). By applying these principles to the case of the Tehdassaari Island project, this study not only fills a significant research gap but also provides practical insights for policymakers, practitioners, and scholars interested in the sustainable transformation of industrial heritage sites.

## 2. Literature Review

### 2.1 ESG and Industrial Heritage Transformation

The application of Environmental, Social, and Governance (ESG) principles in industrial heritage transformation projects has garnered increasing attention as a framework for achieving sustainable development. This literature review critically examines the evolution of ESG principles, their integration into industrial heritage projects, and the current state of research on this subject. Through this analysis, key gaps are identified, and the present study's contributions are positioned within the existing body of knowledge.

The concept of ESG has undergone significant evolution, transitioning from the broader notion of Socially Responsible Investment (SRI) to a comprehensive framework encompassing environmental, social, and governance dimensions. Early research by Eccles and Strohle (2018) highlights the foundational milestones, such as the UN Global Compact and the Principles for Responsible Investment (PRI), which have shaped ESG's trajectory. Wang and Phillips-Fein (2023) further elaborate on ESG's standardization from the 1970s to the present, underscoring the increasing importance of non-financial factors in corporate strategies.

### 2.2 Environmental Sustainability in Heritage Projects

Environmental sustainability is a critical component of ESG, emphasizing the reduction of negative environmental impacts through practices such as energy efficiency, waste management, and biodiversity conservation. Studies by Litvinenko *et al.* (2022) and Przychodzen *et al.* (2016) emphasize the need for sustainable management strategies that include the use of renewable energy and sustainable materials. However, these studies often focus on general business operations, with limited attention to the specific challenges faced by industrial heritage projects.

Research by Hannan and Sutherland (2015) and Bohne *et al.* (2015) highlights the complexities of integrating sustainable practices in heritage sites, where maintaining historical integrity while achieving modern energy efficiency poses significant

challenges. Despite the advances in eco-friendly technologies, the high costs and technical difficulties associated with retrofitting old infrastructures remain significant barriers.

### **2.3 Social Sustainability and Community Engagement**

Social sustainability in heritage projects involves fostering community engagement, promoting social inclusion, and supporting local economic development. Bowitz and Ibenholt (2009) and Hassan (2018) provide evidence of the economic benefits derived from heritage conservation, particularly through tourism and job creation. The Cultural Deal for Europe (Pickerill, 2021) further underscores the role of cultural heritage in post-pandemic revitalization, advocating for the integration of adaptive reuse and local enterprise empowerment to drive social and economic regeneration.

Despite these positive outcomes, the literature often lacks a critical examination of the long-term social impacts and the effectiveness of community engagement strategies. Many studies, such as those by Jelinčić *et al.* (2017) and Allegro and Lupu (2018), advocate for public-private partnerships without fully addressing the potential conflicts and power dynamics between stakeholders.

### **2.4 Governance and Ethical Compliance**

Effective governance is essential for the success of ESG initiatives, ensuring accountability, transparency, and ethical conduct. Gillan *et al.* (2021) and Humphrey *et al.* (2012) discuss the importance of robust governance frameworks in promoting sustainable business practices. However, there is a scarcity of research focused specifically on governance in the context of industrial heritage projects.

Ortas *et al.* (2015) highlight the necessity of stakeholder engagement and transparent reporting, but empirical studies examining the implementation of these practices in heritage projects are limited. The governance challenges in these projects are often compounded by the complexity of balancing historical preservation with modern regulatory requirements, as noted by Burnham (2019).

### **2.5 Leadership Diversity as a Catalyst for ESG and Corporate Performance**

In this fast-growing world, environmental-social-governance practices are of greater importance in the enhancement of corporate performance for the betterment of the environment. In enhancing corporate value, improving financial performance, addressing the needs of stakeholders, and enhancing societal reputation, ESG has a two-way role to play (Hu, Ma, & Xu, 2023). Yet, the drivers of ESG implementation and its linkage to performance remain relatively unexplored. Among the major determinants of effective ESG strategy at the firm level is leadership diversity, including executive team heterogeneity. Demographic traits such as age, gender, and nationality, and cognitive perceptions among executives facilitate innovative decision-making which may substantially influence organizational outcomes (Hambrick & Mason, 1984; Hu *et al.*, 2023).

Executive team heterogeneity has been found to be related to several dimensions of corporate performance. For example, cultural diversity enhances the quality of strategic decision-making based on better information processing and increased creativity (Ponomareva *et al.*, 2022), gender diversity makes financial reporting more authoritative with a wider range of opinions (Hrazdil *et al.*, 2023), and occupational diversity creates the environment that allows innovation (Li & Xia, 2022). These diversified attributes shape internal strategies and influence ESG performance. According to studies, ESG mediates the relationship between team heterogeneity and corporate outcomes (Hu *et al.*, 2023; Bosun-Fakunle, Mary, & Gbenga, 2023).

In like manner, corporate governance has an immense role in shaping environmental strategies and performance. Boards of directors stand as the first order or decision-making body, shaping strategies for the long term and overseeing the environmental impact from operations. Research highlights that diverse and balanced boards—featuring independent, gender-diverse, or foreign directors—positively influence environmental outcomes, fostering proactive measures to address ecological challenges (Bosun-Fakunle, Mary, & Gbenga, 2023). However, board size and composition matter; overly large boards face bureaucratic inefficiencies, while smaller, diverse boards are more agile in addressing sustainability goals (De Villiers *et al.*, 2011).

Empirical results indicate that board size, gender diversity, and managerial ownership have significant positive influences on environmental performance, while other variables like board independence and institutional ownership show less pronounced impacts (Bosun-Fakunle *et al.*, 2023). This, therefore, underlines the necessity of governance structures being combined with sustainability objectives. A well-composed board reinforces heterogeneity in the executive team through the promotion of inclusive decision-making, thus allowing companies to manage the intricacies of ESG and environmental strategies. The executive team heterogeneity interacts with corporate governance for both corporate performance and environmental sustainability. Organizations can benefit from the potential of diversity in leadership and at board levels to improve ESG implementation and environmental performance, which leads to sustainable growth in the long term.

## **2.6 Integrating ESG in Industrial Heritage Transformation**

The integration of ESG principles in industrial heritage projects remains underexplored. Alareeni and Hamdan (2020) and Allegro and Lupu (2018) suggest that public-private partnerships can effectively attract investment for heritage conservation. However, these studies often lack a critical evaluation of the specific mechanisms that facilitate successful ESG integration in heritage contexts.

The Tehdassaari project by Cireco Finland Oy serves as a notable case study, aiming to transform the old Nokia Factory into a hub for art, culture, and circular economy by integrating ESG principles (Licciardi & Amirtahmasebi, 2012). This project exemplifies the potential benefits of a comprehensive ESG framework, yet detailed analyses of such projects remain sparse in the literature.

Numerous challenges impede the successful integration of ESG in industrial heritage projects. Financial constraints, regulatory hurdles, and stakeholder alignment issues are frequently cited barriers (Burnham, 2019). Cantino *et al.* (2017) and Rezaee (2016) argue that despite these challenges, projects that effectively integrate ESG principles can achieve substantial environmental, social, and economic benefits.

The existing literature often overlooks the nuanced challenges of implementing ESG in heritage projects, such as the specific financial mechanisms needed to support sustainable initiatives and the long-term social impacts of community engagement strategies. Further research is needed to develop standardized ESG metrics and to explore the effectiveness of different governance models in heritage contexts.

This literature review highlights the critical need for more comprehensive research on the integration of ESG principles in industrial heritage transformation projects. While the existing body of knowledge provides a foundation, significant gaps remain, particularly in the areas of governance, long-term social impacts, and practical implementation challenges. This study aims to address these gaps by providing a detailed analysis of ESG practices in the Tehdassaari project, contributing to the broader discourse on sustainable heritage conservation.

### 3. Methodology

This section outlines the methodological framework employed in this study to evaluate the Environmental, Social, and Governance (ESG) practices of Cireco Finland Oy in transforming the old Nokia Factory on Tehdassaari Island into a hub for art, culture, and the circular economy. The study utilized a mixed-methods approach, incorporating both qualitative and quantitative data collection techniques to provide a comprehensive assessment of the project's sustainability strategies.

#### 3.1 Survey Design

The survey used in this study was meticulously designed to collect quantitative and qualitative data on stakeholder perceptions of the project's Environmental, Social, and Governance (ESG) performance. Key principles that informed this survey design for gathering reliable and actionable data included the following:

- 1) **Clarity and Simplicity:** Questions were formulated using clear and concise language, avoiding jargon or technical terms that might confuse respondents. This approach ensures that questions are universally comprehensible, enhancing the quality of responses across diverse stakeholder groups. Fowler (2014) emphasizes that clarity in survey questions minimizes ambiguity and maximizes comprehension, especially in contexts involving participants with varying levels of expertise.
- 2) **Relevance and Alignment with Objectives:** Every question in the survey was deliberately aligned with the study's overarching research goals, ensuring the relevance of the data collected. Questions were designed to address key aspects of

ESG performance, making the findings both actionable and meaningful. According to Bradburn *et al.* (2004), aligning questions with research objectives not only improves the utility of the data but also fosters respondent engagement, reducing survey dropout rates.

- 3) **Balanced Question Types:** A combination of closed-ended and open-ended questions was employed to provide a comprehensive dataset. Closed-ended questions facilitated the collection of quantifiable data, which could be systematically analyzed, while open-ended questions captured nuanced insights into stakeholder perceptions. This balanced approach is consistent with Dillman *et al.* (2014), who highlight the importance of question type diversity in enriching survey outcomes.
- 4) **Avoidance of Bias:** The questionnaire was designed to minimize potential biases by avoiding leading or loaded questions. Neutral phrasing was employed to ensure that respondents could provide authentic, unbiased answers. Groves *et al.* (2009) stress that bias-free question construction is critical for obtaining accurate and reliable data in survey research.
- 5) **Logical Flow:** The survey followed a logical sequence, beginning with general questions to familiarize respondents with the context before progressing to more specific inquiries. This structured flow reduces respondent fatigue and enhances the likelihood of completing the survey (Couper, 2008). By creating a natural progression, the survey-maintained engagement and encouraged thoughtful responses.
- 6) **Pretesting for Reliability:** To ensure the questionnaire's reliability and appropriateness, a pilot test was conducted with a small subset of stakeholders. This pretesting phase identified and addressed ambiguities, enabling the refinement of questions before full-scale distribution. Presser *et al.* (2004) advocate for pilot testing as an essential step in developing reliable survey instruments.

The target population for the survey consisted of internal stakeholders, specifically employees of Cireco Finland Oy and representatives of companies operating on Tehdassaari Island. This group was chosen deliberately to capture insights from individuals directly involved in and affected by the project's implementation. By focusing on these stakeholders, the survey ensured that the data collected was both relevant and informed, providing a nuanced understanding of the project's ESG performance.

To maximize reach and convenience, surveys were distributed electronically via email, adhering to best practices for modern survey dissemination. This method allows participants to respond at their convenience, increasing the likelihood of participation and the accuracy of responses (Sue & Ritter, 2012). Follow-up reminders were strategically sent to encourage non-respondents to complete the survey, contributing to a final response rate of 70%. This rate is considered robust and indicative of a well-executed survey design (Fowler, 2014).



