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Enhancing Environmental Sustainability in Vocational Institutions

A Case Study Analysis and Implementation Strategy Certification

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ABSTRACT:

The importance of sustainable development and environmental sustainability has increased over the years. Global and domestic regulations and carbon neutrality targets also place a responsibility on educational institutions to enhance their environmental sustainability. This study aims to establish a framework for assessing environmental responsibility practices within vocational institutions and for the certification and auditing processes to ensure continuous improvement. As part of the study, a case study was conducted on a Finnish secondary vocational institution, and the framework for the research was based on the environmental certification the institution is seeking from the nonprofit OKKA Foundation.

The study's data consisted of responses from a self-assessment provided by the vocational institution, which served as a basis for understanding the institution's current status. Additionally, recent articles on environmental sustainability in educational institutions were reviewed to supplement the current state analysis and to offer better improvement suggestions for achieving the environmental certificate, providing a comprehensive view of environmental sustainability in educational institutions. A mixed-methods approach was chosen for the research, including data from the case institution and a literature review. The institution and individuals from the institution are not named to maintain anonymity.

The institution has all the necessary capabilities to achieve the required certification level in the future. Many units have implemented sustainable practices, though differences exist among units, with some being more advanced in their practices than others. Differences are found in practical methods and knowledge; unifying these practices is essential for the institution's success across all units. The institution's sustainability efforts face challenges such as financial constraints, stakeholder diversity, and regional innovation barriers.

The proposed development measures focus on strengthening community involvement and integrating sustainability into daily operations. Suggestions include improving procurement practices, increasing awareness, and actively engaging stakeholders. Additionally, emphasis was placed on internal communication and new procurement strategies to address cost challenges in sustainable product procurement.

The study emphasizes that sustainable development is a continuous process that requires leadership commitment and strategic planning. Through OKKA certification, the institution can approach sustainability systematically by utilizing self-assessments, strategic planning, and stakeholder involvement. This helps establish a cohesive and evolving approach that supports environmental responsibility goals and enables broader societal impact.

KEYWORDS: Environmental sustainability, educational institution, certification, auditing

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TIIVISTELMÄ:

Kestävä kehitys ja ympäristökestävyyden merkitys on lisääntynyt vuosien saatossa. Maailmanlaajuiset kuin kotimaiset säädökset, sekä hiilineutraalius tavoitteet asettavat myös opetusinstituutioille tarpeen kehittää heidän ympäristökestävyyttään. Tämän tutkimuksen tarkoituksena on muotoilla puitteet ammatillisten oppilaitosten ympäristövastuun käytäntöjen arvioinnille sekä sertifiointiprosessille ja auditoinnille jatkuvan parantamisen varmistamiseksi. Osana tutkielmaa on case-tutkimus suomalaisesta toisen asteen ammatillisesta oppitaloitoksesta ja tutkielman kehyksenä toimii oppilaitoksen hakema kestävän kehityksen sertifikaatti voittoa tavoittelemattomalta OKKA-järjestöltä.

Tutkimusaineistona käytettiin ammattillisen oppilaitoksen tarjoamat vastaukset heidän itseiarviointiin, jonka perusteella lähdettiin rakentamaan käsitystä oppilaitoksen nykytilasta. Tämän lisäksi aineistona käytettiin opetusinstituutioiden ympäristökestävyydestä tehtyjä artikkeleita viime vuosilta täydentämään nykytila-analyysia sekä tarjoaamaan parempia parannusehdotuksia, jotta oppilaitos saavuttaa ympäristösertifikaatin ja tutkimus tarjoaa mahdollisimman laajan kuvan koulutuslaitoksien ympäristökestävyydestä. Tutkielman menetelmäksi valikoitui sekamenetelmä, johon sisältyi case-yrityksen tarjoamat aineistot sekä kirjallisuuskatsaus. Tutkielman opetusinstituuttia ei mainita tai henkilöitä, jotka ovat osallistuneet instituutiosta, jotta mahdollinen anonymeetti säilyy.

Oppilaitoksella on kaikki mahdollisuudet saavuttaa tulevaisuudessa vaadittu sertifikaatin taso. Useissa yksiköissä on toteutettu kestäviä käytäntöjä, mutta yksiköiden välillä on eroavaisuuksia ja osa on edistyneempiä käytännöissään kuin toiset. Eroavaisuuksia löytyy käytännön menetelmissä sekä tiedossa, näiden toimintojen yhtenäistäminen on yksi keskeinen osa instituution onnistumista jokaisessa yksikössä. Instituution kestävän kehityksen työ kohtaa haasteita, kuten taloudellisia rajoitteita, sidosryhmien moninaisuutta ja alueellisia innovaatiomuureja.

Kehitysehdotukset keskittyvät yhteisön osallistamisen vahvistamiseen ja kestävyyden sisällyttämiseen päivittäisiin toimintoihin. Ehdotuksia ovat muun muassa hankintakäytäntöjen parantaminen, tiedon lisääminen ja sidosryhmien aktiivinen mukaanotto. Lisäksi painotettiin sisäistä viestintää sekä uusia hankintastrategioita, joiden avulla kestävien tuotteiden kustannushaasteet voidaan ratkaista.

Tutkimus korostaa, että kestävä kehitys on jatkuva prosessi, joka vaatii johdon sitoutumista ja strategista suunnittelua. OKKA-sertifioinnin kautta oppilaitos voi lähestyä kestävyyttä systemaattisesti, hyödyntäen itseisarviointeja, strategista suunnittelua ja sidosryhmien osallistamista. Tämä auttaa luomaan yhtenäisen ja kehittyvän toimintatavan, joka tukee ympäristövastuullisia tavoitteita ja mahdollistaa laajemman yhteiskunnallisen vaikuttamisen.

KEYWORDS: Environmental sustainability, educational institution, certification, auditing

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1 Introduction

Sustainability has become a central topic of conversation in various organizations when we try to combat global warming and the depletion of natural resources. Also, educational institutions have incorporated sustainable practices into their operations, and Lozano et al (2015) highlight the importance of academic leadership in driving sustainable development initiatives. Educational institutions play a key role in promoting sustainability through education, campus operations, community engagement, and institutional leadership. Creating institutional change toward sustainability requires more than just superficial policies or isolated programs (Moore et al., 2005). It requires a fundamental shift in the decision-making structures and everyday practices of the entire institution.

There is research made on educational institutions' environmental sustainability. Environmental sustainability perspectives range from food waste reduction (Pinto et al., 2018) to energy usage (Gui et al., 2020). However, research on educational institutions' environmental sustainability certification and auditing is scant. Even though, studies have demonstrated that sustainability audits and certifications drive continuous improvement in sustainable development in educational institutions and obliges them to continuously improve their sustainable practices in teaching, research, and extension activities for the benefit of the community (Gomes et al., 2023; Menon & Suresh, 2022).

It is good to note that most of the literature and research has been done with a concentration on Higher Educational Institutions (HEI), and these differ slightly from the object of this research. Higher educational institutions can have thousands of students and are intricate organizations comparable in complexity to entities in the corporate sector (Chinta et al., 2016). Vocational institutions concentrate more on practical study and usually require more facilities that are built differently than higher educational institutions. They also need more and different types of equipment depending on the fields that are taught so that students can do as much as possible with their hands and learn along the way, but some facilities are only intended for studying theory which is aligned with higher education institutions.

1.1 OKKA Foundation and Background of the Study

The OKKA Foundation is a Finnish non-profit foundation established in 1997. It was created through the merger of the Vocational Training Foundation and the Education Foundation, and the purpose of the foundation is to act for the development of the teaching, education, and training sectors to increase effectiveness, raise appreciation, promote scientific research, and support art education (School and environment, n.d). To fulfill its purpose, the foundation organizes training events and study tours, distributes grants and awards, engages in planned publishing activities, supports the sustainable development work of educational institutions through training, consulting, and guidance, and grants sustainable development certificates for educational institutions.

The study draws from the process of acquiring a certificate issued by the OKKA Foundation. Sustainability targets that are mentioned are predefined targets that are set in the certificate and evaluate how the educational institution implements environmental responsibility in its purchases and everyday operations and strives for carbon neutrality, circular economy, and reasonable economy. To get the certificate, the educational institution must do the following things: implementation of self-evaluation, evaluation of the basic level of operation, and development plan.

The OKKA Foundation offers assessment tools, materials, advice, and training to support the sustainable development work of schools and educational institutions. The starting point for the construction of the operational system is the quality, environmental, safety, and well-being aspects related to the operation of the educational institution (School and Environment, n.d.). Based on these aspects, the goals, objectives, and development measures are planned to target the functions and processes of the educational institution. These are constantly improved and monitored.

1.2 Aim and purpose of this study

The objective of this study is to formulate a framework for evaluating vocational institutions` environmental sustainability practices along with the certification process and the audition to ensure continuous improvement. Thus, the research questions are:

RQ1: How to assess the current state of environmental sustainability practices within the case vocational institution and evaluate their alignment with the set targets in the certificate?

RQ2: What are the most prominent avenues for improvement in the case institution and how can educational institutions utilize an environmental certification process as an opportunity for a renewal of sustainability practices?

1.3 Structure of the Study

The thesis is designed to examine environmentally sustainable development practices in educational institutions, especially in the OKKA foundation's certification process. The introduction introduces the background of the research, the goals, and the role of the OKKA foundation as the basis of the research. As a theoretical background, the thesis examines the key concepts of environmental responsibility as they apply to educational institutions, including norms, sustainability of operating culture, procurement practices, and community participation. It also introduces ideas such as degrowth and regeneration to contextualize sustainability beyond traditional growth models. The section on certification and auditing discusses how certification processes can improve sustainability practices in educational settings.

The methodology chapter details the research approach, including data collection, analytical procedures, and ethical considerations, creating a solid foundation for the research. The research findings and analysis chapter includes assessing the case institution's sustainability practices and examining waste reduction and procurement areas. Based on these findings, the areas for improvement analysis section proposes strategies for institutional development, including increasing coherence between departments, promoting sustainability awareness, and improving procurement policies. It emphasizes inclusive approaches and the potential of certification to promote institutional renewal.

In the discussion, observations related to the theoretical framework will be considered, and the broader effects on educational institutions´ sustainable practices will be examined. Finally, the conclusion synthesizes the key insights of the study, discusses limitations, and provides recommendations for future action and research. This structure enables a thorough examination of the thesis in both practical and theoretical dimensions of environmental sustainability in the education sector.

2 Theoretical Background

For us to understand environmental sustainability and for it to be certified and to that extent audited, we need to go through the research that has been done on the environmental sustainability actions of educational institutions. Sustainability means more than the environmental aspect it also governs the economic and social factors as well. This chapter overviews the current literature on academic institutions' environmental sustainability. The vast majority of the literature has been conducted at Higher Education Institutions, which is why these sources are used as the primary references; they represent the closest comparable cases to the subject under investigation.

2.1 Environmental Sustainability in Educational Institutions

Education plays a critical role in supporting sustainable development. Higher education institutions have altered not only the curriculum but also operational techniques and organizational culture, to prepare for a greener and more sustainable future. There has been a lot of research on sustainability in educational institutions and the research in this field has been growing steadily.

Educational institutions should incorporate sustainable ways of operating and teaching sustainability as a part of the educational environment. They must also ensure that their way of working is ecologically, culturally, socially as well and economically sustainable for the future. The standards related to the educational institution's environmental sustainability include, among other things, regulations related to the prevention of waste generation, waste sorting and recycling, handling and storage of hazardous substances, and hazardous waste (School and Environment, n.d). The operation of educational institutions is also subject to regulations regarding food hygiene, construction, and the protection of cultural heritage. The management of the production activity and its emissions in educational institutions may be related to environmental protection regulations. The educational institution must find out the regulations concerning its operation and take care of the necessary practices, orientation, and monitoring, which will ensure the fulfillment of the requirements.

Globally, higher education institutions contribute to sustainability through a variety of activities in research, education, campus operations, community involvement, institutional frameworks, on-campus experiences, and assessment and reporting (Aleixo et al., 2018; Ralph & Stubbs, 2014). These efforts address environmental, economic, social, cultural, institutional, educational, and political activities and result in long-term environmental and socioeconomic benefits. Thus, HEIs play a significant role in fostering sustainability throughout society.

Despite the widely recognized relevance of sustainability, many schools and institutions have failed to completely commit to these initiatives. Many institutions do not prioritize sustainability teaching, even though staff and students have frequently been pioneers in environmental advocacy (James & Card, 2012). While some institutions have begun to integrate sustainability into their policies and operations, few in the United States and Europe are actively pursuing these projects. Education institutions must radically rearrange their pedagogical techniques, research, community connections, and campus operations to prioritize sustainability. To effectively incorporate sustainability, a comprehensive "learning for sustainability" strategy must be applied throughout all institution’s activities (Aleixo et al., 2018).

