Impact Accounting at Corticeira Amorim: the example of CO2 emissions as a key environmental indicator

Jeremias de Biasi

Dissertation written under the supervision of Professor Nuno Moreira da Cruz with the collaboration of industry expert Paulo Alves

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Abstract

The dissertation " Impact Accounting at Corticeira Amorim: the example of CO2 emissions as a key environmental indicator" by Jeremias de Biasi explores the incorporation of environmental indicators, specifically CO2 emissions, into Corticeira Amorim's operations.

Also, the study focuses on CO2 measurement, transparent reporting, and the monetization of emissions for impact accounting. It highlights Corticeira Amorim's efforts in transparent sustainability reporting and its commitment to sustainable practices. Moreover, an overview of best practices from other industries was observed and considered for the comparison of the analysed company. The dissertation also discusses challenges in implementing impact accounting and suggests future directions.

In order to establish a scientific foundation, the literature review primarily focuses on scholarly works and Harvard Business School articles, who are the frontrunners in the impact-weighted accounting field. The analysis includes five interviews with industry experts and employees of the observed company.

Key findings reveal a trend of companies, especially startups and consultancies, providing services to measure and improve CO2-equivalent emissions. Although progress in impact accounting is evident, various challenges indicate it is still an emerging concept. The insights from this dissertation contribute to evolving impact accounting towards a more sustainable form of capitalism.

Key words: Impact Accounting, environmental indicator, CO2 emissions, responsible business, sustainability reporting.

Abstrato

A dissertação "Impact Accounting at Corticeira Amorim: the example of CO2 emissions as a key environmental indicator", de Jeremias de Biasi, explora a incorporação de indicadores ambientais, nomeadamente as emissões de CO2, nas operações da Corticeira Amorim.

O estudo centra-se na medição do CO2, na transparência dos relatórios e na monetização das emissões para a contabilização do impacto. O estudo destaca os esforços da Corticeira Amorim em matéria de transparência dos relatórios de sustentabilidade e o seu compromisso com práticas sustentáveis. Além disso, uma visão geral das melhores práticas de outras indústrias foi observada e considerada para a comparação da empresa analisada. A dissertação também discute os desafios na implementação da contabilidade de impacto e sugere direções futuras.

A fim de estabelecer uma base científica, a revisão da literatura centra-se principalmente em trabalhos académicos e artigos da Harvard Business School, que são os pioneiros no campo da contabilidade ponderada pelo impacto.

A análise inclui cinco entrevistas com peritos do sector e colaboradores da empresa observada. As principais conclusões revelam uma tendência de empresas, especialmente startups e consultoras, em prestar serviços para medir e melhorar as emissões equivalentes de CO2. Embora o progresso na contabilidade de impacto seja evidente, vários desafios indicam que se trata ainda de um conceito emergente. Os conhecimentos adquiridos nesta dissertação contribuem para a evolução da contabilidade de impacto no sentido de uma forma mais sustentável de capitalismo.

Palavras-chave: Contabilidade de Impacto, indicador ambiental, emissões de CO2, negócios responsáveis, relatórios de sustentabilidade.

Content

1 Introduction

> *„Our current system encourages decisions that are based on how to make as much money as possible with the lowest level of risk. We need to shift to a system that encourages making as much money as possible but in a way that is consistent with achieving the highest impact and the lowest level of risk." (Ronald Cohen)*

This powerful quote by one of the most famous drivers for responsible business and particularly impact accounting clearly shows the current state of businesses and its focus. Impact accounting encompasses a range of techniques and approaches regarding how to measure, disclose, and evaluate consequences arising from the activities of corporations to environmental, social and economic dimensions. It captures the beneficial as well as the negative impact that companies cause. Unlike conventional financial accounting, this methodology extends its scope to incorporate non-financial metrics that reflect the broader influence of an organization.

In order to deliver a practical based approach, this dissertation explores the incorporation of environmental indicators, specifically CO2 emissions, into the financial accounts of companies. Using Corticeira Amorim as an example leads to the question on how to deal with operations that have a negative carbon footprint, which is one of the core characteristics in the cork industry.