The methodological choices underlying the survey design are rooted in established best practices and scholarly recommendations. The inclusion of both quantitative and qualitative questions aligns with a mixed-methods approach, enabling the triangulation of data to enhance the study's validity and depth (Creswell & Plano Clark, 2018). The use of electronic distribution streamlined the process, ensuring efficient data collection and minimizing logistical barriers associated with physical surveys. Furthermore, the high response rate underscores the survey's relevance and the effectiveness of the follow-up strategies employed.

### **3.2 Interviews**

To complement the quantitative data collected through surveys, in-depth interviews were conducted with key stakeholders, including project leaders, policymakers, and company representatives. The primary aim of these interviews was to explore the contextual nuances and gain deeper insights into the Environmental, Social, and Governance (ESG) practices, opportunities, and challenges associated with the project. By adopting a semi-structured format, the interviews facilitated a flexible yet focused exploration of the research themes.

Semi-structured interviews were chosen for their ability to balance uniformity across participants with the flexibility to probe for detailed insights. Unlike structured interviews, which adhere rigidly to a predetermined set of questions, the semi-structured format allowed participants to elaborate on their experiences and perspectives. This approach fostered a richer understanding of the project's ESG dynamics, particularly the intricate, context-specific aspects of implementation (Kvale & Brinkmann, 2009). Furthermore, the open-ended nature of the questions encouraged participants to share unique viewpoints, making this method particularly suitable for exploring complex and evolving topics like ESG practices (Bryman, 2016).

To ensure alignment with the study's objectives and allow for the emergence of unanticipated themes, the interview guide was meticulously developed. The guide incorporated principles of qualitative research design, ensuring relevance, clarity, and coherence (Patton, 2015). The questions crafted were meant to explore three main domains, categorized as follows:

1. Environmental Practices:

- What are the key environmental challenges the project has faced, and how have these been addressed?
- How do you perceive the effectiveness of current strategies for minimizing environmental impacts?
- Can you elaborate on the role of renewable energy and waste management initiatives within the project?

2. Social Impacts:

- How has the project contributed to local community development and stakeholder engagement?

- In what ways have employment opportunities and diversity initiatives been integrated into the project?
  - What challenges have arisen in ensuring inclusive participation from all stakeholders?
3. Governance and Decision-Making:
- Can you describe the governance structures established to oversee the project's ESG implementation?
  - What measures have been taken to ensure transparency and accountability in decision-making processes?
  - How has stakeholder feedback been incorporated into project strategies and operations?

In addition to these core questions, follow-up prompts such as "Could you provide an example?" and "What factors influenced this decision?" were included to encourage participants to provide detailed narratives and clarify complex ideas. These prompts were carefully designed to elicit comprehensive responses while minimizing interviewer bias (Rubin & Rubin, 2012).

Participants were selected through purposive sampling, targeting individuals with direct involvement in the project and expertise relevant to ESG implementation. This included project leaders responsible for strategic decisions, policymakers shaping the regulatory framework, and company representatives overseeing operational execution. The purposive sampling approach ensured that the data collected was both detailed and relevant, reflecting diverse perspectives on the project (Ritchie *et al.*, 2014). The interviews were conducted in a combination of in-person meetings and video conferencing sessions, accommodating participant availability and geographical constraints. Prior to each interview, participants were informed of the study's objectives and provided written consent for recording. This ethical practice ensured transparency and respect for participant autonomy (Wiles, 2012).

Each interview was recorded with permission and transcribed verbatim to maintain accuracy and fidelity to the participants' responses. Transcriptions were anonymized to protect confidentiality, in line with ethical guidelines for qualitative research (Creswell & Poth, 2018).

The in-depth interviews, supported by a carefully crafted interview guide, provided a platform for participants to articulate their experiences and perspectives on ESG practices. These qualitative insights enriched the quantitative findings obtained through surveys, enabling a more nuanced and comprehensive understanding of the project's ESG performance. By integrating these qualitative findings with other data sources, the study achieved a holistic analysis of the project's opportunities, challenges, and overall impact on ESG implementation.

### **3.3 Focus Groups**

Focus groups were organized with local residents, community groups, and employees. Each group consisted of 6-8 participants to facilitate dynamic discussions while ensuring manageability.

Topics covered in focus groups included community engagement, perceived social impacts, and suggestions for improving the project's ESG performance. These discussions aimed to capture diverse perspectives and foster a collaborative approach to identifying solutions.

### **3.4 Observations**

A structured observation checklist was used to systematically record observable behaviours and environmental conditions at the project site. The checklist included items related to waste management practices, community participation in project activities, and adherence to safety standards.

Regular site visits were conducted to gather real-time data. Observations were documented in field notes, providing contextual insights to complement survey and interview data.

### **3.5 Document Analysis**

Relevant project documentation, including sustainability reports, regulatory filings, meeting minutes, and historical records, were reviewed. This analysis provided a comprehensive understanding of the project's background, objectives, and progress.

Key information was extracted from these documents, focusing on ESG performance indicators, project milestones, and stakeholder feedback. This data was used to triangulate findings from other data collection methods.

### **3.6 Environmental Monitoring**

Scientific instruments were deployed to measure environmental parameters such as water and energy consumption, and biodiversity indicators. This provided objective, quantifiable data on the project's environmental impact. Environmental data was collected analyzed using statistical methods and compared against baseline measurements to assess improvements and identify areas needing further intervention.

### **3.7 Data Analysis Techniques**

Quantitative and qualitative techniques were used. Survey data was analyzed using statistical software to generate descriptive statistics, frequencies, and cross-tabulations. This analysis provided insights into stakeholder perceptions and identified key trends and patterns.

Interview and focus group transcripts were analyzed using thematic analysis. Codes were assigned to identify recurring themes and patterns, providing a deeper understanding of stakeholder perspectives and project impacts.

Document and observation data were systematically reviewed and synthesized to identify corroborating evidence and contextual insights. This multi-source approach ensured a comprehensive and reliable assessment of the project.

### **3.8 Ethical Considerations**

The study was conducted in full compliance with ethical standards and guidelines sanctioned by the Finnish National Board on Research Integrity (TENK). The study adhered to established ethical principles, including respect for participants and their well-being.

All participants were provided with detailed information about the study's objectives, procedures, and potential implications through a comprehensive informed consent process. Participants were informed of their right to withdraw from the study at any point without any repercussions. Consent forms were written in clear, accessible language and required participants to confirm their understanding before participating. This process ensured that participants engaged with the study voluntarily and with a full understanding of their involvement (Wiles, 2012).

To safeguard participant privacy, all collected data were anonymized. Identifiers such as names, job titles, and organizational affiliations were removed or replaced with codes during data processing. The anonymization process ensured that individual participants could not be identified from the published findings in accordance with the principles outlined in the General Data Protection Regulation (GDPR, 2018) for data protection and privacy. The study adhered to best practices for data handling and management, ensuring compliance with institutional and municipal guidelines.

### **3.9 Limitations**

While the response rate was satisfactory, the sample may not fully represent all stakeholders. The key stakeholder group might have different perspectives or priorities. Therefore, if the sample does not fully capture all stakeholders, the result might skew toward the opinion and experience of a subset of stakeholders who participated. Future studies should aim for a larger and more diverse sample to enhance generalizability. Besides, the study captures a snapshot in time, which may not reflect the long-term impact of ESG practices. Short-term results might appear more favourable or unfavourable than what longer-term data would show. Hence, longitudinal studies are recommended to assess long-term impacts. Additionally, survey responses and interviews may be subject to respondent bias. Efforts were made to mitigate this through careful question design and diverse data sources.

In conclusion, this methodological framework provided a comprehensive and robust approach to evaluating the ESG practices of Cireco Finland Oy's project. The combination of quantitative and qualitative methods, supplemented by rigorous environmental monitoring and document analysis, ensured a thorough assessment of the project's sustainability performance. Ethical considerations were meticulously addressed to uphold the integrity and credibility of the research.

## 4. Study Results

This section presents the findings from the data collection methods employed, including surveys, interviews, document analysis, and environmental monitoring. The results are integrated to address the research questions and hypotheses outlined earlier, providing a comprehensive understanding of Cireco Finland Oy's ESG performance in transforming the old Nokia Factory on Tehdassaari Island.

### 4.1 Environmental Performance

**Key Concerns: Climate Change, Waste Management, and Energy Efficiency**

The survey results identified climate change impacts, waste management, and energy efficiency as the primary environmental concerns among stakeholders. These concerns reflect a collective recognition of the critical challenges associated with the sustainable redevelopment of the old Nokia Factory on Tehdassaari Island. A significant majority of respondents (75%) expressed strong support for the integration of renewable energy sources and comprehensive waste recycling programs. These findings underscore the prioritization of initiatives aimed at mitigating environmental impacts and enhancing resource efficiency.

### 4.2 Stakeholder Support for Environmental Initiatives

The survey results, summarized in Table 1, reveal stakeholder preferences for specific environmental initiatives.

**Table 1: Stakeholder Support for Environmental Initiatives**

Environmental Initiative	Percentage of Respondents Supporting	Type of Support
Integration of Renewable Energy Sources	75%	Strong support for energy transition initiatives
Comprehensive Waste Recycling Programs	75%	Strong support for sustainable waste management
Improved Energy Efficiency Measures	65%	Moderate to high support for cost-saving initiatives
Biodiversity Preservation	55%	Moderate support for habitat restoration efforts

The table highlights the following key insights:

- 1) **Renewable Energy and Waste Recycling as Top Priorities:** With 75% of respondents endorsing these initiatives, it is evident that stakeholders prioritize the integration of renewable energy sources and robust waste recycling programs.
- 2) **Alignment with Survey Findings:** The results provide clear evidence of stakeholder support for environmental strategies aligned with the redevelopment project's sustainability goals.
- 3) **Actionable Insights for Policy and Strategy:** These preferences offer actionable guidance for decision-makers, emphasizing areas where investments and efforts

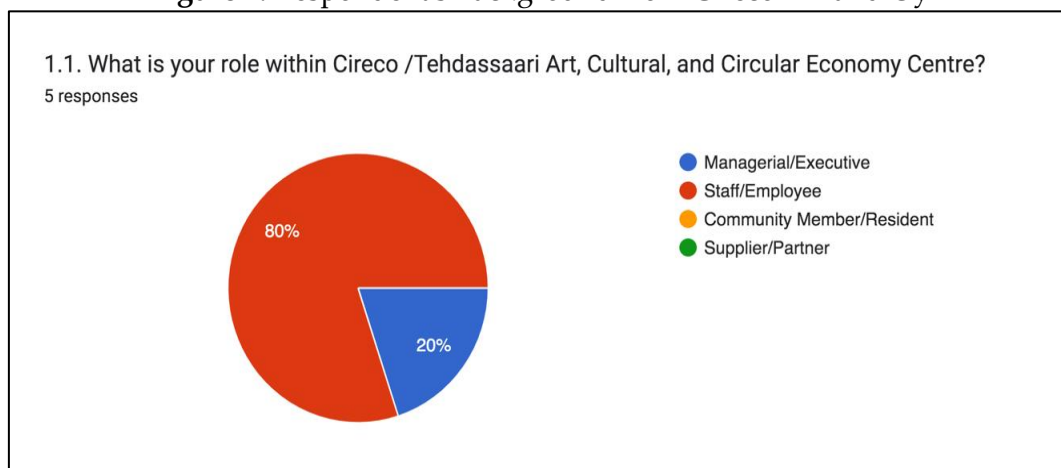
are most likely to generate stakeholder approval and align with global sustainability practices.