Institutions must give the required awareness, information, skills, and values to promote sustainable living. However, most research consists of case studies that emphasize what unique institutions have done, with little comparative study of how these achievements were accomplished (James & Card, 2012). Although stakeholders generally understand sustainability, the concept of sustainability in Higher Education Institutions is less well-known (Aleixo et al., 2018).

While higher education institutions have made progress in promoting sustainability, there is still a need for comprehensive policies that encompass all elements and operations (James & Card, 2012). Higher education institutions achieve environmental sustainability through shared approaches, collaborative efforts, and effective monitoring of energy consumption and carbon footprints. They use their facilities as learning laboratories, engage in campus-wide activism, and utilize innovative financing solutions. Success in sustainability relies on committed leadership and collaboration.

The study made by James and Card (2012) identified six critical factors for achieving campus sustainability; green campus operations, campus administration, teaching, research, and service, campus activism and activity, and assessment. Institutions encounter challenges such as budgetary restrictions, a lack of understanding, and cultural reluctance. Education and awareness are crucial for addressing these problems.

It is critical to educate educational institutions workers about the value of sustainability. External drives such as governmental requirements push institutions towards sustainability, but internal drivers include ethical commitments and pressure from staff and students. However, obstacles such as budgetary limits, a lack of understanding, and opposition to change within the institution might impede development (Ralph & Stubbs, 2014). Comprehensive integration necessitates harmonizing operations, teaching, research, and outreach efforts. Key factors in integrating environmental sustainability are to include financial incentives, teaching policies, and student interest. Major barriers include academic silos and lack of leadership. Key success factors include committed individuals, internationally recognized researchers, and a dedicated sustainability research center. A multifaceted approach, including national policies and funding, is crucial.

Major strategies and projects for reaching carbon neutrality in a variety of sectors, including energy, agriculture, buildings, cities, industry, and transportation (Chen et al., 2022). These initiatives include transitioning to renewable energy, enhancing energy efficiency, altering eating habits, building resilience, and implementing clean energy technology. They also emphasize the need for synergies between adaptation and mitigation efforts, as well as the need for life cycle evaluations in decarbonization projects. It encourages additional research, investment, and collaboration to speed progress toward a carbon-free world.

Different sizes of institutions make direct comparisons challenging. Therefore, there is a need for a criterion based on normalization, such as students, employees, and the area, which is applied to create relevant comparisons (Valls-Val & Bovea, 2021). However, significant variation exists regardless of the normalization criteria, and therefore, it is hard to analyze different institutions with each other.

Educational institutions have a significant opportunity to reduce their carbon footprint by adopting renewable energy sources and making their operations more efficient. Switching to renewable energy, such as wind and solar power, can significantly reduce dependence on fossil fuels. Introducing solar panels is one big step towards cleaner energy in the campus area. In addition, improving the energy efficiency of campus buildings is essential. This could be achieved by an upgrade to LED lighting, smart heating and ventilation installations, insulation, and energy-efficient appliances and equipment. Regular energy audits naturally bring to light many areas needing improvements and, in turn, ensure constant optimization of energy use with minimal levels of greenhouse gas emissions.

In addition to energy management, changing food habits in campus dining services plays a key role in achieving carbon neutrality. Promoting plant-based diets is considered one of the major strategies to decrease the carbon footprint related to food consumption. Buying food locally will further reduce transport emissions and support sustainable agricultural practices. Implementing measures aimed at reducing food waste is also very important, as food waste significantly increases greenhouse gas emissions. These strategies promote a holistic approach toward sustainable development and align institutional practices with environmental protection and climate action.

2.1.1 Environmental Norms in Educational Institutions

Environmental sustainability is supported and regulated by a variety of guidelines both internationally and nationally. These aim to promote sustainability practices, reduce environmental impact, and integrate sustainability practices in curriculums and operations. The norms related to the educational institution's environmental responsibility include, among other things, regulations related to the prevention of waste generation, waste sorting and recycling, handling and storage of hazardous substances, and hazardous waste. In addition, regulations on food hygiene, construction, and the protection of cultural heritage apply to the operation of schools.

International guidelines and frameworks can be said to be UNESCO`s Education for Sustainable Development Goals (ESDG) and the United Nations Sustainable Development Goals (SDGs). UNESCO promotes sustainable development as a central part of sustainable development education and as a crucial enabler of sustainable development. Their guidelines encourage the integration of sustainable development into teaching, learning, and school operations (UNESCO, n.d.). The United Nations regulations, especially SDG 4 (quality education) and SDG 13 (climate action) urge educational institutions to integrate the principles of sustainable development into their activities and practices as well as their curriculum. ESD is a key component of the SDGs, specifically mentioned in Goal 4,
it aims to guarantee inclusive and fair quality education and to advance lifelong learning opportunities for all. It underlines how education can contribute to sustainable development, the promotion of sustainable lifestyles, the protection of human rights, social responsibility, the promotion of the circular economy, and the greening of the economy and society.

The sustainable development work of all the countries of the world is guided by the global action program for sustainable development agreed upon at the UN in 2015, which is called Agenda 2030, it contains 17 goals that the countries should achieve together by 2030 (UNESCO, n.d.). Goal 4, and in particular, 4.7, Education for Sustainable Development and Global Citizenship, have already been mentioned. Thus, the target is to ensure that by 2030, all learners acquire the knowledge and skills needed to promote sustainable development, including education for sustainable lifestyles and consumption patterns; education for human rights, gender equality, a culture of peace and non-violence, appreciation of global citizenship, and respect for cultural diversity and its contribution to sustainable development. Empirical research on education for sustainable development (ESD) is limited and reveals gaps in educational practices and learner engagement (Kioupi & Voulvoulis, 2019). Education for sustainable development (ESD) and sustainable development (SD) are frequently interpreted in a reductionist approach, with environmental and economic perspectives evaluated individually rather than jointly.

Ferrer-Estévez and Chalmeta (2021) collected 160 articles published in the past 10 years to combine them and to propose a framework for educational institutions with guidance for the seamless integration of Sustainable Development Goals (SDGs) into their operational activities. Their research aims to guide institutions to incorporate the principles of sustainable development more effectively into various aspects of educational activities, from administration to teaching and community participation. Their proposed framework addresses the structural and procedural changes needed to incorporate the SDGs in a way that aligns with educational organizations' existing values, policies, and practices. Their work identifies critical areas such as administration, curriculum development, campus operations, and stakeholder engagement as points of integration, emphasizing adaptability to the various needs and challenges of educational institutions.

Ferrer-Estévez and Chalmeta (2021) proposed a broad structural framework that is an operational approach based on recent literature. However, Kumar et al. (2018) argue that for sustainable development efforts to make meaningful progress, they need refinement to practicality and objectivity without political influence to increase intellectual clarity. While Ferrer-Estévez and Chalmeta (2021) emphasize the comprehensive institutional integration of the SDGs, Kumar et al. (2018) point out that a focused, depoliticized approach is needed to ensure that sustainable development initiatives remain practical and universally applicable.

According to the UNESCO-commissioned Final Report on the UN Decade of Education for Sustainable Development Shaping the Education of Tomorrow: 2012, by the first decade of the twenty-first century, the majority of scientific articles on the theme of sustainability in higher education (HE) will address environmental management, ecological footprint, and making university campuses more environmentally friendly (Albareda-Tiana et al., 2018). To a lesser extent, sustainability has been included in university courses. Higher education institutions (HEIs) have made substantial attempts to address sustainability by reorienting learning and teaching processes around sustainability.

Universities and colleges have a forum to interact with the UN Sustainable Development Goals (SDGs) according to UNESCO's Higher Education Sustainability Initiative (HESI). UNESCO´s Sustainable Development Goal 4 (SDG 4) is education, which directly involves HEIs in both sustainability teaching and operational practices (Leal Filho et al., 2019). Higher education institutions have been integrating sustainable development (SD) into their systems, curricula, and local communities. Despite global commitments to sustainability, actual implementation in HEIs often lacks depth and stability, focusing more on isolated initiatives like recycling rather than systemic change (Shawe et al., 2019).

The UNECE Strategy for Education for Sustainable Development is mainly focused in Europe and Middle-Asian countries, whereas the ESDG and SDGs focus internationally, emphasizing the need to incorporate sustainable development topics into teaching and learning to achieve sustainable development. Despite technology developments that result in unsustainable activities, it is critical to consistently integrate sustainable development into university courses (Crespo et al., 2017). The COPERNICUS initiative and the University Charter for Sustainable Development emphasize universities' role in teaching environmental literacy and ethics. However, incorporating sustainable development into higher education has been sluggish and has presented several problems. Significant curriculum modifications are required, particularly in engineering degrees, to handle complex global concerns and include sustainable development topics.

Ferrer-Estévez & Chalmeta (2021) created a framework that serves several purposes: Integrate Education for Sustainable Development (ESD) seamlessly into curriculum design, provide hands-on teacher training, incorporate diverse stakeholder perspectives, guide institutions in adapting the Sustainable Development Goals (SDGs) to their context, assist institutions in integrating the SDGs into their activities, promote continuous improvement by viewing sustainability as a process, not just a goal. Furthermore, the framework promotes continuous improvement with a maturity model that examines the stakeholders' knowledge and evaluates programs, plans, and institutions, providing a comprehensive diagnosis compared to existing frameworks.

Thus, the research on educational institutions' environmental sustainability has been growing in past years, indicating that the subject is fascinating. Ferrer-Estévez and Chalmeta (2021), suggest more research and publications on the subject to deepen the understanding of the complex interplay between education and sustainable development, identify effective strategies for integrating sustainable development goals into educational institutions, and address the global challenges of sustainability comprehensively and inclusively.

The requirements for an EMS have been specified by international standards as ISO 14001. It helps organizations to improve environmental protection, enhance their efficiency in being able to reduce their impacts on the environment, and achieve environmental legislation-things which will be discussed in more detail in the following section on certification.

To sum up, mandatory sustainability regulations for educational institutions play a crucial role in reducing environmental impact. These regulations not only lead to long-term cost savings for institutions but also contribute to improving the learning environment. By enhancing energy efficiency and reducing waste, schools can lower operating costs and allocate resources to address various needs. Overall, these regulations are essential for promoting the well-being of the environment, economy, and society, ensuring a sustainable future for future generations.

2.1.2 Environmental Goals and Sustainability in Operational Culture

In addition to meeting the requirements of the norms and regulations, the environmentally responsible educational institution continuously strives to improve its operations by setting voluntary goals. They can be related, for example, to reducing the use of materials and the generation of waste, reducing energy consumption and greenhouse gas emissions, or replacing harmful materials and substances with harmless alternatives. The goals can be linked as part of the educational institution's sustainable development program. The realization of the goals is evaluated and new goals are set based on the results. These voluntary environmental goals are strongly linked to environmental responsibility in the operational culture, which is why they were addressed together.

Waste minimization and especially actively reducing food waste is one voluntary activity educational institutions can do. The European Waste Framework Directive prioritizes food waste avoidance owing to its environmental and economic consequences. The FAO estimates that one-third of worldwide food output (1.3 billion tons) is lost or wasted, which is enough to feed one in every nine undernourished people. Food waste is a major contributor to environmental difficulties, accounting for 22% of Europe's global warming potential and 7% of worldwide greenhouse gas emissions from home waste (Kaur et al., 2020; Pinto et al., 2018). Most food waste in developed countries comes at the final stages of the supply chain, thus having a substantial environmental impact (Derqui et al., 2020). Education and awareness campaigns in schools play a crucial role in promoting sustainability and influencing consumption patterns.

Studies have revealed surprising outcomes in school canteens, with large volumes of food being discarded, mostly as plate waste. This includes losses during preparation, cooking, and spoiling, with varied causes such as school schedule limitations and mismatched food quantities to students' demands (Derqui et al., 2020). Reducing food waste at schools has several benefits, including improved student nutrition, encouraging appropriate consumption habits, efficient resource use, lower greenhouse gas emissions, and financial savings. Studies have shown that raising awareness may help minimize plate waste (Derqui et al., 2020; Pinto et al., 2018).