Also, the study focuses on ways of CO2 measurement, transparent reporting, and potential monetization models for impact accounting. Furthermore, it highlights Corticeira Amorim's efforts in transparent sustainability reporting and its commitment to sustainable practices. Since impact accounting is still a rudimentary concept, this dissertation also highlights current challenges for the implementation and suggests actions that could help overcoming these issues.

In order to establish a scientific foundation, the literature review primarily focuses on scholarly works and Harvard Business School articles, who are the frontrunners in the impact-weighted accounting field. Complemented with several expert interviews of the industry, this study aims to provide an example of how CO2 emissions could be measured, monetized and implemented into the accounts of a company.

2 Responsible Business and CSR

2.1 Introduction and definitions

The term “responsible business” refers to practices of companies and organizations that operate in a way that not only ensures profitability but also considers the impact of their decisions and operations on society, the environment, and stakeholders. This concept goes beyond simple compliance with the law. Also, involves companies that are willing to adopt certain practices which promote sustainable and ethical outcomes. The key elements of responsible business are ethical behavior, sustainable practices, respect for human rights, engaging stakeholders, community engagement, transparency, and long-term thinking. (Agudelo et al., 2019)

In order to ensure a common understanding of these key elements, the following part provides a brief description of them.

Ethical behavior involves operating with integrity, honesty, and fairness. Ethical companies avoid practices that could harm consumers, employees, or any other stakeholders. Even if those practices might be technically legal, they need to be avoided. (Malloch-Brown et al., 2017)

Sustainable practices consider the environmental impact of business operations. (Agudelo et al., 2019) These practices often look for ways to reduce their carbon footprint, limit waste, and support renewable energy sources.

Respect for human rights ensures that operations and supply chains do not exploit workers or violate human rights in any kind. Responsible businesses usually ensure fair wages, safe working conditions, and oppose child labor or forced labor. (Malloch-Brown et al., 2017)

Engaging stakeholders describes companies that are able to engage with their stakeholders, including employees, customers, suppliers, and the communities in which they operate. In this context it is important to understand and address the relevant concerns. (Agudelo et al., 2019)

Community engagement means giving something back to the community. This can happen either through charitable contributions, volunteer efforts, or other means that support local or global causes. (Kramer et al., 2019)

Transparency implies that responsible businesses are open about their practices and are willing to be held accountable for their impact. (Bonini and Swartz, 2014) This can involve producing sustainability reports, being open to audits, and responding to stakeholder inquiries.

Long-term thinking represents rather focusing on long-term implications regarding the own decisions instead of only looking towards short-term profits. (Henderson, 2018)

In essence, responsible business is about recognizing the interdependence of business, society, and the environment. Also, it implies making decisions that benefit not just the company's bottom line, but also the environment in which the company operates. (Kramer et al., 2019)

2.2 History of responsible business and CSR

The history of responsible business often overlaps with the concept of Corporate Social Responsibility (CSR). Both concepts imply a commitment by companies to operate ethical and sustainable. (Agudelo et al., 2019)

Responsible business practices have old roots, with some examples in ethical considerations in trade and commerce. For instance, the principles of fair trade and responsible lending in the ancient civilizations.

The Industrial Revolution in the 18th and 19th centuries marked a significant shift in business practices. It also revealed the negative social and environmental consequences due to the fast developing industrialization. For example, poor working conditions and environmental degradation.

As a response to the dangerous working conditions, labor movements gained momentum. Ultimately leading to the founding and establishment of labor unions that are still fighting today for the rights and safety of workers. (Phillips et. al, 2019)

The 20th century brought the growth of corporate philanthropy, with companies like Ford and Carnegie that donated enormous sums to charitable causes. (Agudelo et al., 2019) However, this philanthropy usually was disconnected from core business operations.

The 1950s and 1960s witnessed the beginning of the modern corporate responsibility movement. More and more companies started recognizing the importance of integrating social and environmental concerns into their operations. (Agudelo et al., 2019) This period also marked the emergence of concepts like stakeholder theory, which emphasized considering the interests of various stakeholders.