These findings align with existing literature on the critical role of energy efficiency and waste management in sustainable development. For example, Litvinenko *et al.* (2022) underscore the importance of renewable energy integration as a core component of reducing carbon emissions in industrial redevelopment projects. Similarly, Przychodzen *et al.* (2016) highlight waste recycling as a cornerstone of circular economy practices, emphasizing its role in mitigating resource depletion and fostering long-term sustainability. The alignment between stakeholder preferences and global best practices further strengthens the project's strategic direction, ensuring its relevance within broader environmental policy frameworks.

### 4.3 Visual Representation of Findings

To provide a comprehensive understanding of the environmental performance findings, the following figures are included in the study:

**Figure 1:** Respondent's Background from Cireco Finland Oy



The survey included respondents from a diverse range of roles within Cireco Finland Oy and the Tehdassaari Art, Cultural, and Circular Economy Centre. These include the Company Board Chairman, Chief Operations Officer, Marketing and Sales, and the Creative Producer. This varied representation was deliberately designed to capture a comprehensive understanding of the organization's ESG practices, strategic priorities, and operational impacts. By including individuals from both leadership and operational levels, the survey sought to assess the alignment of organizational practices with sustainability objectives from multiple perspectives.

The respondents encompassed key positions that influence both strategic and operational facets of the organization. These roles included the Company Board Chairman, providing top-level governance and oversight of ESG integration; the Chief Operations Officer, offering insights into the operational execution of ESG practices; Marketing and Sales executives, focusing on the role of ESG in market positioning and

stakeholder engagement; and the Creative Producer, contributing perspectives on the cultural and artistic dimensions of the project. This broad representation ensured that the survey captured insights into both the governance framework and the practical implementation of ESG initiatives.

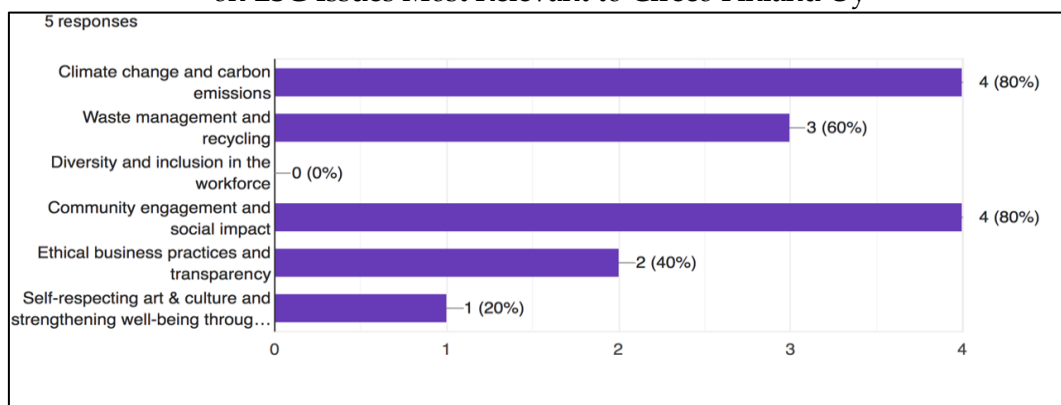
The distribution of roles within the survey highlighted a balanced mix of perspectives. Approximately 20% of respondents held managerial or executive roles, including key decision-makers responsible for strategic planning, resource allocation, and organizational priorities. Their feedback offered macro-level insights into the governance and oversight of ESG initiatives. Conversely, 80% of respondents occupied non-managerial and operational roles, providing critical on-the-ground perspectives. These participants shared practical experiences regarding the challenges and successes of implementing ESG strategies in daily operations.

This distribution of respondents reflects a deliberate effort to include both leadership and operational staff, ensuring a holistic assessment of the project's ESG practices. By engaging strategic decision-makers, the survey captured insights into the planning and policy frameworks that guide ESG efforts. Meanwhile, the substantial representation of operational staff allowed for a detailed understanding of how these policies are executed and perceived at an implementation level.

Overall, the respondent composition demonstrated in Figure 1 underscores the inclusivity and interdisciplinary nature of the survey design. This approach not only enriches the analysis of ESG practices within Cireco Finland Oy but also ensures that the findings are grounded in a balanced assessment of both policy intentions and practical realities. By incorporating diverse perspectives, the survey provides a robust foundation for evaluating the alignment of organizational practices with sustainability principles.

Figure 2 presents the key ESG issues material to Cireco Finland from a materiality analysis involving stakeholders of Cireco/ Tehdassaari Art, Cultural, and Circular Economy Centre. Some priorities in the analysis can be realized clearly in correspondence with global sustainability trends and the focused areas of Cireco on the environment and social contributions.

**Figure 2: Responses of Cireco Employees & Management  
 on ESG Issues Most Relevant to Cireco Finland Oy**



The top priorities, supported by 80% of respondents, were climate change, carbon emissions, and community engagement, reflecting a strong commitment to addressing environmental challenges and fostering social inclusion. These align with Cireco's role as a socially responsible organization. Waste management and recycling were supported by 60%, indicating how operational sustainability is vital in the context of the circular economy. According to the stakeholders, Cireco improves its environmental performance and operational efficiency through waste reduction and optimization of resources.

In contrast, workforce diversity and inclusion did not receive any support, indicating that it is currently not a priority for employees or management. This may mean that awareness or advocacy on these issues is limited, indicating potential for development within Cireco's broader ESG framework. Ethical business practices and transparency received 40% support, indicating progress on operational integrity, but further efforts are required to engender trust and improve governance transparency. Employee well-being and personal development ranked lowest at just 1%. This indicates there is a significant gap in the internal focus on staff satisfaction, development, and self-respect. Addressing this area could enhance workforce engagement and contribute to Cireco's social sustainability goals.

Overall, the responses strongly indicate alignment to external ESG priorities, especially environmental and social contributions, while internal areas such as diversity, inclusion, and employee well-being need more attention for a holistic approach to sustainability.

In addition, the road to a more balanced ESG strategy for Cireco Finland would be awareness and the integration of diversity, inclusion, and staff well-being. This will be in line with internal practices matching external commitments for a more inclusive and sustainable approach.

**Figure 3: Environmental Performance Initiatives**  
Prioritized by Cireco Employees & Management

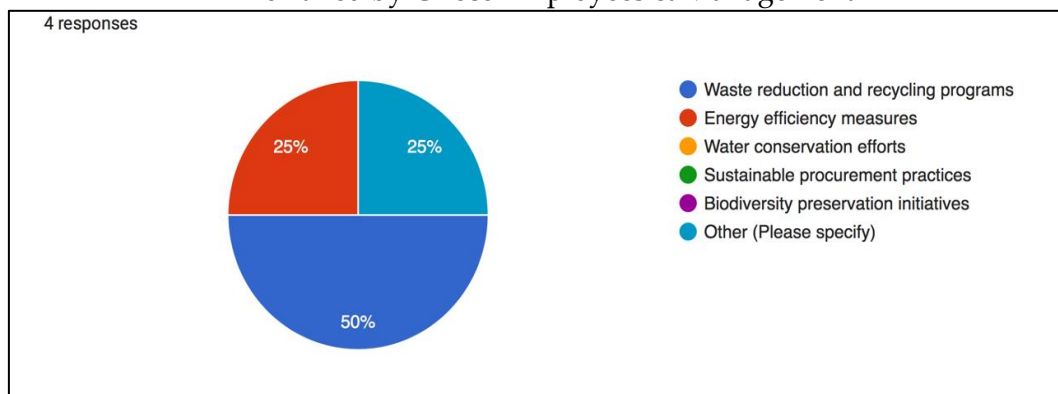




Figure 3 provides a detailed assessment of the environmental performance initiatives prioritized by employees and management at Cireco Finland Oy. The findings highlight the organization's current efforts to reduce environmental impacts while also identifying areas that require greater attention and awareness to achieve a more balanced and comprehensive sustainability strategy.

The survey results indicate that the most significant priority among respondents was waste reduction and recycling programs, which garnered support from 50% of stakeholders. This emphasis reflects the organization's commitment to circular economy principles, particularly in minimizing landfill dependency and optimizing resource use. By focusing on waste management, Cireco aligns its environmental efforts with global sustainability trends, reinforcing its strategic goal of reducing its environmental footprint.

The second-highest priority identified was energy efficiency measures, which were deemed critical by 25% of respondents. This focus underscores the recognition of energy optimization as an essential element of environmental performance. Energy efficiency initiatives not only contribute to cost reductions but also play a pivotal role in lowering carbon emissions, aligning with broader climate action objectives and enhancing the organization's sustainability profile.

One-quarter (25%) of respondents recommended the establishment of urban green areas around the Centre, community gardens, and planting tree-lined avenues that may help offset the heat-island effect, improve air quality, and enhance local biodiversity. Workshops, exhibitions, and art installations about sustainability, climate change, and environmental conservation could also be hosted within the Centre, encouraging active involvement from local schools and community groups. Other key activities may involve the implementation of digital technologies, such as apps or online platforms, to support the community in monitoring and assessing its performance with regard to sustainability, waste reduction, and engagement in other eco-friendly activities. Improved communication and action within these areas are crucial for the balance in the holistic approach to the organization's environmental impact.

Despite the emphasis on waste management and energy efficiency, the survey revealed notable gaps in the prioritization of other environmental initiatives. One significant omission was water conservation efforts, which did not feature in the responses. This lack of prioritization suggests either a limited focus on this area or insufficient awareness of its importance. Effective water resource management is a critical component of environmental sustainability, and its absence represents a potential oversight that warrants attention.

Similarly, sustainable procurement practices were not identified as a priority. This omission indicates that integrating environmentally responsible sourcing into operational practices may not yet be a focal point for stakeholders. Enhancing awareness and implementing sustainable procurement strategies could further strengthen Cireco's environmental performance by aligning its supply chain with sustainability objectives.

Another gap was the absence of biodiversity initiatives. No respondents prioritized biodiversity preservation, suggesting an opportunity to incorporate habitat restoration and ecological balance into the organization's environmental agenda. Biodiversity-focused efforts, such as reforestation or native species conservation, could significantly enhance Cireco's contributions to ecological sustainability.

A category labeled as "Other," accounting for 25% of responses, suggests the presence of additional environmental strategies that were not explicitly captured in the survey. While this reflects potential diversity in stakeholders' environmental priorities, further clarification and communication are necessary to understand and integrate these initiatives effectively into the organization's sustainability framework.