Reducing food waste requires both technological solutions and changes in attitude, behavior, and culture. Interventions to prevent food waste frequently center on awareness campaigns, including students monitoring waste, pedagogic lunches, pre-ordering food, improving meal forecasts, giving variable quantities, and upgrading food quality. To decrease waste, innovative techniques such as reverse recess (recess before lunch) and tray-free dining have been proposed. Engaging both students and staff via straightforward communication and educational activities is crucial for the success of these interventions (Derqui et al., 2020). By adding educational posters and guerrilla campaigns the food waste was reduced by 15%, reducing meal, bread, and meat waste. However, staff engagement and training are needed for further success (Pinto et al., 2018). The campaign also improved recycling habits, highlighting responsibility and habit changes. Food waste in educational institutions is a complex issue influenced by both internal and external factors. There are gaps in research, such as under-researched drivers of waste, lack of comprehensive studies on food waste audits, and limited understanding of the effectiveness of waste reduction strategies (Kaur et al., 2020).

Everyone agrees that to reduce food waste successfully more awareness is needed and engaging the staff and students (Derqui et al., 2020; Kaur et al., 2020; Pinto et al., 2018). The “food waste ecosystems” (FEW) framework developed by Kaur et al. (2020) views food waste as an open system and gives a comprehensive idea of food waste. They see food waste as an open system that is affected by meal types, dining areas, portion sizes, and serving methods, this gives a comprehensive picture of food waste and offers other ideas to reduce food waste. Implementing a systematic monitoring system for food waste, adjusting portion sizes based on hunger levels and clear instructions on the amount of waste can help reduce waste. In addition, schools should adopt structured approaches, such as calculating efficiency indices, sorting food waste for reuse, and providing surplus food to third parties.

Reducing waste as a whole is important in educational institutions because it reduces the environmental load, saves natural resources, and reduces waste management costs. In addition, it offers students concrete examples of sustainable consumption, which promotes environmental responsibility not only during school days but also more broadly in their everyday lives.

Waste management is strongly linked to the circular economy concept. Recycling allows materials to be reused instead of reaching landfills or being burned. The circular economy goes beyond recycling. In a circular economy (CE), the linear economic system turns into a closed cycle, where resources are kept in the economy even when the product has reached the end of its useful life. While typical sustainability initiatives focus on waste management, CE stresses waste reduction and material recycling back into manufacturing (Hartley et al., 2020). The concept of circular economy is central to sustainable development, as its goal is to prolong the use of resources and close material cycles. The goal is to design and manufacture the products in such a way that they remain in use and circulation for as long as possible and they can be upcycled to create new value. Increasing circular economy competence is a key future challenge for education. Educational institutions also need to see themselves as part of the circular economy and develop operational models through which the circular economy is made a reality in the everyday life of educational institutions and partner networks.

However, achieving a full transition to a circular economy requires systemic changes in value chains and business models (Mendoza et al., 2019b). Businesses play a key role in this change, and innovations in business models are seen as key paths in the implementation of CE in higher education institutions as well. Higher education institutions have a socioeconomic impact and because they influence the formation of attitudes and values, higher education institutions are recognized as important players in sustainable development (Vergani, 2024).

The earlier studies on CE and education institutions have studied challenges (Vergani, 2024) and on-campus activities (Mendoza et al., 2019a), guiding the process of implementing circular economy (CE) business model innovations in an educational setting. Key challenges to CE implementation in institutions include financial constraints, stakeholder complexity, regional innovation challenges, collaboration and communication issues, attitudinal and cultural barriers, conceptual limitations, governance and planning difficulties, technical challenges, and priority and coordination issues (Vergani, 2024). There is a need for a comprehensive approach that addresses financial barriers, stakeholder coordination, innovation capacity, and cultural attitudes, all interconnected. To drive systemic change, we need integrated governance and cross-sector collaboration (Hartley et al., 2020). Existing policies frequently focus on waste treatment and sustainable procurement. Research on economy-wide policy combinations for resource efficiency is needed and a policy mix strategy to facilitate CE transition.

Mendoza et al. (2019a) presented a methodological framework for implementing circular economy methods in higher education institutions, with a special emphasis on on-campus activities. It uses an iterative process of planning, doing, verifying, and improving that is consistent with sustainable management frameworks. The framework consists of three basic steps: examining the present state of CE in the organization, informing stakeholders about the creation of the CE plan, and implementing the strategy according to the instructions provided. The study emphasizes the importance of applying CE principles to improve the resource efficiency and environmental sustainability of higher education institutions.

Several institutions of higher education around the world have begun to integrate CE principles into academic curricula, research projects, and collaborative ventures, consistent with the initiatives of the Ellen MacArthur Foundation (Mendoza et al., 2019a). Despite that, there is no information about the implementation of CE principles for the sustainable campus management of higher education institutions. Key challenges to implementing CE in higher education are lack of awareness, conservative administrative structures, insufficient policies, and time and funding constraints.

Mendoza et al. (2019) developed a BECE framework (Backcasting and Eco-design for the Circular Economy), which is a structured approach used in the research to guide the process of implementing circular economy (CE) business model innovations in a university setting. The framework consists of a background analysis that entails obtaining important information on current affairs, such as existing practices, obstacles, and prospects for sustainability and circular economy at the university. Exploration where semi-structured interviews are used in this step to look deeper into specific topics or issues raised during the background investigation. These interviews help gather information from university stakeholders. Assessments where participatory workshops are held to review obtained data, investigate viable solutions, and select intervention areas for implementing CE business model modifications. This step requires active participation and collaboration among stakeholders to discuss ideas and assess their practicality. Reflection is where a critical review of the workshop outcomes is conducted. This entails examining the suggested interventions to determine their possible impacts, practicality, and fit with the university's goals and values. Overall, the BECE framework provides a structured identification, evaluation, and prioritization of actions toward circular economy principles in the educational institution setting to fully serve the purpose of enhancement in sustainability performance and resource efficiency.

Higher education institutions play a key role in promoting economic growth and social well-being through knowledge creation, transfer, and community development. Despite their positive effects, higher education institutions are significant consumers of resources and sources of waste, which requires sustainable development management.

2.1.3 Degrowth and Regenerative Sustainability

The circular economy and degrowth economy are two economic concepts that foster sustainable development and may be integrated in a complementary manner. The circular economy focuses on the efficient use of materials and resources to reduce waste creation and extend product life cycles through a closed loop. A degrowth economy, on the other hand, promotes reducing economic activity to an environmentally sustainable level while prioritizing people's well-being over economic growth. It promotes simple and responsible consumerism, egalitarianism, and the reasonable use of natural resources.

In a degrowth economy, the aim is to build an economic model where well-being is not dependent on growth. The solutions of the moderate economy are based on the limits of the Earth's carrying capacity, social justice, and democracy. A moderate economy does not automatically mean economic contraction or zero growth, but its starting point is the question of where we need growth and what kind of growth should be limited. However, in a degrowth economy sustainability does not require continuous growth to support it. Degrowth economics and renewable sustainability are interlinked ideas; their base is a radical change from the conventional model of economic growth towards a system focused on ecological health, social welfare, and long-term sustainability.

The concept of degrowth economy developed as a response to the intertwined environmental, social, and economic crises, challenging the prevalent paradigm of economic growth. Degrowth advocates advocate for an equal reduction in output and consumption to improve human well-being and environmental sustainability (Schneider et al., 2010). This paradigm shift necessitates fundamental adjustments in value systems, governance frameworks, and economic models. Degrowth encompasses a decrease in GDP(Gross domestic product) to enhance the well-being of society and environmental health. It highlights the value of local, reciprocal services and the recognition of non-market activities. Sustainable degrowth entails selected growth in specific areas while emphasizing social equality, environmental protection, and democratic engagement. Finally, degrowth is a multidimensional notion that calls for a fundamental reconsideration of society’s values and priorities, encouraging conviviality.

Degenerative sustainability refers to practices that damage or weaken natural and social systems over time. In contrast, regenerative sustainability aims to restore, renew, and revitalize these systems, creating a positive and lasting impact. While degenerative approaches focus on minimizing damage, regenerative approaches actively improve the health and vitality of the environment and communities. This change creates deeper connections and more meaningful roles for individuals as agents of sustainable development.

Degrowth and regenerative sustainability are two of the main ones to achieve sustainability so that they do not enter the problem from different perspectives. The degrowth concept questions the paradigm of continuous economic growth and encourages reducing resource consumption and environmental burden. Regenerative development, on the other hand, focuses on revitalizing ecosystems and restoring nature, fighting to create conditions where nature can regenerate and develop. These offer complementary approaches to sustainability. The association's strategies for reducing economic growth and revitalizing the ecosystem can offer a more sustainable society that respects both people and the environment.

Regenerative sustainability (RS) goes beyond standard sustainability goals by aiming for continuous improvement of whole-system well-being and health. It is based on a holistic worldview that incorporates current scientific understandings, various methods of knowing, and both internal and external components of sustainability. RS brings human consciousness and behaviors in line with the principles of living systems (Gibbons, 2020). This raises sustainable development goals to regenerative development goals. The regenerative sustainability method is more exciting and motivating because it targets the fundamental causes of unsustainable behavior and is based on how healthy biological systems operate. Advancing regenerative sustainability calls for fundamental transformations, improved awareness and education, theoretical and practical progress, strong leadership, community empowerment, and the integration of spirituality.

Effective regeneration involves addressing all aspects of what makes a place healthy, whether it's a residential neighborhood, corporate campus, tiny property, or building. Starting with holistic knowledge, each entity serves as an entrance point into the larger system (Reed, 2007). Regardless of scale, every person or system may have a significant impact on the system's physical footprint. The footprint itself is not limited, as long as the people involved are aware of their actions.

Catalyzing a regenerative condition involves three critical steps: recognizing the dominant pattern of place, defining a design framework and standards, and establishing a process of conscious learning and involvement (Reed, 2007). This process is an ongoing spiral that continues long after the design leads and consultants leave. It is critical to continue making purposeful attempts to maintain old relationships while also discovering new, better, and more essential ones.

Reed (2007) emphasizes the importance of connecting with and renewing our environment so that we can mitigate its loss and degradation. The text argues that by focusing on creating vibrant and inspiring places, we can feel more connected and meaningful to both the natural and social worlds, acting in meaningful roles as co-creators. This strategy leads to more comprehensive and effective initiatives, increased happiness, and a strong sense of caring and gratitude. Reconnecting to a place and its traditions can help solve environmental and resource issues. This shift from sustainable design to restorative and regenerative design promotes greater participation and growth of both individuals and communities.

Voluntary initiatives that aim to reduce educational institutions' environmental footprint could include optimizing unused spaces. This would enable institutions to enhance resource efficiency and improve energy management. Educational institutions often consist of multiple units, making it challenging to assess overall energy consumption accurately (Gui et al., 2020). A significant portion of energy use is dedicated to heating and lighting, with higher energy demands typically observed in colder climates than regions closer to the equator (Sepanta, 2022).

Underutilized buildings usually have a higher energy consumption per space unit because the basic energy requirements, lighting, heating, and cooling, continue regardless of the level of use. This shows that optimizing the use of space can improve energy efficiency. Peaks in energy demand are closely related to utilization patterns (Gui et al., 2020). Spaces in frequent and continuous use generally had more efficient energy consumption per inhabitant compared to spaces used less frequently. Educational institutions can improve energy efficiency by designing spaces that better match usage patterns and by implementing scheduling practices that reduce energy use in underutilized areas.

The term green campus can be used for educational institutions that incorporate these voluntary environmental goals into their operations academy. These educational institutions actively integrate sustainable development practices into their operations. Green buildings offer environmental, economic, social, and reputational benefits by reducing energy use, lowering operating costs, improving indoor environments, and enhancing institutions' image (Richardson & Lynes, 2007). However, financial and organizational barriers block their implementation, with debates over initial costs and collaboration among designers, researchers, and facility managers. Green building projects in Higher educational institutions require strong leadership, clear sustainability targets, and effective collaboration among stakeholders, demonstrating significant investment and commitment to sustainability.

The research by Tiyarattanachai and Hollmann (2016) revealed no significant difference in respondents' demographics (i.e., gender, age, and study level). This finding supported the hypothesis that Green Campus University respondents were more happy with sustainability management and quality of life on their campus, independent of demographics. The study highlighted that gender has no substantial impact on environmental awareness. However, the study contradicted previous research, which indicated that demographic parameters such as gender, age, and degree of education affected environmental knowledge and attitude.

Atherton and Giurco (2011) developed sustainability strategies for climate change, transport, and paper use, identifying common issues such as resourcing, coordination, data availability, and community engagement. Significant human and financial resources are needed to implement these actions, leading UTS to appoint a sustainability manager and coordinator. Accurate data collection and ongoing monitoring are essential, with efforts now focusing on integrating data collection into systems efficiently. Engaging the staff and students is critical for the success of these strategies. Achieving long-term sustainability requires a cultural shift within the educational institution and needs continued commitment. Their strategic approach includes extensive study, planning, and stakeholder involvement, positioning it for future difficulties while ensuring that measures contribute to specified goals. Continuous review and improvement are required to respond to new possibilities and challenges, while also promoting resilience against resource depletion and carbon pricing through dynamic methods and a monitoring and assessment culture.