The 1970s shifted business perspectives due to increasing environmental concerns. Governments around the world began to introduce regulations to encourage responsible business practices. With the globalization of supply chains, issues like child labor and unsafe working conditions started to raise public concern. Therefore, the demand for ethical behavior and supply chain responsibility became more important. (Malloch-Brown et al., 2017)

In recent decades, businesses have increasingly integrated responsible practices into their core strategies.
This includes sustainability reporting as well as engagement with stakeholders to address social and environmental challenges. (Hinks, 2019)

Environmental, Social, and Governance (ESG) factors have gained prominence in the 21st century. Not only investors, but also consumers started emphasizing the importance of ESG performance as a measure of a company's sustainability and long-term success.
Some companies adopted a purpose-driven approach into their strategy. It implies integrating social and environmental concerns into their business models. They are aiming to create positive social impact and pursue operations that go beyond profit. (Malnight et. al, 2019)

Finally, the history of responsible business reflects an evolving understanding of corporations in society and the demand for ethical, sustainable, and socially responsible business practices. Today, responsible business is more than a moral imperative, but also a strategic advantage. Hence it aligns with the expectations of stakeholders and consumers in an increasingly interconnected and socially conscious world. The consequences of climate change as well as the rising desire of consumers for sustainable products and services, force companies worldwide to operate more sustainably and report more transparently.
Therefore, concepts like impact accounting are rising awareness and become more significant in the capitalism of today.

3 Concept of Impact Accounting

3.1 Introduction and definitions

Impact accounting refers to a set of practices and methodologies used to quantify, report, and assess the positive and negative effects of an organization's operations on social, environmental, and economic factors. (IFVI, 2023) This approach goes beyond traditional financial accounting by integrating non-financial performance indicators that capture an organization's broader societal impact. (Freiberg et. al, 2020).
Impact can be divided into a direct (caused by own operations) and an indirect (linked to business relationships or along the value chain) characterization.

Key components of impact accounting are holistic evaluation, measurement, transparency, stakeholder inclusivity, standardization, materiality, and integration into financial accounting.
In order to establish a shared understanding, the following part define the key components of impact accounting. (Serafeim et. al, 2019)
Holistic evaluation means that impact accounting considers the positive and negative outcomes of an organization's activities on society, the environment, and the economy.
Measurement aims to quantify impacts using specific metrics, standards, and tools. This allows organizations to compare their impact year-over-year and against industry benchmarks.
Transparent reporting is a cornerstone of impact accounting. It involves providing clear, comprehensive, and accurate disclosures about an organization's impact, methodologies used, and data sources. Impact accounting often involves input from various stakeholders, including investors, employees, customers, and affected communities, to ensure that all relevant impacts are considered.
Several standards and frameworks exist to guide impact accounting, such as the Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB), and the Impact Management Project (IMP).

Materiality refers to identifying which social, environmental, or economic impacts are most significant in the context of the organization's operations and stakeholder concerns.
Impact accounting is most effective when integrated with traditional financial reporting. (Serafeim et. al, 2019) This provides a holistic view of an organization's overall performance. This is the most significant component, but also the most difficult one to capture. The relevance of financial reporting in the context of impact accounting is discussed deeply in the following chapter.

3.2 Reasons for implementing impact accounting

Even today with the CSR and ESG approaches there is still no sufficient and holistic system on how to measure the impact of organizations on society, environment, and the economy. (Cohen, 2020)

Besides a missing measurement system, there are several significant reasons why companies should implement impact accounting.

First, it can improve the decision-making. Organizations can use impact data to make more informed strategic decisions. These decisions might have a positive effect on the long-term business. (Cohen, 2020)

Second, it could strengthen the stakeholder trust. Transparent reporting on impact can foster communication and reliability among key stakeholders. (IFVI, 2023)

Third, the internal risk management can benefit from an implementation. Identifying and addressing negative impacts can reduce regulatory, reputational, and operational risks.

Fourth, the access to capital could be easier. Some investors prioritize organizations with positive social and environmental impacts, so robust impact accounting and reporting can attract other investors. (Cohen, 2020)

Finally, an improved reputation. Demonstrating commitment to positive impact can enhance an organization's reputation in the public and foster the positive image of a company.

3.3 Disadvantages and constraints

However, although there are many relevant reasons for implementing impact accounting, there is also a variety of disadvantages and constraints that are entailed in this concept.