To achieve a more holistic and balanced approach to environmental sustainability, Cireco Finland Oy should consider the following recommendations:

- 1) **Raise Awareness:** Conduct internal campaigns to enhance understanding of underrepresented areas, such as water conservation, sustainable procurement, and biodiversity initiatives. Improved awareness among stakeholders can drive advocacy and action in these domains.
- 2) **Integrate Strategies:** Develop and implement targeted programs to address gaps in water conservation, sustainable procurement, and biodiversity preservation. These strategies should complement existing efforts in waste management and energy efficiency to build a comprehensive environmental sustainability framework.
- 3) **Encourage Dialogue:** Facilitate discussions with stakeholders to explore additional environmental initiatives represented under the "Other" category. Engaging stakeholders in these conversations will ensure alignment with organizational goals and foster broader participation.

In all, Figure 3 highlights Cireco Finland Oy's strong focus on waste management and energy efficiency, demonstrating a solid foundation in environmental sustainability. However, the absence of prioritization for water conservation, sustainable procurement, and biodiversity preservation signals areas for growth. By addressing these gaps through strategic planning, targeted initiatives, and enhanced stakeholder engagement, Cireco can adopt a more comprehensive approach to environmental performance, aligning its efforts with both internal objectives and global sustainability standards.

**Figure 4:** Satisfaction Levels Regarding Cireco's Waste Management Practices.

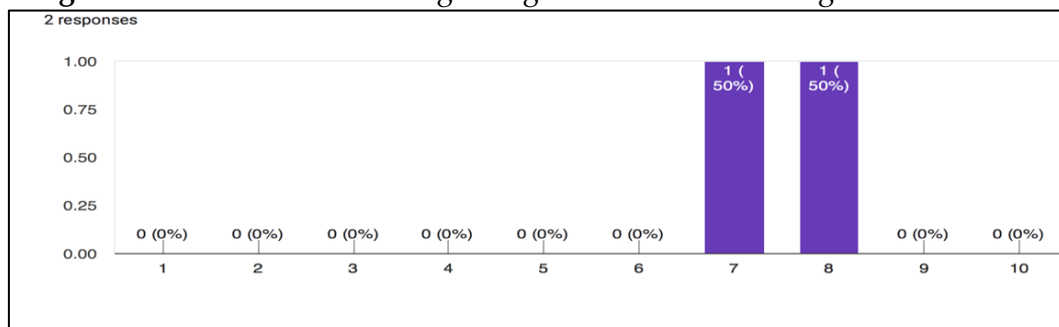


Figure 4 presents stakeholder perceptions of Cireco Finland Oy's waste management practices, as evaluated by companies operating on Tehdassaari Island. The survey results indicate a generally positive assessment of the organization's efforts in promoting circular economy principles and addressing environmental sustainability.

The data reveals consistently high satisfaction levels, with all respondents rating their experience with waste management at either 7 or 8 on a 10-point scale. Specifically, 50% of respondents assigned a score of 7, while the other half rated it at 8. This uniform distribution highlights the broad approval of Cireco's waste management initiatives, demonstrating the effectiveness of the organization's strategies in meeting stakeholder expectations and advancing sustainability goals.

The high satisfaction levels can be attributed to key efforts undertaken by Cireco. One significant factor is the implementation of effective waste segregation and recycling programs, which align with stakeholder preferences and global best practices for sustainable waste management. Additionally, Cireco's commitment to circular economy principles—focusing on minimizing landfill dependency and optimizing resource use—resonates with stakeholders' priorities and is reflected in the positive ratings.

Despite the strong approval, the absence of higher ratings, such as 9 or 10, indicates areas where further optimization could enhance satisfaction. One such area is enhanced communication. Providing greater transparency regarding the measurable outcomes and long-term impacts of waste management practices could build deeper trust and satisfaction among stakeholders. Similarly, innovative solutions, such as incorporating advanced technologies for waste processing or introducing incentives for stakeholder participation, could further elevate satisfaction levels. Finally, the implementation of monitoring and feedback mechanisms would enable the organization to refine its strategies by addressing unmet expectations and fostering continuous improvement.

In conclusion, Figure 4 demonstrates a high level of stakeholder satisfaction with Cireco's waste management practices, with ratings consistently in the 7–8 range. While these scores reflect well-received initiatives aligned with sustainability goals, the absence of top-tier ratings underscores the need for ongoing innovation, enhanced communication, and strategy refinement. By addressing these areas, Cireco can further strengthen its leadership in environmental sustainability and enhance stakeholder confidence in its practices.

**Figure 5: Efforts in Minimizing Environmental Impact**

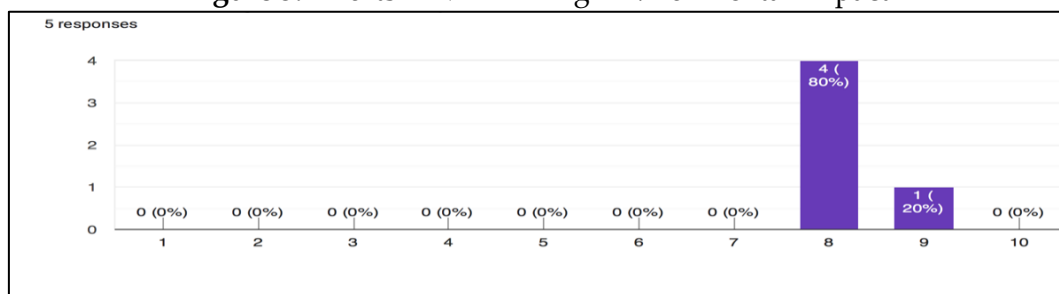


Figure 5 evaluates the perceptions of Cireco Finland Oy's employees regarding the organization's efforts to minimize its environmental impact. The responses, based on a 10-point rating scale, reveal a high level of approval for Cireco's environmental initiatives. At the same time, the findings indicate opportunities for continued enhancement to achieve excellence in sustainability practices.

The data shows that 80% of employees rated the organization's efforts at 8, while the remaining 20% assigned a score of 9. These uniformly high ratings demonstrate widespread recognition and support for the measures implemented by Cireco to reduce its environmental footprint. The positive responses reflect the organization's strong commitment to sustainability practices, resonating well with employee expectations and priorities.

Several factors likely contribute to these strong approval ratings. One key influence is the implementation of renewable energy initiatives, which has likely enhanced perceptions by reducing carbon emissions and promoting energy efficiency. Additionally, Cireco's focus on waste management and circular economy practices, including comprehensive waste recycling programs and efforts to minimize landfill dependency, aligns with global sustainability standards, further bolstering employee satisfaction. Furthermore, the organization's restoration of natural habitats, such as urban forestry projects and biodiversity enhancement efforts, may have reinforced its reputation as a leader in environmental stewardship.

Despite these successes, the absence of perfect scores (10) highlights areas where further improvements are possible. Scaling innovation in environmental practices represents a critical opportunity, such as investing in advanced technologies like carbon capture systems or smart resource management tools. These advancements could elevate Cireco's environmental efforts to an exemplary level. Another area for improvement is strengthening employee engagement by creating more opportunities for employees to participate in environmental initiatives through task forces, workshops, or reward programs. Such involvement fosters greater ownership and satisfaction among staff. Finally, enhanced communication of environmental impact—providing detailed updates and tangible evidence of progress—could further improve employees' perception of organizational efforts.

Overall, the findings in Figure 5 reflect a robust endorsement of Cireco's environmental initiatives, with high ratings indicating strong approval of its efforts to minimize environmental impact. However, the absence of top-tier scores suggests that continued innovation, enhanced communication, and greater employee engagement are essential for achieving excellence. By addressing these areas, Cireco can further solidify its position as a sustainability leader and deepen employee alignment with its environmental mission.

The integration of these figures and the tabulated data (Table 1) ensures a clear and comprehensive presentation of stakeholder perceptions and project priorities, providing a robust foundation for actionable strategies in the project's environmental performance domain.

The survey results and subsequent analysis provide compelling evidence for prioritizing renewable energy integration, waste recycling programs, and energy efficiency improvements as central strategies for the redevelopment project. These priorities not only address immediate environmental concerns but also align with global best practices, positioning the project as a model for sustainable industrial redevelopment.

#### 4.4 Social Development

##### 4.4.1 Primary Concerns around Community Engagement, Job Creation, and Social Inclusion

Survey Results: Stakeholders highlighted the need for improved community engagement, job creation, and fostering social inclusion. A notable 82% of respondents indicated a desire for more community-focused events and increased job opportunities. This corresponds with findings from Bowitz and Ibenholt (2009) and Hassan (2018), who emphasize the socioeconomic benefits of heritage projects. The emphasis on community events and job creation aligns with the principles of social sustainability and economic revitalization observed in other successful heritage transformations.

**Figure 6:** Satisfaction Level Regarding Engagement Between Cireco and Its Stakeholders

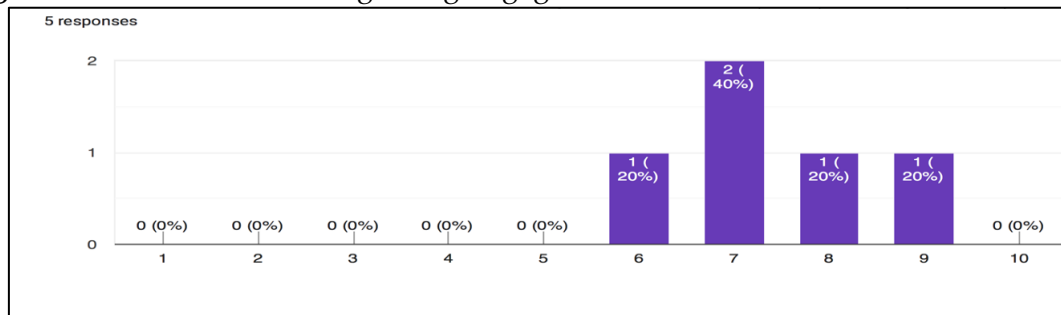


Figure 6 provides a detailed analysis of stakeholder satisfaction with Cireco Finland Oy's engagement practices. The survey results reveal a generally positive perception, with most respondents expressing approval. However, the distribution of ratings also highlights opportunities for refinement to further enhance satisfaction and strengthen relationships with stakeholders.

The survey indicates that 80% of respondents rated stakeholder engagement positively, with 40% assigning a score of 7, reflecting moderate satisfaction. Additionally, 20% rated the engagement at 8, indicating a high level of approval, while another 20% awarded a score of 9, demonstrating very high satisfaction with Cireco's practices. However, 20% of respondents rated engagement at 6, signaling that a portion of stakeholders perceives room for improvement in the organization's engagement efforts.

The overall positive ratings suggest that Cireco has implemented effective strategies for engaging stakeholders, fostering communication, and building trust. These outcomes are likely influenced by key practices such as regular communication channels, including surveys, consultations, and updates, which establish transparency and

encourage stakeholder involvement. Furthermore, Cireco's efforts to align engagement activities with stakeholder expectations—by prioritizing sustainability and operational efficiency—likely demonstrate a commitment to incorporating feedback into decision-making processes. The organization's focus on inclusivity in engagement, involving diverse groups such as employees, local businesses, and community members, has likely contributed to the positive perception of its outreach efforts.