2.1.4 Environmental Sustainability in Procurement

Educational institutions can emphasize environmental sustainability in public procurement, by defining the minimum requirements, comparison criteria, or contract terms of the procurement target. A condition may be that the product has an environmental label. The environmental criteria for procurement can also be related to the use of renewable energy, energy efficiency, low-carbon quantity, material choices, reduction of waste quantities, and recycling of materials.

Sustainable public procurement (SPP) entails incorporating sustainability criteria into procurement procedures, so utilizing the purchasing power of public institutions to promote sustainable products and services (Witjes & Lozano, 2016). Research made by Brammer and Walker (2011)discussed the growing importance of sustainable procurement (SP) practices in both private and public sectors, focusing on environmental degradation, climate change, and social responsibility. The authors reviewed existing literature on SP in the public sector and analyzed over 280 organizations worldwide to assess SP practices. They identified four main influences on SP practices: perceived costs and benefits, familiarity with SP policies, availability of sustainably produced goods, and organizational incentives/pressures.

The research made by Pacheco-Blanco and Bastante-Ceca (2016) investigated the role of universities in promoting sustainable consumption through Green Public Procurement (GPP) initiatives, both internally and externally. Externally, the study analyzed how educational institutions project their "green" image, finding that a significant portion have implemented initiatives related to green procurement and have departments dedicated to environmental subjects. Internally, educational institutions tend to include environmental criteria in procurement contracts and organize awareness campaigns. Educational institutions play a key role in promoting sustainable consumption.

Barriers to implementing environmentally friendly public procurement are the difficulty in locating initiatives and inconsistent communication (Pacheco-Blanco & Basante-Ceca, 2016). Financial constraints, such as the higher costs of durable products, prevent adoption (Witjes & Lozano, 2016). However, management support, board support, and clear planning are important promoters. Educational institutions play a significant role in transitioning to sustainable practices.

2.1.5 Cooperation in the Local Community

Higher education institutions collaborate and are a part of local communities. Higher education institutions have a vital role in directing students, faculty, and other staff members and influencing the economic, social, and environmental aspects of their surrounding areas. Through international commitments, curricular integration, green campus initiatives, and policy formulation, they contribute to sustainability (Leal Filho et al., 2019). When teaching sustainable development, the education sector places a strong emphasis on critical thinking, flexibility, and real-world experiments. It is becoming more widely acknowledged that colleges should prepare their students to be change agents who can solve global issues and advance the SDGs in addition to providing them with an academic education.

There is a gap in the comprehensive integration of sustainability both on-campus and in community outreach. The study points out that there is a general neglect of activities and emphasizes the need for specific sustainability offices, institutional commitment, and supportive policies to avoid 'greenwashing' and make sustainability a core aspect of HEI operations (Shawe et al., 2019). The literature suggests that sustainable development cannot be achieved without collaboration involving various stakeholders especially higher education institutions which are crucial in pushing for regional and worldwide sustainability initiatives (Leal Filho et al., 2019). Limited resources, motivation problems, as well as poor coordination are barriers to effective local partnerships. Despite the challenges like poor waste management and inefficient energy utilization at local levels, further collaboration opportunities between universities and local communities are extensive.

Nevertheless, universities can improve the way they carry out their mandate of local sustainability initiatives by better advertising their sustainability efforts to their local communities. Local partnerships will be improved by concentrating on the topics that are of interest to both organizations. Community consultation should be given top priority by researchers as they design projects. To give support to local sustainability projects continually, they have to make their expertise more reachable to the general public. The development of such partnerships tends towards mutualistic outcomes, which will build mutual gains and create synergy in sustainable development at the community level, underlining the significance of local cooperation for each university and its communities.

2.2 Certification and Auditing in Educational Institutions

A comprehensive understanding of sustainability practices is essential to effectively assess the academic institution's environmental sustainability. This knowledge informs the auditing and certification processes, which contribute to sustainability actions in the institution. To promote sustainable development and environmental responsibility in educational environments, educational insitutions are increasingly utilizing certification. Certification provides a system that allows educational institutions to evaluate and improve their environmental protection efforts and report on their achievements. They also give external validation that the institution has achieved substantial progress toward environmental sustainability. Certification, in general, is a process by which someone obtains official documents, or an official document is provided for confirmation that something has occurred or was done.

ISO 14001 defines the elements of an environmental management system (EMS). ISO 14001 helps organizations to improve environmental protection, reduce their environmental impact, and maintain compliance with environmental legislation. ISO 14001 is part of the ISO 14000 series, which deals with the management of environmental issues. For educational institutions, the ISO 14001 standard can serve as an excellent reference framework for integrating environmental responsibility and sustainable development into school operations.

Educational institutions adopt ISO 14001 standards to implement effective environmental management systems, ensure compliance with environmental laws, and promote continuous improvement of sustainable development practices. As a whole, ISO 14001 offers schools a structured approach to developing environmental responsibility, which can promote sustainable development and improve the management of environmental issues. ISO 14000 standards guide educational institutions in environmental management. It provides practical guidance for educators on greening campuses and demonstrates how these standards can resolve issues in environmental education curricula and implementation. Environmental audits play a crucial role in legitimizing environmental studies programs and resolving interdisciplinary challenges in environmental education (Fisher, 2003). In auditing, a predetermined person visits the site to assess the program's compliance with applicable standards and practices, and its results are reported for certification audit purposes. Adopting ISO 14000 standards as a business tool to guide campus environmental management, offers benefits such as legitimacy, cost savings, due diligence, and improved marketing.

Sustainable development is a dynamic process that requires continuous development of goals and funding due to the constantly changing environment. Each organization must develop its competence to govern and make well-thought-out decisions (Von Oel-Reich, 2004). The environmental management system's systematic and structured approach can help address social and economic issues associated with sustainable development, fostering a common management system for continual improvements and sustainable development. Training is crucial for effective EMS implementation, influencing attitudes and behaviors among managers and employees (Sammalisto & Brorson, 2008). EMS training and communication are demanding tasks but essential for promoting sustainable practices beyond simple actions like reducing paper consumption. They identified that similar training methods can be applied in both educational and industrial settings. However, higher educational institutions might require more interactive training due to the nature of academic freedom and critical thinking.

The University of Gävle's use of Environmental Management Systems (EMS) has considerably enhanced environmental performance, awareness, and management. The university's dedication to ISO 14001 certification and emphasis on environmental issues has contributed to its success (Sammalisto & Brorson, 2008). The EMS team must present indirect environmental principles to lecturers and researchers, highlighting their potential long-term benefits. Training approaches, such as interactive discussions and seminars, may be tailored to each educational institution’s particular academic culture. The communication channels utilized in academia and industry have no major variation in EMS deployment. However, some people may not understand their link to the EMS or their contribution to sustainable development. The university's performance is dependent on its integration into the broader management system, which emphasizes ongoing training and communication to highlight EMS benefits. Although ISO standards offer a structured approach to environmental management, they may be time-consuming, Western-centric, and potentially conflict with educational funding priorities (Fisher, 2003). However, the benefits of ISO standards, including consistency, practical value, and standardization, outweigh these concerns, especially in fostering practical learning and implementing sustainability measures in educational institutions.

Bardati (2006) examined the significance of environmental audits in promoting sustainability at universities, emphasizing Bishop's University in Quebec, Canada. It follows the history of the campus environmental audit, from its origin as a student project to its incorporation into educational institutions’ operations. The study emphasized the importance of environmental audits in the broader framework of campus sustainability programs and the commitment of higher education institutions to environmental sustainability. The campus environmental audit was presented as a technique for raising environmental quality standards, shifting from eco-efficiency to sustainability, and encouraging active learning about sustainability. Student participation in auditing promotes transformational learning opportunities.

Menon and Suresh (2022) presented an assessment framework that can be used to assess environmental sustainability. This fuzzy logic method is used to create the conceptual model to evaluate the institution’s environmental sustainability level. The initial phase towards a sustainable campus is to incorporate environmentally conscious curricula. Menon and Suresh (2022) recognized several factors that drive sustainability initiatives in higher education (HE), including governmental directives, administrative leadership, institutional dedication, accreditation standards, and sustainability audits. Gomes et al. (2023) found that ISO 14001 certification, has demonstrated a commitment to sustainable development and continuous improvement in sustainability actions.

The campus environmental audit at Bishop's University has been an ongoing evaluation and recommendation-making activity, although it is not the main driver of sustainability. Greening the campus is frequently an extended, contentious, and tough process. Bardati (2006) identified barriers such as cost apprehension, fear of negative publicity, concern of potential legal difficulties, doubt about audit advantages, unwillingness to identify problems, and contentment with present environmental performance have to be carefully and strategically addressed.

To assist an organization in moving toward sustainability, people should recognize each step taken, and systemic measures, such as an environmental audit, should be assessed. Interpersonal interactions are also crucial in encouraging sustainability on campus (Bardati, 2006). Bishop's small size, residential style, and extensive extracurricular activities have been beneficial in carrying out the campus audit. Good relationships among university personnel allow more individuals to assume responsibility for the campus environment. Teachers have the unique opportunity to influence whole generations of students' development toward sustainability. Assisting students in evaluating their place in the world and discovering their connection to the environment and society can be both humbling and fulfilling. Bishop's campus environmental audit has catalyzed deeper inquiries and discoveries.

The fuzzy logic method, introduced by Menon and Suresh (2022) for assessing environmental sustainability can be used as a foundation for certification processes in educational institutions. Research in educational institutions’ environmental sustainability certification and auditing is minor. Even though, studies have demonstrated that sustainability audits and certifications drive continuous improvement in sustainable development in educational institutions and obliges them to continuously improve their sustainable practices in teaching, research, and extension activities for the benefit of the community (Gomes et al., 2023; Menon & Suresh, 2022).

3 Methodology

This paragraph contains the research methodology that is used in the thesis. The aim is to provide an improvement plan for the company's current environmental sustainability practices and offer a framework for evaluating vocational institutions' environmental sustainability practices along with the certification process and the audition to ensure continuous improvement. First, the research method is discussed and followed by the data-gathering procedure and data analysis. Lastly, this chapter discusses ethics.

3.1 Research Method

This thesis is qualitative research with the characteristics of quantitative aspects. Most outcomes are qualitative, but they may also be converted into quantitative data. The mixed method may be used as an umbrella term for the research technique, which examines educational institutions' environmentally sustainable development approaches using a case study method. The fundamental idea behind mixed methods studies is that by integrating both quantitative and qualitative approaches, researchers can achieve a more comprehensive understanding of research problems and complex phenomena than they could with either approach alone (Molina-Azorin, 2016). The research approach is seen as an extension of, rather than a substitute for, quantitative and qualitative approaches and the utilization of this approach aims to leverage the strengths of both methodologies complementing each other while mitigating the limitations inherent in a more traditional single approach.

3.2 Data Collection

A Finnish upper secondary vocational institution offering over 20 fields of study. Not all fields had the opportunity to participate in the self-assessment, and some fields were assessed together due to their location on the same campus. Almost all teachers and skill coaches from the fields of education participated in self-evaluations by the field of education and some of the heads of education. All six educational institution's management team members participated in the self-evaluation. In total, more than 170 people out of 280 in the educational institution participated in a self-assessment group. The goal was that each of the institution's personnel would have participated in the self-evaluation, but due to various reasons, this goal was not reached.

To define the improvement objects, first, the institution's current state must be assessed. The evaluation of the institutions' current state has been carried out in a self-assessment survey which is based on the criteria provided by the OKKA foundation; the company's management team and personnel took part in this review, with each evaluating the performance of their unit. The indicator evaluates how the educational institution implements environmental responsibility in its procurement and everyday operations and strives for carbon neutrality, circular economy, and sustainable economy. They can use an evaluation support slide provided by the OKKA foundation (see picture 1) as help when they review their unit's sustainability practices.