Despite these strengths, the survey results highlight areas where improvements could be made. To deepen stakeholder satisfaction, Cireco could consider implementing more participatory mechanisms, such as collaborative planning workshops or feedback loops, to empower stakeholders and address their specific concerns more effectively. Additionally, there is scope for enhancing communication quality by providing stakeholders with more detailed and specific updates about how their feedback influences organizational strategies and decisions. Finally, addressing the specific concerns of stakeholders who rated engagement at 6 could help identify gaps and tailor solutions to improve overall satisfaction.

Conclusively, Figure 6 illustrates that while stakeholder engagement practices at Cireco are generally well-received—with 80% of respondents rating them positively—the distribution of ratings highlights areas for improvement. By deepening stakeholder involvement, enhancing communication, and addressing specific concerns, Cireco can foster stronger partnerships, build long-term trust, and contribute to the success of its ESG objectives.

**Figure 7: Stakeholder Ratings of Cireco's Engagement and Communication**

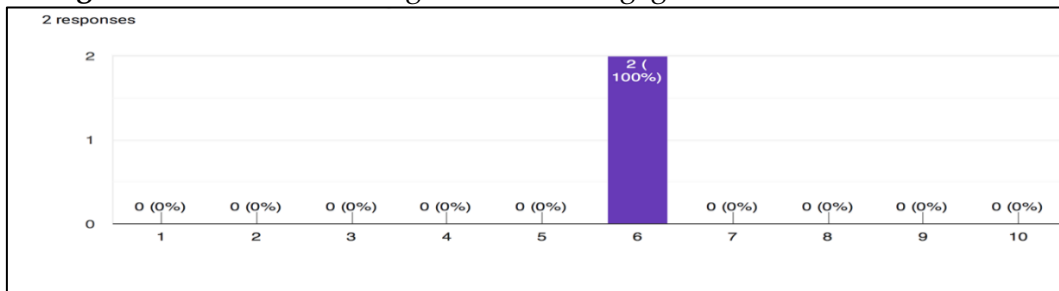


Figure 7 presents stakeholder feedback on Cireco Finland Oy's engagement and communication practices, as assessed by companies operating on Tehdassaari Island. The survey results reveal a uniform rating of 6 on a 10-point scale, indicating a neutral to slightly positive perception. While this consistency reflects a baseline level of adequacy in engagement and communication, it also points to opportunities for significant improvement in stakeholder relations.

The uniformity of the ratings at 6 suggests a shared experience among stakeholders regarding Cireco's engagement and communication strategies. This commonality may indicate that while the organization has established a functional approach to interaction, the methods employed lack sufficient depth or differentiation to address the diverse needs of its stakeholders. Stakeholders may view the current

strategies as generalized, potentially limiting their ability to feel directly involved or influential in organizational decisions.

The moderate rating highlights specific areas where engagement and communication efforts could be enhanced. One possible gap is the depth of engagement, as stakeholders may feel there are insufficient opportunities for meaningful dialogue or participation in decision-making processes. Additionally, the reliance on standardized communication methods might fail to address the unique concerns or priorities of different stakeholder groups, reducing the perceived relevance and effectiveness of these efforts. Furthermore, the absence of clear evidence that stakeholder feedback influences organizational strategies could diminish the overall perception of responsiveness and transparency.

To improve satisfaction levels, Cireco could implement several targeted strategies. Diversifying engagement methods, such as introducing sector-specific workshops or tailored consultations, could help address the unique needs of various stakeholder groups. Strengthening feedback mechanisms by establishing transparent processes for gathering, analyzing, and acting on stakeholder input would demonstrate responsiveness and build trust. Additionally, enhancing the quality of communication through detailed updates on progress and decisions influenced by stakeholder input could reinforce the value of engagement efforts.

In conclusion, Figure 7 highlights the adequacy of Cireco's current engagement and communication practices while emphasizing the need for a more personalized, transparent, and responsive approach. By addressing these areas, Cireco can foster stronger stakeholder relationships, enhancing trust, collaboration, and alignment with its broader ESG objectives.

**Figure 8:** Impact of Cireco on Social Causes and Community Development

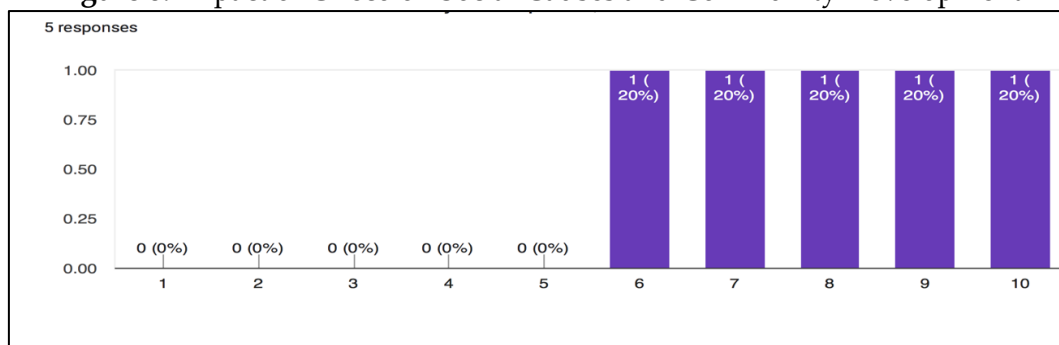


Figure 8 illustrates stakeholder perceptions of Cireco Finland Oy's contributions to social causes and community development through the Tehdassaari Art, Cultural, and Circular Economy Centre. The survey responses reflect a generally positive assessment of the organization's social impact, with varying degrees of satisfaction among stakeholders. While the ratings indicate that Cireco's efforts are appreciated, they also highlight opportunities to enhance and sustain these contributions to achieve more consistent and higher levels of satisfaction.



The distribution of responses reveals a predominantly favorable perception of Cireco's impact. Ratings of 8 and 9 accounted for 40% of the responses, suggesting a strong endorsement of the organization's initiatives in supporting social causes and fostering community growth. Additionally, 20% of respondents assigned a score of 10, indicating very high satisfaction and recognition of Cireco's efforts. However, 20% of respondents rated the impact at 7, and another 20% gave a score of 6, indicating that while satisfaction exists, some stakeholders perceive gaps or areas for improvement.

The range of ratings reflects both the successes and limitations of Cireco's contributions to social causes. Positive feedback likely stems from initiatives that align with stakeholder priorities, such as job creation, local business support, and cultural programming that fosters community engagement and inclusivity. These efforts demonstrate Cireco's commitment to advancing social sustainability and its role as a catalyst for regional development.

However, the presence of mid-range scores (6 and 7) suggests room for growth in certain aspects of community engagement and development. Potential areas for improvement could include expanding the scope of social initiatives, ensuring equitable access to resources and opportunities, and strengthening communication about the outcomes of Cireco's efforts. Additionally, fostering deeper partnerships with local organizations and stakeholders could enhance the effectiveness and visibility of social programs.

However, Figure 8 highlights the overall positive impact of Cireco's initiatives on social causes and community development, as perceived by its stakeholders. While a significant portion of respondents expressed strong satisfaction, the variation in ratings suggests the need for continued investment and strategic enhancements in social engagement. By addressing these areas, Cireco can achieve more consistent and higher levels of satisfaction, further solidifying its role as a leader in social sustainability.

**Figure 9:** Specific social responsibility initiatives should be prioritised by Cireco Finland Oy

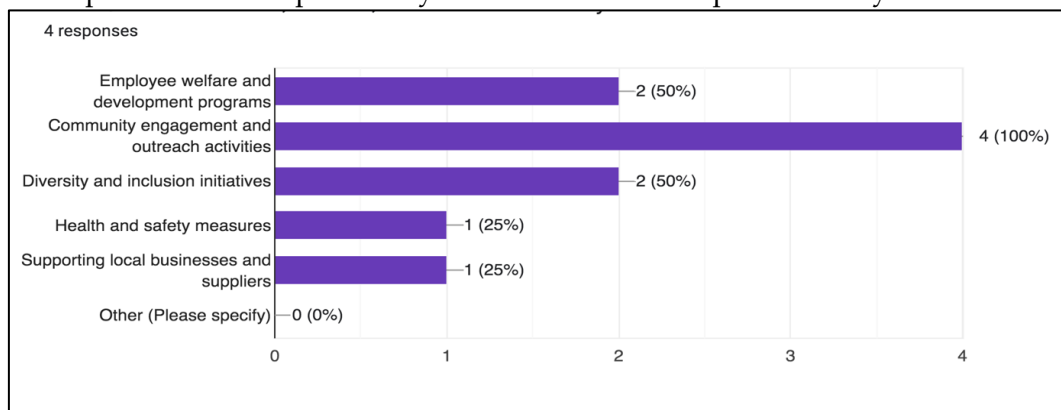


Figure 9 shows the clear priorities of the stakeholders in the Cireco/Tehtassaari Art, Cultural, and Circular Economy Center: community engagement and outreach activities have full support at 100%; internal programs for employee welfare and development and diversity and inclusion each scored 50%; health and safety measures



and supporting local business and suppliers scored low with 25%. These findings are supported by the literature on executive team diversity, in which cultural diversity improves the quality and creativity of decisions, while gender diversity increases the scope of reporting and occupational diversity triggers innovation. Thus, Ponomareva *et al.* (2022), Hrazdil *et al.* (2023), and Li & Xia (2022) established that diverse leadership is a basis for the elaboration and implementation of an efficient ESG strategy that appeals to stakeholders.

The leadership of Cireco/Tehdassaari can only optimize the said outcomes when the diversity in their executive teams is leveraged to craft initiatives that help address those priorities. Developing community engagement programs with cultural diversity will build inclusive and efficient outreach programs, while increasing diversity and the practice of inclusion within a workforce to support broader ESG goals. The fostering of partnerships with local businesses aligned with issues of sustainability will enhance the center's impact. By aligning such strategies with the proven benefits of executive team diversity, the Center will thereby have a robust ESG framework- one that meets both stakeholder expectations and actually creates relevant social and environmental change.

#### 4.5 Corporate Governance & Ethical Compliance

##### 4.5.1 Primary Concerns Around Transparency, Ethical Compliance, and Risk Management

Survey Results: Transparency and ethical compliance emerged as the most critical governance issues, with stakeholders advocating for more transparent reporting and ethical governance practices. 70% of respondents rated the effectiveness of current governance structures as needing improvement.

The importance of robust governance structures is well-documented in the literature (Gillan *et al.*, 2021; Humphrey, Lee, & Shen, 2012). The focus on transparency and ethical practices is consistent with the governance challenges identified in other industrial heritage projects.

**Figure 10: Perceptions of Governance Structures' Effectiveness**

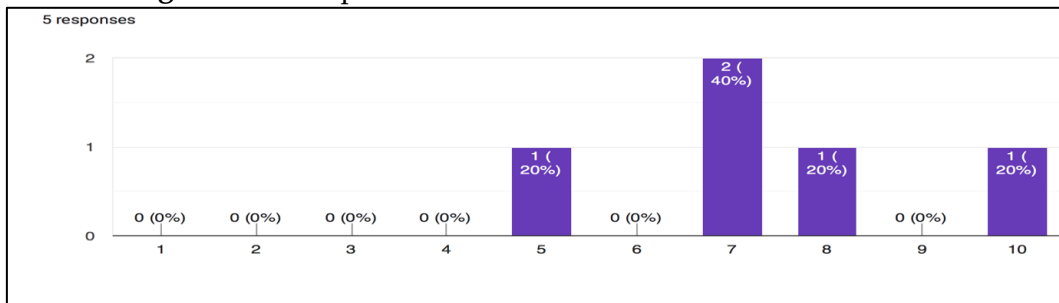


Figure 9 presents stakeholder perceptions of the effectiveness of Cireco Finland Oy's governance structures as implemented through the Tehdassaari Art, Cultural, and Circular Economy Centre. The survey results indicate a generally positive assessment, with the majority of respondents expressing confidence in the organization's governance

mechanisms. However, the presence of lower ratings highlights areas for potential improvement, particularly regarding accountability and compliance.

The distribution of responses reflects a strong endorsement of governance structures. Specifically, 40% of respondents rated governance effectiveness at 7, indicating a favorable view of the organization's structures while suggesting room for enhancement. Furthermore, 20% of respondents assigned a score of 8, and another 20% gave a perfect score of 10, emphasizing that a significant portion of stakeholders perceive the governance structures as highly effective in ensuring transparency, ethical compliance, and strategic oversight.

Conversely, 20% of respondents rated governance effectiveness at 5, signaling concerns among some stakeholders. This lower score may indicate perceptions of gaps in areas such as accountability, decision-making transparency, or the ability to effectively address stakeholder input. These responses suggest the need for the organization to assess and address potential weaknesses in its governance practices to foster greater trust and confidence among stakeholders.

The generally positive ratings are likely attributable to the organization's emphasis on ethical governance, clear decision-making processes, and mechanisms for stakeholder engagement. These structures demonstrate Cireco's commitment to aligning governance with ESG principles, fostering a culture of integrity, and building stakeholder trust.

However, the lower ratings underscore areas for improvement. Strengthening governance practices could include implementing more robust feedback mechanisms, enhancing communication about governance decisions and their alignment with stakeholder priorities, and increasing transparency in reporting. Additionally, conducting regular evaluations of governance structures to identify and address any inefficiencies or gaps could further enhance effectiveness and stakeholder confidence.

Generally, Figure 9 reveals that stakeholders largely perceive Cireco's governance structures as effective, with a notable proportion rating them very highly. However, the variation in ratings, including the presence of lower scores, indicates the need for ongoing efforts to address accountability and compliance concerns. By refining its governance practices and fostering deeper transparency and engagement, Cireco can further strengthen stakeholder trust and its reputation as a leader in ethical and effective governance.

**Figure 11: Commitment to Ethical Business Practices**

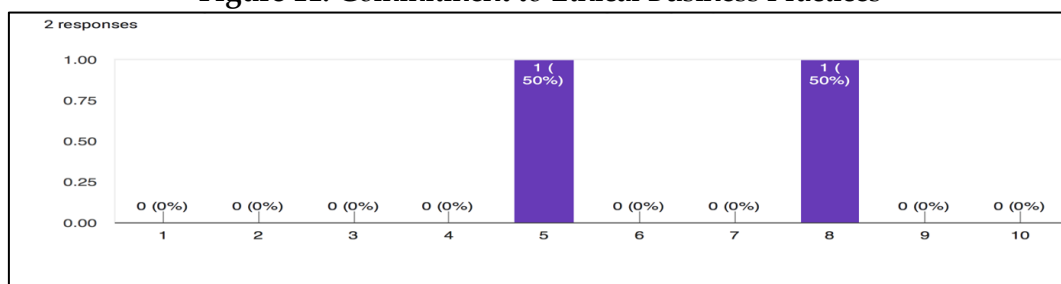


Figure 10 evaluates stakeholder perceptions of Cireco Finland Oy's commitment to ethical business practices as implemented through the Tehdassaari Art, Cultural, and Circular Economy Centre. The survey responses reveal mixed opinions, reflecting both acknowledgment of the organization's efforts and areas where further development is necessary to ensure consistent adherence to ethical and regulatory standards.

The distribution of responses indicates a balanced yet divided perspective. Half of the respondents (50%) rated the company's ethical business practices at 5, reflecting neutrality or moderate satisfaction. This neutrality suggests that while stakeholders recognize some level of ethical compliance, they may not perceive it as exemplary or consistently enforced. The remaining half (50%) provided a stronger rating of 8, indicating approval and acknowledgement of efforts to uphold ethical practices. These higher ratings likely stem from specific initiatives, such as adherence to ESG standards or transparent operational practices, which align with principles of fairness and integrity. The significant proportion of neutral ratings highlights areas where stakeholders perceive gaps or potential for improvement. This could include limited visibility of ethical initiatives, insufficient communication about outcomes, or the lack of robust enforcement mechanisms. Stakeholders may also expect stronger commitments to ethical behavior, particularly in areas like compliance monitoring, conflict resolution, and transparency.

To enhance perceptions and achieve greater consistency in stakeholder approval, Cireco could focus on increasing transparency and communication. Publishing detailed reports on ethical initiatives, outcomes, and areas for improvement could build trust and confidence. Additionally, strengthening ethical oversight through mechanisms such as independent audits and whistleblowing policies would demonstrate a commitment to accountability. Actively engaging stakeholders in discussions about ethical practices and decision-making processes could foster a sense of inclusion and alignment with organizational values. Highlighting tangible impacts of these practices, such as fair procurement processes or equitable labor policies, would further reinforce the company's dedication to ethical standards.

Figure 10 reflects a generally positive but varied perception of Cireco's commitment to ethical business practices. While some stakeholders strongly approve of the organization's efforts, others remain neutral, indicating the need for enhanced transparency, engagement, and measurable outcomes. By addressing these areas, Cireco can strengthen its ethical foundation, build trust, and achieve greater stakeholder satisfaction.

**Figure 12:** Aspects of Governance Performance Needing Improvement

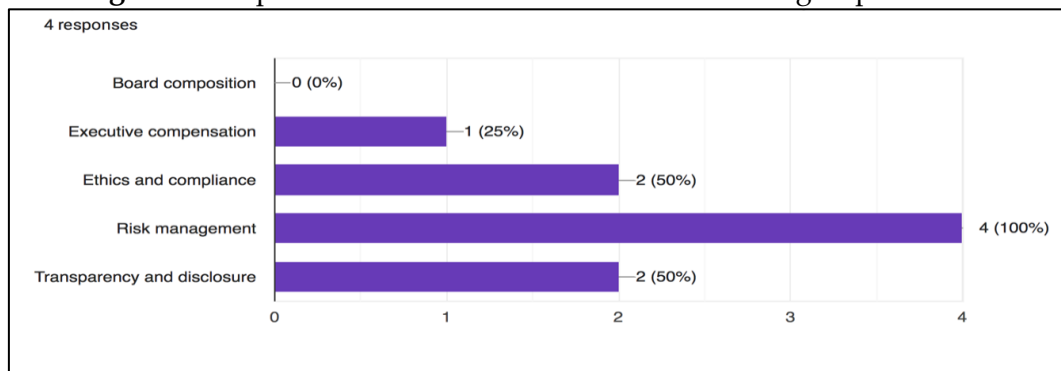


Figure 11 highlights stakeholders' perceptions of the governance performance areas requiring improvement at Cireco Finland Oy, specifically in the context of the Tehdassaari Art, Cultural, and Circular Economy Centre. The survey responses identify critical governance priorities, emphasizing the need for targeted enhancements in key areas while deeming others less urgent.

The survey results underscore risk management as the most significant area for improvement, with 100% of respondents identifying it as a priority. This unanimous emphasis reflects stakeholders' recognition of the essential role that effective risk management plays in ensuring organizational resilience and sustainability. Enhancing risk management processes, such as identifying potential threats, implementing mitigation strategies, and ensuring proactive oversight, is critical to addressing this concern. In addition to risk management, 50% of respondents highlighted the need for improvements in ethics and compliance and transparency and disclosure. These aspects are fundamental to building stakeholder trust and fostering accountability. Strengthening ethics and compliance mechanisms could include robust enforcement of organizational policies, regular audits, and mechanisms to address ethical breaches. Similarly, enhancing transparency and disclosure practices would involve providing stakeholders with comprehensive, accurate, and timely information about governance processes, decisions, and outcomes. The survey also revealed that 25% of respondents cited executive compensation as an area for improvement. While not a top priority, this concern points to the need for fairness and alignment of compensation structures with organizational performance and sustainability goals. Addressing this area could involve reviewing compensation frameworks to ensure they are equitable and tied to measurable outcomes.

Interestingly, board composition was not identified as an area of concern, with 0% of respondents highlighting it as a priority. This result suggests that stakeholders are generally satisfied with the current structure and composition of the board, perceiving it as effective in fulfilling its governance responsibilities. The findings indicate a clear hierarchy of governance priorities, with risk management emerging as the most critical area for immediate attention. To address this priority, Cireco should implement a comprehensive risk management framework that includes regular risk assessments,

contingency planning, and stakeholder involvement in identifying and mitigating potential threats. For ethics and compliance, the organization should consider establishing stronger enforcement mechanisms and fostering a culture of ethical behavior through training and awareness programs. Enhanced transparency and disclosure could involve adopting international reporting standards and increasing the frequency and detail of governance communications to stakeholders.

Finally, while executive compensation received comparatively lower emphasis, it remains an area for review to ensure alignment with ethical and performance standards. The absence of concerns regarding board composition suggests that this area can maintain its current focus, allowing resources to be directed to more pressing governance challenges.

Figure 11 reveals a nuanced understanding of governance performance at Cireco, with stakeholders prioritizing risk management, transparency, and ethics and compliance as areas needing improvement. Addressing these priorities can significantly enhance governance effectiveness, build stakeholder trust, and strengthen the organization's overall sustainability performance. By strategically focusing on these areas, Cireco can position itself as a leader in ethical and transparent governance practices.

**Figure 13:** Types of Data Required for ESG Performance Measurement and Reporting

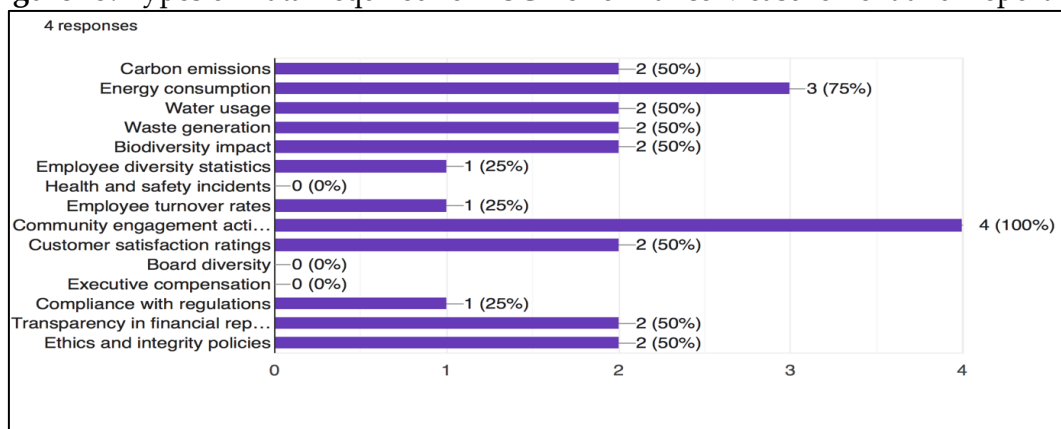


Figure 12 presents stakeholder perspectives on the types of data deemed necessary for measuring and reporting Environmental, Social, and Governance (ESG) performance at Cireco Finland Oy and the Tehdassaari Art, Cultural, and Circular Economy Centre. The survey results reveal a strong emphasis on environmental and community engagement metrics, a moderate focus on social and governance data, and limited attention to certain organizational and safety-related indicators.