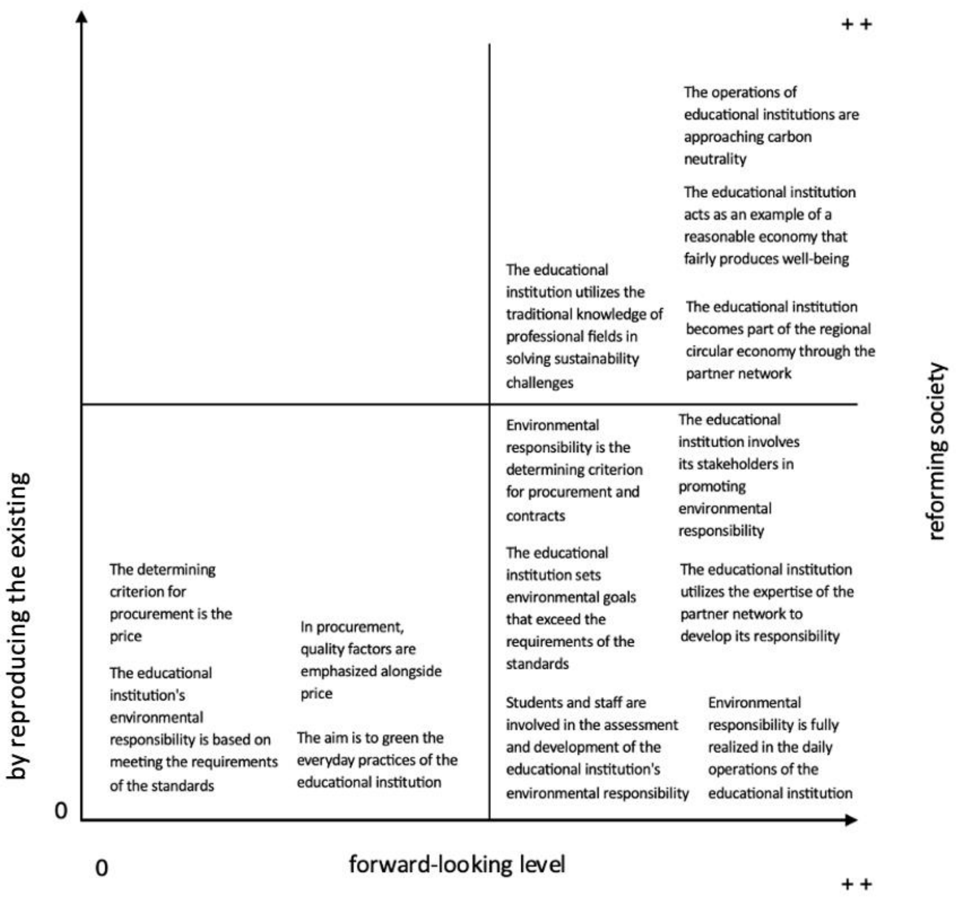

Figure 1. Evaluation support slide provided by OKKA Foundation.

The selected indicator offers three levels. At the level that reproduces the existing (left bottom corner of the matrix), the educational institution follows the regulations related to environmental matters and maintains practices and plans according to their requirements. In the day-to-day life of the educational institution, consideration of environmental issues can be seen in individual procedures such as waste sorting and energy-saving instructions.

On a forward-looking level (right bottom corner of the matrix), the educational institution includes staff and students in the evaluation of operational culture as well as the establishment of goals and strategies. Environmental responsibility and ethics are significant criteria for evaluating and selecting proposals for procurement and contracts.

Environmental responsibility is thoroughly integrated into the educational institution's everyday operations. The educational institution develops its environmental responsibility by using the knowledge of its partners and involving its stakeholders in the process.

At the level of reforming society (top right corner of the matrix), the educational institution is linked to the regional circular economy through the development of circular economy operational models in collaboration with its partners. The educational institution has created ways to assist its operations in attaining carbon neutrality.

The first level is considered the base, and the objective is that the educational institution will be at the final level in the future, reforming society. Based on their information, those who took part in the survey had to assess which level their unit falls into and justify this decision. They were instructed not to answer if they felt they did not know enough about their unit's sustainability functions they could also come back later to read other people's arguments and give their assessment. The answers were given as balls in the matrix. The number of respondents varied from unit to unit; some received more than others, and some did not feel they knew enough about their unit's sustainability issues. They could also give improvement ideas if they thought that they would be suited for the unit.

3.3 Analytical Process

The participants evaluated their unit's environmental sustainability using the corresponding table (see Appendix 1). Following the assessment, they were asked to provide a brief justification for their decisions. These answers were used as a starting point for the improvement suggestions, but because of the brevity of the answers, genericity, and partial lack of information, the main analysis process is executed by using scientific research and articles that are mainly based on environmental sustainability in educational institutions, mostly in higher educational institutions because vocational institutions are little or non-existent. The themes given in advance by OKKAS's frame served as the selection criteria and frame for the research material.

The findings revealed variability among the different units. While some units displayed advanced sustainable practices, others recognized room for development. This is because they are focused on various activities, which is why their sustainability problems and needs differ. Despite the heterogeneity, a general pattern emerged: answers within each unit were mostly consistent, showing a shared knowledge and assessment of their unit's environmental performance. This consistency implies that, despite variances across units, members of each unit typically agreed on their sustainability status. The absence of significant disparities within units suggests that unit members have a common attitude toward environmental sustainability. Overall, the survey provided valuable insights into the current state of environmental sustainability across different units.

Based on the self-assessment survey, the development areas are stapled together, and improvement objects are assessed for them. The certificate is used to help find problem areas between the current state and the set targets, when the areas for development are determined, a development plan is written up that describes the problem and areas of development that the organization must improve so that they correspond to the certificate and its required level. This allows the organization to develop its operations and finally get the certificate. For this certification, the company is audited by an external person appointed by the OKKA foundation to ensure continuous improvement and progress toward sustainability.

3.4 Ethics

It is important to follow ethical principles when doing a master’s thesis. The following ethical principles have been taken into account when doing the thesis: the participants' informed consent, anonymity, avoiding harm, and honesty in reporting. The researcher also ensures the safe handling of data and avoids conflicts of interest, keeping the research process transparent and fair.

4 Analysis and Research Result

This section presents the detailed analysis and research results of the study, addressing the core research questions that guided the investigation. The first research question was: How to assess the current state of environmental sustainability practices within the case vocational institution and evaluate their alignment with the set targets in the certificate? The question aimed to gain a full overview of the institution's existing sustainability measures and their success in satisfying the set parameters of the environmental certification it pursues.

4.1 Results from the Current State

With the guidance of the self-evaluation, we observe that the educational institution has already implemented several operational procedures following sustainable development. We can evaluate the institution’s current state of sustainability actions and compliance with the certificate, thus getting the answer to research question 1.

There is a difference between the units because they are focused on different activities, which is why their sustainability problems and needs differ. The results of the self-assessment are divided into three parts: those who felt that their unit was generally in the first level (at the bottom left on the matrix), those who felt that they were between levels one and two (bottom left and right of the matrix and those who were between level two and three bottom right and top right of the matrix.

Part 1: Low proactiveness and innovativeness 1a.

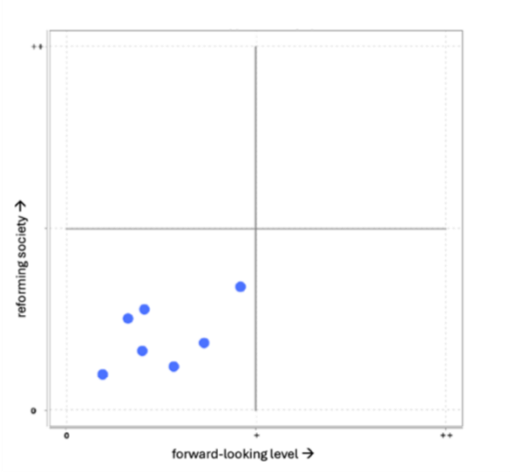

Figure 2. Self-assessment one.

Respondents in health and social services and technical maintenance units generally felt that their units were less proactive (forward-looking) and less innovative (reforming society). They felt their unit was less proactive (forward-looking) and less innovative (reforming society). This is visible in the plot (Figure 1), which has a tighter cluster of data points in the lower left quadrant. This was justified because the determinating factor is price, not the quality however, some positive factors were showing, like efficient utilization of facilities and local food and raising awareness of sustainability, which indicates that they are more sustainable than they think. Trays have been given up in dining, and an electric bicycle has been purchased for the educational institution. In addition, projects are implemented in which cycling is promoted, recycled materials are used, and beehives produce honey. Carbon neutrality has also been studied in learning environments by comparing physical spaces and online studies.

Part 2: Lower proactiveness and innovativeness 1b.

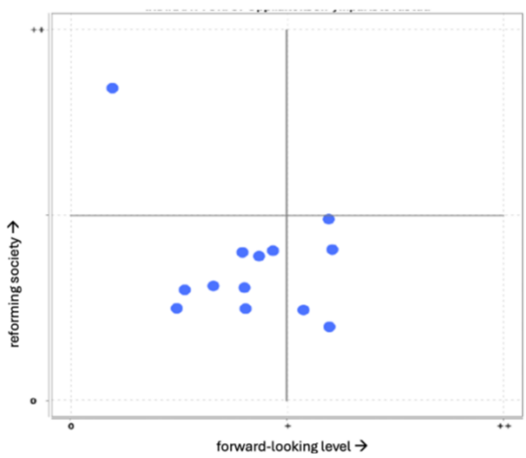

Figure 3. Self-assessment two.

Participants from various units, including mechanics, business, and technology. The plots (Figure 2) data points are primarily concentrated in the lower quadrants, indicating lower levels of both proactivity (forward-looking level) and innovativeness (reforming society), with a couple of outlier data points. Participants were from various fields, The justifications for answers were that they repair and maintain old and think carefully about new operations. Price and quality are dominant purchasing factors. However, there was also some ignorance of sustainable ways of doing things, like buying new goods, although some premises have to be used as surplus storage. Information should first be open before a line worker in our educational institution can answer this.

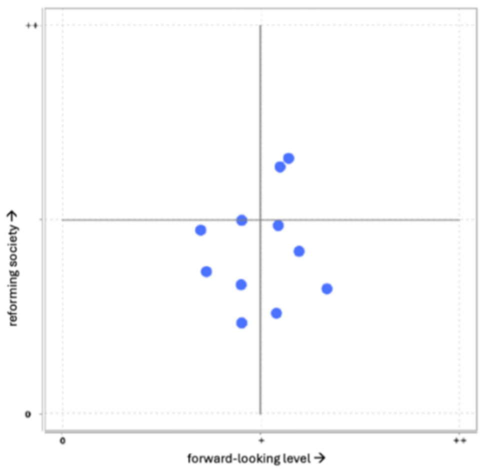

Figure 4. Self-assessment three.

Construction and engineering units plot (Figure 3) points are more spread out, with a majority still within the lower left quadrant but with some presence in the upper quadrants. This spread indicates mixed opinions about their sustainability practices, with some stating there are signs of stronger proactivity and innovation than others. Sustainability comes on behalf of the suppliers, and the waste is sorted at the sorting points in a commendable manner to their right places, from where they are transported and sorted for recycling and further processing by our own company or partner companies.

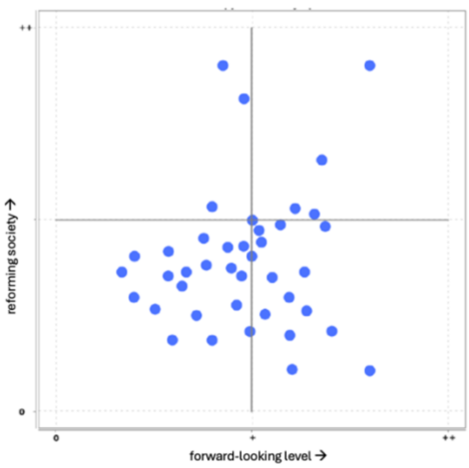

Figure 5. Self-assessment four.

The self-assessment plot four (Figure 4) is based on a larger group of participants from the support services unit, which resulted in a more dispersed spread of data points across all quadrants, though there is a notable concentration near the center. This suggests that there is more variation in answers in the group, and some do not feel like their unit is that forward-looking where, whereas some think they are already in the right position.

Justifications for these are price and quality are determining factors in procurement, and environmental factors are not considered. There is more talk about the environmental responsibility of educational institutions, and the matter is being brought up more and more all the time, which is a good thing. Practical actions for environmental issues are variable and highly dependent on the activity of individual persons. In the procurement of the educational institution, there would be an opportunity to invest more in the issue by emphasizing the role of environmental responsibility (note: a challenging issue in terms of procurement, even if there is room for will). The development of teamwork and the further increase of self-direction play an important role in the development of things in everyday life.