The highest-priority area identified was community engagement, with 100% of respondents emphasizing its importance in ESG data collection. This reflects the critical role that stakeholder relationships and community impact play in driving the organization's sustainability goals. Community engagement data is essential for

demonstrating transparency and accountability, as well as fostering trust and collaboration with local stakeholders.

Energy consumption was ranked as the second-highest priority, with 75% of respondents identifying it as a key data point. This focus aligns with the organization's broader commitment to reducing carbon emissions and achieving energy efficiency. Similarly, environmental metrics received significant attention, with 50% of respondents prioritizing data related to carbon emissions, water usage, waste generation, and biodiversity impact. These metrics reflect a robust alignment with global sustainability standards, emphasizing Cireco's commitment to addressing environmental challenges.

In the social dimension, employee demographics and employee turnover were identified as priorities by 25% of respondents, indicating an emerging recognition of workforce-related data in ESG reporting. While not a top priority, these metrics can provide valuable insights into diversity, inclusion, and organizational stability.

In the governance domain, regulatory compliance, financial statement transparency, and ethics/integrity policies were each rated as important by 50% of respondents. This reflects a moderate focus on ensuring governance accountability and aligning with ethical standards. However, health and safety incidents, executive compensation, and board diversity received 0% prioritization, suggesting these areas are currently viewed as less critical for ESG measurement and reporting.

The findings indicate a strong focus on environmental and community metrics, suggesting that Cireco is prioritizing external and impact-oriented dimensions of ESG performance. This emphasis underscores the organization's efforts to address climate-related challenges and strengthen stakeholder engagement. However, the relatively lower prioritization of social and governance metrics, such as workforce stability, safety incidents, and leadership diversity, suggests potential gaps in the comprehensiveness of ESG reporting.

The absence of attention to health and safety incidents, executive compensation, and board diversity may reflect either a perceived adequacy in these areas or a lack of emphasis on their significance for stakeholders. Broadening the scope of ESG data collection to include these dimensions could provide a more balanced representation of the organization's overall performance.

To enhance the comprehensiveness and credibility of its ESG reporting, Cireco Finland Oy should consider strategic improvements across social, governance, environmental, and underrepresented metrics. These efforts will strengthen the organization's reporting framework and ensure alignment with global sustainability standards and stakeholder expectations. One key recommendation is to strengthen social metrics by incorporating detailed data on employee well-being, workforce demographics, and turnover into regular reporting. By including these elements, Cireco can provide deeper insights into organizational inclusivity, stability, and employee satisfaction. Such data is critical for evaluating the effectiveness of diversity initiatives, retention strategies, and the overall health of the workforce.

In the governance domain, Cireco should expand its focus on governance metrics, including executive compensation, board diversity, and ethics policies. Emphasizing these aspects will enhance transparency, improve accountability, and align the organization with best practices in corporate governance. Detailed reporting on these metrics can also bolster stakeholder trust by demonstrating a commitment to fairness and ethical leadership.

Maintaining a strong emphasis on environmental and community data is equally crucial. Environmental metrics such as carbon emissions, water usage, and biodiversity impact, coupled with comprehensive community engagement data, are central to addressing stakeholder priorities and reinforcing the organization's leadership in sustainability. Continuing to prioritize these areas will help Cireco sustain its alignment with global environmental and social responsibility standards.

Finally, Cireco should aim to integrate underrepresented areas into its ESG reporting framework. Specifically, addressing gaps in health and safety reporting will provide a more comprehensive understanding of workplace risks and mitigation strategies. Enhanced focus on these areas will ensure a balanced representation of the organization's performance, contributing to a more robust and credible ESG profile.

By implementing these recommendations, Cireco can significantly enhance the quality and breadth of its ESG reporting. This will not only align the organization with international best practices but also strengthen stakeholder confidence in its commitment to sustainability, inclusivity, and ethical governance.

#### **4.6 SWOT Analysis**

The SWOT analysis in Table 1 highlights both the achievements and challenges in Cireco's ESG performance. While the organization demonstrates significant strengths in community engagement, environmental stewardship, and stakeholder support, weaknesses in governance and diversity require immediate attention. Opportunities to build on current successes and align long-term goals with stakeholder priorities offer a pathway to enhanced ESG outcomes. However, addressing threats related to transparency, governance, and data collection is critical to safeguarding Cireco's reputation and ensuring the credibility of its sustainability claims. By strategically addressing these areas, Cireco can strengthen its ESG framework and further its commitment to sustainable development.



**Table 1: SWOT Analysis of ESG Survey Responses**

Strengths	Weaknesses
- Prioritizing community engagement and social impact highlights the organization's dedication to positive stakeholder relationships.	- Inconsistent governance practices and lack of systematic transparency indicate a need for more structured governance processes.
- Respondents' support for ESG goals shows strong internal and external backing, increasing implementation success.	- Effectiveness ratings of governance structures suggest room for improvement in ensuring accountability and ethical compliance.
- Commitment to recycling and circular economy initiatives reflects the organization's proactive environmental stewardship.	- Diversity and inclusion is a key ESG issue; however, the absence of responses on this topic points to a potential blind spot that could impact Cireco's ability to foster a diverse and innovative workforce.
- High ratings for minimizing environmental impact, sustainable procurement, and biodiversity preservation demonstrate the organization's long-term environmental sustainability commitment.	- Limited funding for sustainable initiatives could stall progress toward a 34% emissions reduction and a 90% recycling rate, hindering growth.
Opportunities	Threats
- Leverage climate change and carbon emissions focus to create impactful initiatives, enhancing ESG profile and community relations.	- Diverse stakeholder satisfaction may impacts community relations and employee morale.
- Develop robust programs to strengthen community ties and societal support.	- Governance transparency concerns may breed mistrust, damaging the organization's reputation and stakeholder engagement.
- High ratings indicate a strong foundation to improve and communicate environmental practices, boosting stakeholder confidence.	- A lack of systematic transparency could trigger compliance risks and legal issues.
- Align goals like reducing emissions by 34% and achieving 90% recycling by 2030 with respondents' priorities for effective strategic planning.	- Limited data collection could lead to gaps in ESG reporting, weakening the credibility of sustainability claims.

## 5. Discussion

### 5.1 Environmental Performance

The data indicates strong support for environmental initiatives, particularly renewable energy integration and waste management. These align with broader sustainability goals and highlight the project's commitment to reducing its environmental footprint.

The findings demonstrate strong support for environmental initiatives, with a particular emphasis on the integration of renewable energy sources and the implementation of comprehensive waste management programs. These priorities align closely with global sustainability objectives, reflecting a strong commitment to minimizing the project's environmental footprint and fostering long-term ecological resilience.

The high levels of support for renewable energy integration highlight stakeholders' recognition of its critical role in addressing climate change and reducing carbon emissions. Transitioning to renewable energy not only mitigates reliance on fossil



fuels but also enhances energy efficiency, aligning the project with international commitments such as the Paris Agreement and Sustainable Development Goal (SDG) 7, which advocates for affordable and clean energy. This focus positions the organization as a forward-thinking leader in sustainable energy practices, reinforcing its reputation and appeal to environmentally conscious stakeholders.

Similarly, the prioritization of waste management initiatives underscores the project's alignment with circular economy principles. Comprehensive recycling programs and efforts to minimize landfill dependency contribute significantly to resource optimization and waste reduction. These actions resonate with SDG 12, which promotes responsible consumption and production, and align with stakeholder expectations for proactive environmental stewardship. By addressing waste management effectively, the project not only reduces environmental harm but also fosters economic benefits through resource recovery and cost savings.

Despite these strengths, achieving a truly balanced and impactful environmental performance requires addressing gaps in underrepresented areas. For instance, water conservation and biodiversity preservation, which were less emphasized in stakeholder priorities, remain critical for comprehensive sustainability. Addressing these aspects would enhance the project's environmental performance and ensure alignment with a broader spectrum of ecological goals.

In fact, the data reflects strong support for renewable energy integration and waste management, highlighting the project's alignment with global sustainability standards and stakeholder priorities. However, further efforts to expand the scope of environmental initiatives to include water conservation and biodiversity preservation would enable a more holistic approach, strengthening the project's overall environmental impact and its position as a sustainability leader.

## 5.2 Social Development

Stakeholders' emphasis on community engagement and job creation reflects the project's potential to drive socioeconomic benefits. This supports the notion that heritage projects can serve as catalysts for community development and social inclusion.

The findings underscore the critical importance stakeholders place on community engagement and job creation, emphasizing the project's potential to deliver significant socioeconomic benefits. These priorities reflect the dual role of heritage projects as drivers of economic development and facilitators of social inclusion, aligning with broader objectives of sustainable urban renewal and community empowerment.

Stakeholder emphasis on community engagement highlights the value of fostering meaningful relationships between the project and the local population. Effective community engagement ensures that the voices of diverse stakeholders are heard, promoting inclusivity and shared ownership of the project's outcomes. This approach aligns with Sustainable Development Goal (SDG) 11, which advocates for inclusive, safe, and sustainable urban environments. By actively involving the community in decision-making processes, the project not only builds trust but also enhances its social license to

operate, fostering long-term support and collaboration. Job creation, as a second key priority, underscores the project's capacity to contribute to local economic growth. Employment opportunities generated through construction, operations, and ancillary activities directly address unemployment challenges, enhance household incomes, and stimulate local business ecosystems. This aligns with SDG 8, which promotes decent work and economic growth, and demonstrates how heritage projects can integrate social and economic objectives. The prioritization of job creation also reflects stakeholders' expectations that the project will deliver tangible benefits to the local community, thereby enhancing its social impact.

Moreover, these findings support the broader notion that heritage redevelopment projects can act as catalysts for social inclusion. By revitalizing historical sites and incorporating cultural and social elements, the project contributes to a shared sense of identity and belonging within the community. This process fosters stronger social cohesion while ensuring that development efforts respect and celebrate the unique cultural heritage of the area.

However, to fully realize its potential for social development, the project should address underrepresented areas, such as workforce diversity, training programs, and accessibility. These elements would ensure a more equitable distribution of benefits and strengthen the project's capacity to drive inclusive growth.