Part 3: higher proactiveness and innovativeness

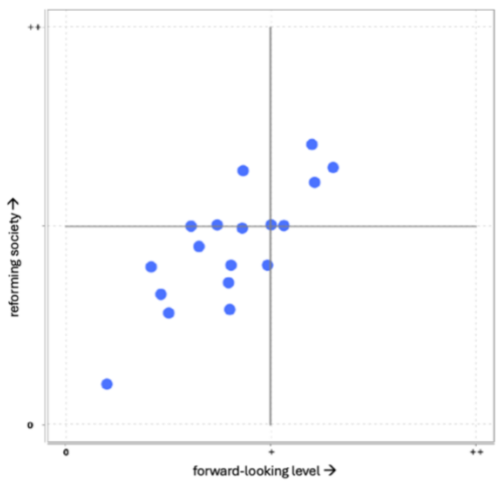

Figure 6. Self-assessment five.

This plot (Figure 5) represents responses from the common qualification units, displaying a moderate number of data points with a noticeable cluster in the lower right quadrant, showing higher proactivity but lower innovativeness overall. Some outlier data points show that some think their unit is more innovative than others who participated in the assessment. Comments said they can not affect the responsibility because it comes from the suppliers. Waste sorting and further processing are enabled. More knowledge about sustainability is needed, and there is doubt whether the educational institution can even be carbon neutral. The lighting of large spaces may take quite a lot of electricity, so this should be considered so that they are not used unnecessarily. The washing of trays was stopped a few years ago, as a result of which the service experience of the canteen deteriorated significantly.

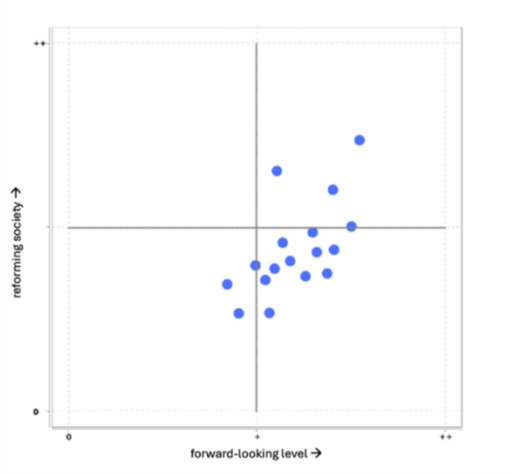

Figure 7. Self-assessment six.

This plot (Figure 6) represents data from the forestry and agriculture units. Here, there is a dense cluster of data points concentrated more on the bottom right quadrant, which means that the proactivity (forward-looking level) is approaching the desired end, but the innovativeness (reforming society) is still not at that level, a few rate themselves strongly even there, while a few also rate the proactivity (forward-looking level) weaker than most. The educational institution implements a basic level of environmental responsibility, which can be seen in everyday life as greening, a visible example of various circular economy recycling bins. Emphasis has been placed on using Finnish lake fish in student catering and waste sorting. The equipment should be renewed quickly. Old equipment was removed, and more modern equipment was replaced, but financing is a problem. In expensive industries, keeping equipment new is challenging and, in the world of educational institutions, even impossible. Environmental responsibility comes into play, especially through different guidelines, e.g., the guidelines and quality systems of companies in various academic fields. The educational institution strives to operate by sustainable development, but the operating methods are shaped by the actions of each individual – staff, students, and networks.

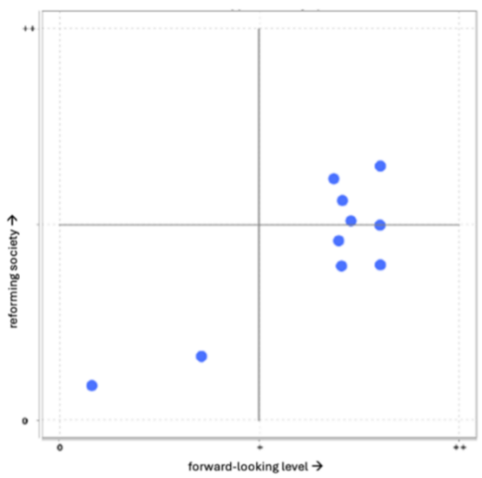

Figure 8. Self-assessment seven.

The analysis specifically addresses welfare-related units, where most data points cluster in the upper right quadrant (Figure 7), indicating high levels of both proactivity (forward-looking level) and innovation (reforming society). There are a few points in the lower left quadrant, indicating that some participants do not feel like their unit does a lot of sustainability actions. Justifications were that sustainability actions are developed forward, but they should also be made visible in everyday work. In procurement, money is often the deciding factor, although sustainable development and the circular economy have been promoted through projects such as theme days. The educational institution operates according to the required standards, and purchases are based on price, not quality.

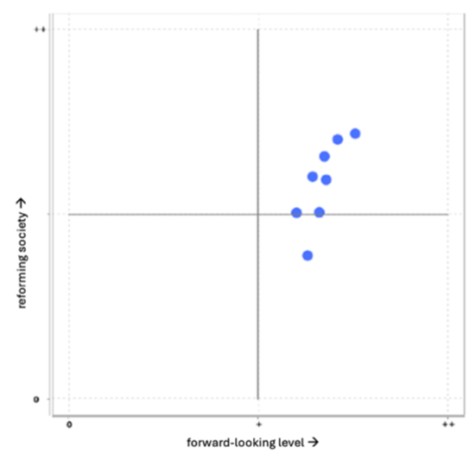

Figure 9. Self-assessment eight.

This analysis focuses specifically on the logistics sector, which demonstrates a smaller, tightly clustered group of data points, mostly in the upper-right quadrant of Figure 8, indicating a high level of both proactivity (forward-looking level) and innovativeness (reforming society). Some also did not feel their unit would be as forward-looking as others thought. This is justified by high-quality materials used to keep the premises clean, reducing food waste, equipment procurement, the environment, and the effort towards carbon-neutral teaching, sustainable development theme day is organized.

The general trend is increasing proactivity and innovation, but inconsistency is high in some circumstances. Some units struggle with proactivity or innovation; a few exceptions, like Figure 1, demonstrate that both remain a challenge. There are significant differences in sustainability practices and awareness across units, likely due to their diverse activities and functions. Some units have stronger, more proactive approaches, while others remain less engaged in forward-looking or innovative practices.

This enables us to better identify which require further support to encourage proactive and innovative approaches to sustainable development, as well as those who require only minor assistance. According to the self-assessment survey results and analysis, the educational institution appears to be at a transition point between the forward-looking level and reforming society level of its environmental sustainability, as outlined in the OKKA framework.

Most units display some proactivity by engaging staff and students in waste sorting, raising awareness of sustainability issues, and incorporating sustainability into procurement practices where feasible. Local food use and waste sorting are emphasized in many areas, suggesting a focus on integrating environmental responsibility into daily operations. There is a clear awareness of sustainability practices across units, though the level of proactivity varies significantly depending on the specific activities of each unit.

Efforts to include students and staff in sustainability activities, such as waste reduction campaigns and energy-saving initiatives, strongly align with Education for Sustainable Development (ESD) goals, particularly those outlined by UNESCO in SDG 4 and SDG 13. Furthermore, establishing voluntary environmental goals, such as reducing energy consumption and material use, reflects the institution's dedication to sustainability, aligning with ISO 14001, which encourages continuous improvement in environmental management.

4.1.1 Waste Reduction Initiatives

Waste reduction initiatives, such as sorting and recycling, are consistent with the European Waste Framework Directive and school initiatives to avoid food waste. However, challenges remain, such as the availability of sustainable products and cost considerations in procurement. Sustainable public procurement (SPP) methods, such as incorporating renewable energy and low-carbon materials into procurement decisions, reflect the institution's commitment.

All units emphasize in some way reducing food waste and increasing the sustainability of eating; an attempt was made to lessen the environmental load generated by washing dishes with water by keeping trays out of the dining area. Some also stressed their affinity for local cuisine and the days of Finnish lake fish. On the other hand, there were challenges because if students did not like the food, they left school and bought food from the store. This increases the waste since quantities have been determined in advance, how much food is needed, and if a lot of this is not consumed, we have to find a purpose for it from somewhere else or, in the worst-case scenario, throw it in the trash. This has also a negative impact on student nutrition.

As the studies proved, most of the food waste comes from plate waste in the final stages of the supply chain, and this can be reduced by education and awareness campaigns (Derqui et al., 2020). This has been attempted to be corrected in some cases by preferring foods students know to enjoy, hoping they will stay at the school to eat. There is also a positive impact on student nutrition, encouraging appropriate consumption habits, efficient resource use, lower greenhouse gas emissions, and financial savings (Derqui et al., 2020; Pinto et al., 2018).

Waste sorting has also increased across all the units, with efforts being made to invest in various units. There is a need to increase the possibilities for plastic recycling, where opportunities need to be expanded. On the other side, there are no recycling sorting points whatsoever in some cases, complicating recycling as well as sustainability aims.

4.1.2 Procurement

In procurement, the emphasis should be on high-quality and long-lasting products that are durable, can be repaired, and have spare parts available, although the budget may impose restrictions. This does not always come true because the price is the determining factor in most cases, and the sustainability factor is not considered. In certain units, like Figures 2,6,7, and 8, the value of quality in addition to price is acknowledged; nevertheless, in most cases, this causes problems when price defines the majority, and quality must be sacrificed. This was also noticed in the study by Witjes & Lozano (2016), which found that environmentally friendly procurement often faces barriers to adaptation because of financial constraints such as the higher costs of durable products. Also, barriers to implementing sustainable procurement are difficulty locating initiatives and inconsistent communication (Pacheco-Blanco & Basante-Ceca, 2016).

In addition, the aim is to optimize the use of facilities through durability and repairability, although there were differences, and in some cases, there were empty spaces in the facilities, and these would need to require renovation. Empty areas consume resources and raise expenses such as lighting, heating, and cleaning costs. Utilization of these spaces promotes the sustainability of the units because unused areas increase the school's carbon footprint without any tangible benefit. Especially in colder countries, empty spaces consume more energy because the heating, ventilation, and air conditioning (HVAC) systems need to compensate for lost heat usually generated by the daily activities of people in these buildings (Sepanta, 2022).

The educational institution aims to improve cost efficiency and operations by sustainable development in many ways. Small group and individual guidance will be enhanced; skilled staff members were considered to be in a key position to raise price awareness and product knowledge among the students, both domestic and imported from abroad. Increasing expertise and possibly an external assessment of sustainability could be necessary due to insufficient knowledge of sustainability among employees. An attempt will be made to get the full benefit of the teaching aids. Educational materials are reused whenever possible, and one unit is planning an urban garden to increase carbon neutrality.

Students and staff participate in the assessment and development of environmental responsibility. Efforts are being made to develop daily operating procedures to be more sustainable, and the goal is to achieve a paperless office. Increasing the use of electricity in driving, as well as holding company visits electronically, would reduce emissions from traffic. The goal is to promote the circular economy with the help of an exchange market, where you can import or export goods for free.

The educational institution has clear goals to achieve sustainable development and carbon neutrality, but there are still challenges in practical implementation. As concrete measures, the educational institution utilizes forest ownership to compensate for carbon dioxide emissions, collaborates between sectors in, for example, the reuse of metal sheets, and promotes the circular economy with the help of an exchange market.

Based on the evaluation support slide (Figure 1) and the answers given to the self-assessment survey, the educational institution is positioned between the forward-looking level and the reforming society level in most cases besides Figure three, which is still positioned in the forward-looking sector.

The justification is that the indicator offers three levels. These are 1: the level reproducing the existing, 2: the forward-looking level, and 3: reforming society. At the first level, the educational institution follows the regulations related to environmental matters and maintains practices and plans according to their requirements, which is seen from the self-assessment survey that is being conducted. In the day-to-day life of the educational institution, consideration of environmental issues can be seen in individual procedures such as waste sorting and energy-saving instructions, these are also seen from the answers that these procedures are being made and even trying to make steps forward.

On the second level, the educational institution includes staff and students in the evaluation of operational culture as well as the establishment of goals and strategies. Environmental responsibility and ethics are significant criteria for evaluating and selecting proposals for procurement and contracts. Environmental responsibility is thoroughly integrated into the educational institution's everyday operations. The educational institution develops its environmental responsibility by using the knowledge of its partners and involving its stakeholders in the process.

Justifications on forward-looking level characteristics are: The institution emphasizes the importance of environmental responsibility in procurement, and staff members are involved in evaluating and setting goals, which aligns with the forward-looking level's emphasis on integrating environmental responsibility into the operational culture. The institution is actively seeking to optimize its operations by promoting sustainability, reducing waste, and increasing efficiency in energy use, such as aiming for a paperless office and encouraging the circular economy. This reflects a commitment to improving current practices, which is a hallmark of the forward-looking level.

At the third level, the educational institution is linked to the regional circular economy through the development of circular economy operational models in collaboration with its partners. The educational institution has created ways to assist its operations in attaining carbon neutrality. This level of character that can be found in educational institutions' actions is working towards a more significant societal impact by promoting the circular economy through initiatives like an exchange market for goods and collaboration across sectors for resource reuse. This suggests a move towards becoming a part of the regional circular economy, which is a key feature of the reforming society level.