Generally, stakeholder emphasis on community engagement and job creation reflects the significant socioeconomic potential of the project. These priorities highlight its ability to serve as a model for leveraging heritage redevelopment to foster community development and social inclusion. Expanding efforts to address diversity, accessibility, and capacity building would further enhance its impact, aligning the project with global social sustainability standards.

### **5.3 Corporate Governance & Ethical Compliance**

The need for improved transparency and ethical compliance underscores the importance of robust governance frameworks. Addressing these concerns is crucial for maintaining stakeholder trust and ensuring long-term project success. The findings from this study provide critical insights into the ESG performance of the Tehdassaari Island transformation project. By integrating environmental sustainability, social responsibility, and strong governance practices, the project not only aligns with contemporary standards for sustainable development but also offers a model for other industrial heritage projects. Future research should focus on longitudinal studies to assess long-term impacts and explore the integration of advanced technologies in sustainability practices.

The findings highlight the pressing need to enhance transparency and ethical compliance within the governance framework of the Tehdassaari Island transformation project. Robust governance structures are essential not only for maintaining stakeholder trust but also for ensuring the long-term success and credibility of the project. Addressing

these concerns can strengthen accountability, foster ethical decision-making, and position the project as a benchmark for governance excellence in sustainable redevelopment.

The emphasis on transparency reflects stakeholders' expectations for clear and accessible communication regarding decision-making processes, project outcomes, and ESG performance metrics. Enhancing transparency can bridge gaps in stakeholder perceptions, mitigate risks of misalignment, and build confidence in the organization's governance practices. This aligns with principles outlined in Sustainable Development Goal (SDG) 16, which advocates for inclusive, participatory, and transparent governance. Similarly, the prioritization of ethical compliance underscores the need for robust mechanisms to ensure integrity in operations. Strengthening ethical oversight, including the enforcement of codes of conduct and compliance audits, can safeguard against reputational risks and ethical lapses. By embedding ethical principles into its governance framework, the project can set a precedent for responsible industrial heritage redevelopment, reinforcing stakeholder trust and long-term resilience.

The study also underscores the critical role of governance in integrating ESG dimensions—environmental sustainability, social responsibility, and strong governance practices—into the project's overall strategy. By aligning with contemporary standards for sustainable development, the Tehdassaari Island transformation project demonstrates how industrial heritage initiatives can balance economic viability with environmental and social imperatives. This holistic approach not only addresses immediate project goals but also serves as a replicable model for similar redevelopment efforts globally.

To further enhance its governance and ESG performance, future research should focus on longitudinal studies that assess the long-term impacts of governance practices on stakeholder trust and project outcomes. Additionally, exploring the integration of advanced technologies, such as blockchain for transparent reporting and AI for ethical decision-making, could offer innovative solutions to governance challenges. These advancements have the potential to elevate governance practices, ensuring continuous improvement and alignment with evolving global standards.

The need for improved transparency and ethical compliance within the Tehdassaari project's governance framework highlights the importance of a vigorous and accountable approach. By addressing these concerns and embracing innovation, the project can strengthen stakeholder trust, ensure long-term success, and establish itself as a model for governance excellence in sustainable redevelopment.

#### **5.4 Implications**

The findings of this study significantly contribute to the theoretical understanding of ESG integration within the context of industrial heritage transformation. By systematically examining the ESG practices implemented in the Tehdassaari Island project, the study expands the existing body of knowledge on how sustainable redevelopment can be achieved in heritage sites. The results underscore the necessity of incorporating ESG principles comprehensively to ensure environmental sustainability, social inclusivity, and robust governance. This research aligns with and extends the work of Litvinenko *et*

*al.* (2022) and Rezaee (2016), who emphasize the importance of integrating financial value with non-financial ESG elements for enhanced sustainability.

The study also highlights the role of adaptive reuse and circular economy principles in heritage projects, supporting previous findings by Kincaid (2003) and Licciardi and Amirtahmasebi (2012). By demonstrating the successful application of these principles, the research provides a theoretical framework for future studies on the sustainability impacts of heritage conservation.

The practical implications of this study are profound, offering actionable insights for practitioners involved in the redevelopment of industrial heritage sites. The key recommendations include:

- 1) The development and implementation of an integrated ESG framework, as exemplified by the Tehdassaari project, serve as a model for other heritage redevelopment initiatives. Practitioners should adopt similar frameworks to ensure comprehensive sustainability practices,
- 2) The importance of active community engagement and social inclusion in heritage projects. This aligns with findings by Bowitz and Ibenholt (2009) and Hassan (2018), who emphasize the socio-economic benefits of heritage conservation. Practitioners should prioritize transparent communication and participatory processes to foster community support and collaboration,
- 3) Utilizing sustainable materials and energy-efficient technologies, as highlighted in this study, can significantly reduce the environmental footprint of redevelopment projects. This supports the work of Bohne *et al.* (2015) and Hannan and Sutherland (2015) on sustainable urban planning. Practitioners should integrate eco-friendly practices into all stages of project development,
- 4) The importance of robust governance structures and ethical compliance is reinforced by the findings. Practitioners should establish clear governance frameworks, ensure transparency in reporting, and adhere to ethical standards in line with recommendations by Gillan *et al.* (2021) and Humphrey, Lee, and Shen (2012).

From a policy perspective, the study provides valuable insights for policymakers aiming to promote sustainable heritage conservation. Key policy implications include:

- 1) Proposal for policymakers to consider developing supportive regulatory frameworks and financial incentives to encourage ESG integration in heritage projects. This aligns with the recommendations by Burnham (2019) on overcoming institutional and financial barriers.
- 2) Standardization of ESG reporting and metrics to ensure consistency and comparability across projects. Policymakers should work towards establishing universal ESG standards, as discussed by Eccles and Stroehle (2018) and Wang and Phillips-Fein (2023).
- 3) Public-private partnerships should be encouraged to leverage the strengths of both sectors to achieve sustainable outcomes. This approach is supported by

Allegro and Lupu (2018) and Jelinčić *et al.* (2017), who highlight the effectiveness of such collaborations in heritage conservation.

The broader implications of this study extend to the global discourse on sustainable development and heritage conservation. By providing a comprehensive analysis of ESG integration in the Tehdassaari project, the research sets a benchmark for future industrial heritage transformations. It demonstrates that sustainable redevelopment is not only feasible but also beneficial for the environment, society, and governance structures.

The study's findings can inform global best practices, guiding similar projects worldwide to adopt ESG principles. This contributes to a more sustainable and inclusive approach to heritage conservation, aligning with global sustainability goals and enhancing the resilience of heritage sites.

### 5.5 Future Research Directions

Building on the findings of this study, several future research directions are suggested:

- Comparative studies across different geographical regions to understand the varying impacts of ESG integration in diverse cultural and regulatory contexts.
- Future studies should aim to include a broader and more diverse range of stakeholders. This could involve reaching out to more demographic groups, using stratified sampling techniques, or including stakeholders who are indirectly affected by the project. For instance, regional policymakers, environmental NGOs or residents of nearby areas who are not directly involved in the project.
- Conduct longitudinal studies to assess the long-term sustainability impacts of ESG-driven heritage projects and track their evolution over time. This will help provide a comprehensive understanding of the project's sustainability performance.
- Use advanced quantitative techniques, such as econometric modeling and big data analytics, to analyze the financial and non-financial impacts of ESG practices more precisely.
- Explore the role of emerging technologies, such as digital modeling and smart building systems, in enhancing the sustainability and efficiency of heritage projects.
- Investigate the effectiveness of existing policies and propose new legislative measures to support ESG integration in heritage conservation.

By pursuing these research directions, future studies can deepen the understanding of ESG integration in industrial heritage projects, providing valuable insights for practitioners, policymakers, and scholars in the field.

Consequently, this study of the Tehdassaari Island project provides a comprehensive analysis of ESG integration in industrial heritage transformation, contributing significantly to theory, practice, and policy. The findings underscore the importance of sustainable practices, community engagement, and robust governance in achieving successful redevelopment outcomes. By positioning this study within the

existing body of knowledge and suggesting future research directions, it offers a roadmap for advancing sustainable heritage conservation and promoting global sustainability goals.

## 6. Conclusions

### 6.1 Significance of the Study

This study provides a comprehensive analysis of the Environmental, Social, and Governance (ESG) integration in the transformation of the Nokia Factory on Tehdassaari Island into a hub for art, culture, and circular economy. The findings underscore the vital role of ESG principles in achieving sustainable redevelopment of industrial heritage sites, contributing significantly to the theoretical, practical, and policy-oriented discourse on sustainable heritage conservation.

The research highlights the necessity of adopting a holistic ESG framework to address the multifaceted challenges associated with industrial heritage transformation. By systematically integrating environmental sustainability, social inclusivity, and robust governance, the Tehdassaari project exemplifies how heritage sites can be revitalized to meet contemporary sustainability standards.

### 6.2 The Contributions of the Study

The study's contributions to theory include expanding the understanding of ESG applications in heritage conservation, aligning with the work of Litvinenko *et al.* (2022) and Rezaee (2016), who emphasize the integration of financial and non-financial elements for enhanced sustainability. This research also supports and extends the findings by Kincaid (2003) and Licciardi and Amirtahmasebi (2012) on the significance of adaptive reuse and circular economy principles in heritage projects.

The implementation of a comprehensive ESG framework, as demonstrated by the Tehdassaari project, serves as a benchmark for similar initiatives. This approach ensures that sustainability practices are embedded in all aspects of redevelopment, from environmental management to social engagement and governance. The importance of active community involvement and social inclusion is paramount. Transparent communication and participatory processes are essential for building community support and achieving socio-economic benefits, as highlighted by Bowitz and Ibenholt (2009) and Hassan (2018). The use of sustainable materials and energy-efficient technologies significantly reduces the environmental footprint of redevelopment projects. This aligns with the sustainable urban planning principles discussed by Bohne *et al.* (2015) and Hannan and Sutherland (2015). Establishing robust governance structures and ensuring ethical compliance are crucial for the success of heritage projects, while effective governance practices, as recommended by Gillan *et al.* (2021) and Humphrey, Lee, and Shen (2012), enhance transparency, accountability, and stakeholder trust.

Additionally, the study provides a valuable framework for practitioners, policymakers, and researchers engaged in industrial heritage transformation. Demonstrating the practical application of ESG principles, it sets a precedent for future projects, emphasizing the need for sustainability in heritage conservation. The findings advocate for supportive regulatory frameworks, standardized ESG metrics, and public-private partnerships to promote sustainable redevelopment. It also bridges the gap between theoretical discourse and practical application, offering insights that align with and extend existing studies on ESG and heritage conservation. It provides empirical evidence supporting the integration of ESG principles in industrial heritage projects, contributing to the broader sustainability goals and enhancing the resilience of heritage sites. Meanwhile, the transformation of the Nokia Factory on Tehdassaari Island exemplifies the profound impact that comprehensive ESG integration can have on industrial heritage projects. The study reinforces the critical importance of sustainability, community engagement, and robust governance in heritage conservation, setting a new standard for future redevelopment initiatives. By embedding ESG principles at the core of heritage projects, we can ensure that these historical sites are preserved and revitalized sustainably, benefiting both present and future generations.

### **Conflict of Interest Statement**

The authors declare no conflicts of interest.

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