While several units demonstrate advanced practices, such as high-quality materials in procurement, efforts to reduce food waste, and even carbon-neutral teaching initiatives, there is generally less emphasis on innovative solutions that would place the institution fully within the reforming society level. Some units show signs of moving towards circular economy models by recycling materials and promoting the use of sustainable resources like local food, but others struggle with these concepts.

The institution is taking concrete steps towards carbon neutrality, including the use of forest ownership for carbon offsetting. This indicates progress towards the highest level of environmental responsibility, aiming to reform society by contributing to broader sustainability goals.

While the institution has taken important steps in promoting sustainability, there are still areas for improvement before it can fully transition to the reforming society level—especially the concentration of data points in the lower quadrants, which indicates lower proactivity and innovation. Some outliers reach higher levels, the institution is primarily at the forward-looking level but shows movement towards the reforming society level in certain areas.

In conclusion, the institution is primarily at the forward-looking level but shows significant elements of progress towards the reforming society level. While there are still challenges in practical implementation and full integration of sustainability practices, the efforts in promoting the circular economy, carbon neutrality, and the active involvement of stakeholders suggest that the institution is on the path to advancing to the reforming society level shortly. Developing more structured sustainability initiatives, adopting innovative solutions, and consistent application across all units will help the institution move forward.

4.1.3 Challenges to Success in the Certification Process

However, institutions may face challenges such as financial constraints, stakeholder complexity, and regional innovation barriers. This is also seen in some units of this institution. Implementing a formal framework, like the BECE (Backcasting and Eco-design for the Circular Economy), may assist in solving these challenges. The iterative process of planning, executing, verifying, and improving would allow for a more comprehensive integration of CE principles into the institution's activities. Participatory workshops and stakeholder evaluations could promote collaboration and generate innovative solutions for CE integrations (Mendoza et al. 2019a). Stakeholder participation is critical for promoting systemic change, and integrating both internal and external parties can strengthen the institution's ability to embrace sustainable practices.

The challenges facing local sustainability efforts, such as a lack of financial resources and enthusiasm, are widely recognized. Strengthening connections with local communities and aligning initiatives with common interests can improve the institution's sustainability effect and resource utilization. Institutions should boost their sustainability efforts by better publicizing these activities to local populations and raising knowledge about how they contribute to overall sustainability goals. This would strengthen local partnerships and develop a culture of sustainability throughout the school and its surrounding community.

5 Improvement Objects

The second research question was: What are the most prominent avenues for improvement in the case institution, and how can educational institutions utilize an environmental certification process as an opportunity for a renewal of sustainability practices? This question focused on identifying specific, practical actions that the institution could take to improve sustainable development. The goal was not only to locate areas for improvement but also to understand the possibilities of the certification process and how it can catalyze systematic changes in the educational institution. The first paragraph reviews the suggestions for improvement objects proposed by the participants, and the second paragraph reviews the suggestions for improvement given by the author based on previous scientific studies.

5.1 Participants´ suggestions for improvement

Participants could provide suggestions for improvement if they felt they had valuable ideas to contribute. These answers serve as a preliminary basis for identifying possible improvement goals and understanding sustainable development in each unit. However, due to the general nature, variability, and brevity of many answers, it became necessary to look for concrete improvement goals in the scientific literature. The thesis also incorporated these findings to provide a more comprehensive and evidence-based approach to the recommendations.

Recycling possibilities have already been increased, but there would also be a need for plastic recycling points. Recycling should be made more of a theme so that everyone participates in this. Raising the value and importance of community so that everyone is included and then everyone can function better. Choosing long-lasting and high-quality products, on the other hand, also renewing the purchasing instructions so that the decisive criterion is the environment and not quality. However, it is not wise to think only about environmental issues in new purchases without also taking quality into account. High-quality products are often more durable and long-lasting, which can lead to a more environmentally friendly result in the long run. The best approach is to balance environmental aspects and quality so that procurement is both ecologically sustainable and operationally efficient. Utilization of professionals was also named as a suggestion improvement because it was felt that one does not know how to judge what is responsible and sustainable and what is not. The educational institution must dare to be a pioneer, for example, in testing new operating forces before students move to working life so they are already familiar with them.

5.2 Improvement Suggestions

This chapter reviews improvement objects based on the scientific literature related to the topic and compares it to the current state of the educational institution. Although environmental sustainability is acknowledged, it has not been fully incorporated across all units, with substantial dependence on individual actions and inconsistent application of sustainable development practices. Some units report that sustainability practices depend on suppliers, limiting their ability to make a direct impact. The focus on waste sorting, sustainability in procurement, and food waste reduction is common, but some units need more support in increasing proactivity and innovating new methods to integrate sustainability deeply into their operations. A key area for improvement is ensuring that environmental responsibility is consistently prioritized across all units, with clear, structured actions rather than reliance on individual initiatives.

5.2.1 Procurement and Supply Chain Management

In procurement, the debate between price and quality is a common challenge, particularly when resources are limited. Currently, procurement is often driven by price, with environmental responsibility secondary. Environmental standards are usually included in procurement contracts by educational institutions, as are awareness campaigns. To make procurement methods more sustainable, institutions can choose suppliers who satisfy higher sustainability requirements, focus on environmentally friendly products, sustainable resources, and circular economy concepts, and integrate environmental sustainability into procurement decisions (Witjes & Lozano, 2016). The institution can shift towards prioritizing environmental criteria, especially by setting higher sustainability standards for suppliers. Procurement policies should explicitly emphasize eco-friendly products, sustainable resources, and circular economy principles (Pacheco-Blanco & Bastante-Ceca, 2016). Long-lasting products that may be fixed and maintained are also important in fostering sustainable consumption. Transitioning to environmentally aware procurement strategies would establish the institution as a leader in resource-efficient and sustainable operations.

Collaboration is critical in tackling sustainability issues, as many environmental problems rely on suppliers. It is critical to choose suppliers who adhere to desired sustainability policies and verify that the handling of goods, including disposal, meets regulatory criteria. To fulfill their sustainability goals, institutions should encourage participation from local communities, including students, staff, and external stakeholders. According to the standards, educational institutions play an important role in promoting local sustainability and equipping students to be change agents (Shawe et al., 2019). Thus, the literature identifies gaps in deeper collaboration as well as the risk of focusing on discrete projects, such as recycling, rather than taking a more comprehensive approach to sustainability. To overcome barriers such as limited motivation and poor coordination, ensure that community collaborations are well-coordinated and meet agreed goals.

5.2.2 Holistic Implementation Across the Divisions

Environmental sustainability is acknowledged as a crucial objective, but it has not been completely integrated into all operating divisions, with a substantial dependence on individual initiatives and inconsistent implementation of sustainable development practices. Several units report that their sustainability initiatives are substantially impacted by suppliers, limiting their ability to have a direct and consistent impact. While common practices like trash sorting, sustainable sourcing, and food waste reduction are in place, certain units require further assistance to become more proactive and imaginative in incorporating sustainability into their operations. One crucial improvement area is to ensure that environmental responsibility is emphasized across all units through organized and coordinated measures rather than relying on isolated, individual-driven initiatives.

5.2.3 Increasing Efficiency of the Space Usage

Another key part of sustainability is the efficient utilization of school spaces. Poor space usage, such as vacant or underutilized rooms, wastes resources like heating, electricity, and cleaning. Even when unoccupied, areas incur maintenance, heating, and lighting costs (Gui et al., 2020). Furthermore, unoccupied areas provide security and maintenance difficulties since they are more prone to vandalism and need significant resources to reintegrate into regular operations after lengthy periods of inactivity. Unused areas can create a bad impression of the institution's efficiency, which can have an impact on both student and staff morale and motivation (Richardson & Lynes, 2007). More effective use of these spaces, such as repurposing them for community events or extracurricular activities, would unlock their full potential and benefit both the school and the community. Furthermore, from a sustainability aspect, maintaining unused spaces unnecessarily increases the institution’s carbon footprint.

5.2.4 Changing Norms and Voluntary Actions

Norms and voluntary behaviors have an important role in fostering sustainability, especially in the context of the circular economy and degrowth models. Although these principles may appear more theoretical, it is critical to incorporate them into real operations. For example, Kaur et al.'s (2020) "food waste ecosystems" (FEW) paradigm depicts food waste as an open system influenced by a variety of elements, including meal kinds, portion sizes, eating spaces, and serving techniques. This comprehensive approach gives a better knowledge of the problem and suggestions for decreasing food waste. Institutions might solve this by implementing systematic food waste monitoring systems, adjusting serving sizes to meet real demand, and providing clear trash disposal instructions. Additionally, schools could benefit from calculating efficiency indices, sorting food waste for reuse, and distributing surplus food to third parties, enhancing food waste management practices.

5.2.5 Building Awareness

To overcome these difficulties, both staff and students must be more proactive in implementing sustainable practices. While there are pockets of awareness, the institution might benefit from more structured and visible sustainability goals integrated into everyday activities, such as energy management, recycling, and food waste reduction. Regular sustainability workshops, as well as enhanced student participation in reviewing environmental practices, have the potential to generate more involvement and creativity (Mendoza et al., 2019a). Although certain units display creativity, the entire organization should invest in more new ideas. This might involve working with local partners to develop circular economy models, such as reusing waste materials for educational initiatives. Furthermore, sustainability-themed initiatives may motivate students and staff to generate new solutions for lowering the institution's carbon impact. Cross-departmental initiatives that promote carbon neutrality and sustainable operational practices would also be beneficial.

Expanding sustainability communication and engagement in the institution to address the lack of knowledge in certain units by increasing internal communication about the institution’s sustainability goals and practices. Regular updates and newsletters could help increase awareness and provide practical steps for all departments to contribute to sustainability. Platforms for staff and students to share sustainability success stories and ideas would foster a more collaborative environment.

Addressing the variability between units is also a key step that institutions could make to make sure to achieve a unified line and complete sustainability measures that extend throughout the entire organization. Establishing a standardized framework to ensure that all units adhere to basic sustainability principles will be essential. Less proactive units could benefit from mentorship programs or learning from more innovative departments. Aligning leadership and strategy is also a part of the variability concern. Sustainability targets should be integrated into institutional strategy and long-term goals, ensuring that sustainability is not dependent on isolated actions or individual initiatives but embedded within the institution’s overall mission.

5.2.6 Participatory Processes to Learn and Take Action

Enhancing proactivity in everyday operations. Although there is an understanding of sustainability in some units, the proactive involvement of both staff and students in sustainability practices needs to be enhanced. This could include regular sustainability workshops and greater student involvement in evaluating the institution’s environmental practices. Incorporate more visible and structured sustainability goals into daily routines, such as energy consumption, recycling, and food waste management.

Fostering innovation and circular economy models. Although there is shown some innovation in some units, the institution as a whole should invest in developing innovative solutions, such as collaborating with local partners to create circular economy models like repurposing waste materials for educational projects (Hartley et al., 2020). Implementing sustainability-themed projects to encourage students and staff to develop new ideas for reducing the institution’s carbon footprint and resource consumption. Encourage cross-departmental initiatives that promote carbon neutrality and sustainable operational practices.

The growing emphasis on the circular economy in higher education indicates that educational institutions may play a critical role in furthering CE through curriculum creation and on-campus activities (Mendoza et al., 2019b). Educational institutions can increase knowledge and competency in CE, ensuring that students participate in this transforming process. While the institution has made some efforts in this regard, there is still an opportunity for more systematic integration of CE principles into operational and pedagogical frameworks. Business model improvements for CE might help to boost the institution's sustainability policies (Vergani, 2024). This might involve supporting CE principles in procurement, campus infrastructure, and curriculum creation, setting the groundwork for systemic change, and making the institution more resource-efficient.

5.2.7 Going Beyond Business as Usual

The concept of a degrowth economy is relevant to institutions' goals of reducing consumption and prioritizing well-being over economic growth. Degrowth aims to reduce economic production while maintaining social well-being and environmental sustainability (Schneider et al., 2010). These challenge traditional growth models, emphasizing responsible consumerism and environmental activities. Institutions are already making attempts to decrease their environmental impact, notably through energy efficiency and waste reduction; these are the first steps toward implementing degrowth principles. This strategy challenges traditional growth-oriented economic paradigms, encouraging a change toward more sustainable and ethical consumer habits. These processes can be advanced even further with the assistance of regenerative sustainability.

Regenerative sustainability (RS) offers a complementary perspective by going beyond traditional sustainability goals and aiming to restore and renew ecosystems and communities rather than merely minimizing harm. Gibbons (2020) and Reed (2007) emphasize that RS creates a lasting positive impact on natural and social systems. Institutions could evolve waste management and energy efficiency initiatives further by incorporating RS principles, such as community empowerment and solutions that actively improve environmental and community health. By adopting these practices, institutions could move from simply reducing waste and energy consumption to regenerating local ecosystems and enhancing the well-being of surrounding communities.

5.3 Utilizing the Environmental Certification Process for Renewal

The certification process serves as a structured framework for institutions to conduct a thorough evaluation of their sustainability practices. This self-assessment process allows institutions to critically examine both areas of strength and those requiring improvement, thereby creating a roadmap for environmental enhancement. By systematically reviewing their current sustainability initiatives, institutions can identify gaps and set realistic goals for improvement (Gomes et al., 2023). This reflective process is crucial for establishing a solid foundation on which future sustainability efforts can be built, ensuring that institutions are not only compliant with certification standards but are also proactive in their environmental responsibilities (Sammalisto & Brorson, 2008).

A critical aspect of the certification process is the opportunity it offers for institutions to formalize their sustainability efforts. Institutions may turn their sustainability goals into tangible initiatives by creating a thorough strategic sustainability plan that meets the OKKA certification standards. Strategy should contain measurable objectives, clear timelines, and assigned teams or specific individuals responsible for the execution of particular sustainability initiatives. Formalization would ensure accountability and allow for the orderly implementation of sustainability practices. Incorporating sustainability goals within the operational framework of the institution provides the drive toward sustainability is not just aspirational but one founded on concrete and implementable strategies.

External auditing, as a part of the certification process, provides institutions with a valuable opportunity to identify gaps in their sustainability practices. The external audit serves not only as a compliance mechanism but also as a diagnostic tool, offering constructive feedback on how institutions can enhance their sustainability efforts. Engaging with external auditors allows institutions to benefit from an objective assessment of their practices and provides a roadmap for improvement. The certification process should not be viewed as a one-time goal but as a continuous journey of improvement. Regular reviews and audits ensure that institutions remain responsive to new sustainability challenges and are positioned to achieve long-term progress in their environmental objectives (Bardati, 2006; Menon & Suresh, 2022).

The accomplishment t of certification offers institutions a significant opportunity to publicly demonstrate their commitment to sustainability. This visible commitment can enhance the institution's reputation, positioning it as a leader in sustainability within the educational sector. Certification provides a platform for meaningful engagement with a broad range of stakeholders, including students, staff, suppliers, and community partners. Through this engagement, institutions can foster a shared sense of responsibility for sustainability, creating a collaborative environment in which all stakeholders contribute to the institution’s sustainability goals. In this way, certification not only strengthens the institution’s internal sustainability practices but also promotes broader societal engagement with environmental issues (Bardati, 2006; Gomes et al., 2023).

The certification process should be a catalyst for promoting innovation and collaboration within institutions. By using certification goals as a framework, institutions can encourage cross-departmental collaboration and the development of innovative solutions that extend beyond mere compliance with sustainability standards. Certification can inspire a range of initiatives, including research projects related to sustainability, partnerships with local businesses, and student-led environmental campaigns.

In this context, certification serves not only as a compliance mechanism but as a driver of societal change, pushing departments and individuals within the institution to think creatively about how they can contribute to broader environmental reforms. By aligning institutional goals with societal needs, the certification process can serve as a tool for promoting innovative and transformative approaches to sustainability (Menon & Suresh, 2022; Sammalisto & Brorson, 2008).

In conclusion, the certification process offers institutions a comprehensive framework for integrating sustainability into all parts of their operations. From procurement practices to daily routines, the actionable measures provided by the certification process enable institutions to systematically address their environmental responsibilities. Through self-assessment, strategic planning, external auditing, and stakeholder engagement, the nature of sustainability can, therefore, be institutionalized to ensure continuous progress toward the environmental goals of institutions. Furthermore, through innovation and collaboration, the certification process can also help higher education institutions play a transformative role in solving some of the big challenges facing society. Thus, a certificate isn't just a statement of compliance but a strategic means to advance long-term sustainability and social reform.

6 Discussion

Environmental issues and sustainability themes have become important to the modern world as we struggle with climate change. Additionally, EU directives and the Finnish state are pushing for the sustainability of companies and institutions. As a result, educational institutions must invest in sustainability so that common goals can be met without depleting natural resources from future generations. This study was conducted as a resource for one Finnish vocational school striving for the OKKA Foundation's environmental certificate.

6.1 Managerial Implications

The study assessed the current state of environmental sustainability practices within the vocational institution, focusing on their alignment with OKKA Foundation’s environmental certification targets. First, the study aimed to evaluate the current state of these practices and their alignment with certification requirements. Based on self-assessments across various units, the institution demonstrates progress in promoting sustainability, though variations between units in terms of proactivity and innovation persist. While most units have integrated basic sustainability measures, such as waste sorting and sustainable procurement, challenges, such as budget constraints and procurement priorities, continue to hinder their effectiveness. For example, procurement processes often prioritize cost over environmental responsibility, limiting the adoption of sustainable products. These barriers align with findings from Mendoza et al. (2019) and Witjes & Lozano (2016).

Second, the study aimed to identify actionable measures for improvement and explore how the environmental certification process could serve as an opportunity to renew sustainability practices. A critical challenge identified was the ongoing issue of food waste. Despite existing initiatives, limited student participation sometimes exacerbates waste levels. This reflects a broader need for systemic efforts to integrate sustainability into daily institutional practices and reduce unit disparities. Increasing awareness among stakeholders has been shown to minimize waste effectively (Derqui et al., 2020; Pinto et al., 2018). Addressing such challenges requires more cohesive strategies rather than relying on individual efforts.

Opportunities for improvement include reducing energy consumption, promoting the circular economy, and organizing sustainability-related events, which collectively signal a positive trajectory toward institutional commitment. A key recommendation is strengthening procurement strategies by pursuing cost-effective, sustainable solutions, such as group purchasing programs or partnerships for environmentally friendly items. This approach balances affordability with environmental responsibility and better aligns procurement practices with sustainability goals. Such institutional commitment is critical to embedding sustainability into core operations and avoiding “greenwashing,” as emphasized by Shawe et al. (2019).

Furthermore, fostering greater community participation is essential for achieving sustainability goals. Engaging all stakeholders, including staff and students, through targeted training, communication, and campaigns can bridge knowledge gaps and inspire collective action. As Leal Filho et al. (2019) emphasize, collaboration with local communities is vital for enhancing sustainability practices. Additionally, improved communication strategies—such as regular seminars and sustainability reports—can foster a collaborative workplace and encourage proactive behaviors.

Lastly, sustainability should be approached as an evolving process requiring continuous adaptation to address emerging challenges and opportunities. By implementing these recommendations, the institution can make more significant progress toward environmental objectives while aligning with the goals of the OKKA certification.

6.2 Theoretical Implications

The study provides four main contributions. First, it highlights how the certification process and its tools can be used to provide transparency about an educational institution’s current sustainability status, serving as a foundation for further development. Second, the study reveals the limitations of the certification process in providing actionable and measurable future improvement objectives. Third, the study underscores the necessity of a more coordinated approach to sustainability across different units within the institution. Lastly, the study emphasizes the continuous nature of sustainability and the importance of external support in achieving sustainability objectives.

The study highlights the potential of the certification process and its associated tools to provide transparency regarding an educational institution’s sustainability status. This transparency is essential for identifying strengths and areas for improvement and establishing a reliable foundation for continued development. Environmental audits like those at Bishop’s University (Bardati, 2006) demonstrate how institutions can systematically assess and address sustainability challenges. As demonstrated by ISO 14001 standards, such frameworks offer legitimacy and structured approaches for enhancing educational and environmental responsibility (Sammalisto & Brorson, 2008; Fisher, 2003). While the OKKA framework offers a structured approach, its straightforward and monotonous nature can sometimes lead to inconsistent self-assessment results. These discrepancies often arise from individual variations in understanding and subjective interpretations, risking overestimation or underestimation of actual progress. Therefore, the study underscores the importance of complementing self-assessments with objective, data-driven evaluations to achieve a more accurate and comprehensive picture of institutional sustainability.

Second, the study reveals the limitations of the certification process in providing actionable and measurable future improvement objects. Institutional goals, though well-meaning, are often too general, which can hinder effective implementation and progress tracking. Tailoring sustainability strategies to the specific needs of each unit while maintaining overarching institutional goals is key to achieving meaningful progress. The academic literature gives useful insights on how institutions might put practical measures in place, such as waste reduction methods, promoting awareness among staff and students, and encouraging inclusive involvement. Research by Sammalisto and Brorson (2008) shows that these techniques produce more successful outcomes in sustainability initiatives, demonstrating the importance of context-specific approaches in enhancing overall sustainability efforts. Furthermore, institutional goals must be specific and adaptable to unit-level challenges, aligning with the need for systematic and structured frameworks like those proposed by ISO 14000 standards (Menon & Suresh, 2022). Research also underscores the value of integrating audits and certifications to encourage continuous development in sustainability practices (Gomes et al., 2023).

Third, the study underscores the necessity of a more coordinated approach to sustainability across different units within the institution. Significant differences in sustainability knowledge and goals between divisions point to the need for cross-unit collaboration, such as information exchange, seminars, and mentoring programs (Sammalisto & Brorson, 2008). These initiatives can foster a shared sense of responsibility and ensure that sustainability is embraced collectively rather than confined to a small group. This is also connected to the findings that Bardati (2006) made, where interpersonal interactions are essential for fostering accountability and collaboration in campus-wide sustainability initiatives. Furthermore, the study acknowledges the need for tailoring sustainability strategies to each unit based on their challenges in sustainability.

Lastly, the study emphasizes the continuous nature of sustainability and the importance of external support in achieving sustainability objectives. While internal efforts are crucial, external factors such as supplier choices and cost constraints may present obstacles. Environmental sustainability requires ongoing adaptation, incorporating external expertise and evolving standards, as was highlighted in the study made by Sammalisto & Brorson (2008). The study draws attention to the role of external expertise and collaborations in advancing sustainability goals, highlighting the significance of making effective use of available resources while remaining committed to sustainability.

Importantly, it concludes that the certification process, though valuable, should not be viewed as a one-time achievement but as part of an ongoing commitment to sustainable development. The institution must continue striving for improvement and adapt its sustainability strategies in response to evolving challenges, as supported by Menon and Suresh (2022).

7 Conclusion

This study has explored the environmental sustainability practices of a Finnish vocational institution, examining their alignment with the OKKA Foundation's certification targets. The findings highlight both the progress made and the challenges faced in achieving sustainability goals. Based on these insights, several avenues for improvement have been identified, offering valuable recommendations for the institution to renew and strengthen its sustainability efforts.

The certification process provides a comprehensive framework for institutions to incorporate sustainability into all aspects of their operations. Its practical elements, from procurement practices to everyday routines, allow institutions to address their environmental obligations methodically. Institutions may institutionalize sustainability and assure continual progress toward their environmental goals by conducting self-assessments, strategic planning, external audits, and engaging stakeholders. Furthermore, by encouraging innovation and collaboration, the certification process enables institutions to take on transformational roles in tackling wider social concerns.

7.1 Limitations and Future Recommendations

Although this study provides useful information on the present state of the educational institution's environmental responsibility and opportunities for improvement, it does have certain limitations that should be considered when interpreting the findings. This study is based on a single case study about a Finnish vocational institution, and therefore, the generalizability to other educational institutions may not work properly. Different institutions may have different structures, priorities, and resources, influencing the applicability of these conclusions elsewhere. In the future, it would be recommended to do a multiple case study to give a more comprehensive overview of educational institutions' environmental sustainability.

The participants' short answers could have been supplemented, and a survey could have been added to the study to obtain a more diverse picture of the current situation and suggestions for improvement.

This study focuses only on environmental sustainability and ignores the economic and social aspects. While environmental practices are crucial, broader dimensions of sustainability should be integrated into future assessments and research of the tripod of sustainability, considering two other dimensions—economic and social.

Some future possibilities for further research could be, for example, the role of students in the environmental sustainability of educational institutions. The research could focus on how the active participation and role of students affect the school's environmental sustainability. This could include student initiatives, projects, or campaigns that promote sustainable practices in the school.

Another one could be the impact of digitalization on environmental sustainability, Especially now the using technology devices has increased in schools. The study could explore how digital tools and technologies can support environmental sustainability in schools. This could include the impact of distance education on the environmental load or the implementation of technological solutions such as energy management systems.

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Appendices

Appendix 1. Self-assessment base matrix