The biggest issue is the complexity of impact in general. Measuring non-financial impacts is way more complex than traditional accounting. The reason for this is that currently there exists no general definition of impact and its scope. Of course, there are some definitions, for instance the ones mentioned in the previous chapter, but there is no mandatory regulation or law. (IFVI, 2023)

If we take a closer look at accounting, there are obligatory rules, for instance the IFRS which clearly defines assets and liabilities and how to account them into the books of a company. (Braun, 2023)

The question of where the impact starts and concludes remains unanswered. For instance, CO2 emissions of a firm operating in the automotive sector. Certainly, they can measure all their emissions according to GHG protocols and cluster them into the three different scopes, but all the current measurement methods are based on assumptions and averages, at least at some point. (Queiroz, 2023)

Even if we would assume these numbers are completely accurate, it would still raise the question what the extent of the underlying impact is. Especially societal impacts like suffer of human health, economic disruption and changes in agriculture are very difficult to measure and its subjectivity makes it even harder to generalize. (Evison and Brooke, 2015)

This also underscores the complexity of the matter, as it can be characterized as a paradoxical issue. Without a general concept, this concern cannot be solved, but it is quite challenging to develop a common model covering all this ventures. (Santos, 2023)

This lack of standardization inhibits the general progress of impact accounting. Although many standards exist, there's no single universally accepted approach, making comparisons very challenging. (Braun, 2023)

Despite the challenges mentioned above, the demand for impact accounting is still growing. As long as more stakeholders, including investors, consumers, and regulators continue recognizing and appreciating the importance of organizations' broader societal impacts, the growth will continue in the future. (Cohen, 2020)

4 Environmental indicator and CO2 emissions

4.1 Types of indicators

The environmental indicator is a term in the Impact Weighted Accounting Initiative developed by the Harvard Business School. It primarily assesses a company's environmental impact through quantifiable metrics. This includes measuring and accounting for CO2 emissions, other greenhouse gases and water usage. (Harvard Business School, 2023)

The initiative integrates these environmental factors into financial accounting, providing a more comprehensive view of a company's overall impact on the environment. This approach encourages businesses to consider and reduce their ecological footprint, aligning financial performance with environmental sustainability. (Cohen, 2023)

Impact-weighted accounts are additional entries in financial documents like income statements or balance sheets. They enhance these statements by showcasing a company's impacts — both positive and negative — on employees, customers, the environment, and society at large. This approach aims to provide a holistic view of a company's performance, guiding investors and managers to make decisions that consider not just financial gains or losses but also the entity's broader societal and environmental influence.

Although there several environmental factors, the research of the Harvard Business School mainly focuses on greenhouse gas emissions and water consumption. Both equally relevant factors, might vary in their significance depending on the operating industry. For example, the agricultural and energy production industries have the highest water consumptions. On the other hand, the transportation and construction sectors are the ones with the highest greenhouse gas emissions.

Both types of the indicator are equally relevant for the cork industry, in which Corticeira Amorim operates. According to the available data, this dissertation focuses more on the greenhouse gas emissions, precisely the CO2 emissions. This does not diminish the significance of water usage, but analyzing it adequately becomes more challenging given the available data.

4.2 Concept of carbon pricing

Carbon pricing is a mechanism designed to reduce greenhouse gas emissions by imposing a fee on emissions or providing incentives for emission reduction. (Boyce, 2018) This pricing strategy alters consumption and investment behaviors, fostering economic development in harmony

with climate protection goals. The adoption of carbon pricing as a tool for catalysing climate action is still gaining momentum. (Ramstein, 2019)

Carbon pricing operates by internalizing the external costs of carbon emissions, which are the expenses carried by the society. (Boyce, 2018) These costs encompass various impacts, for instance property losses from rising sea levels, crop damage due to shifting rainfall patterns, and rising healthcare expenses associated with heat waves and droughts. The mechanism of carbon pricing involves attributing these costs back to the sources of carbon emissions. (Ramstein, 2019)

Effectively, carbon pricing redistributes the responsibility of covering the damages caused by climate change from the public to the producers of greenhouse gas emissions. This strategic shift empowers producers with a choice: either reduce their emissions to avoid incurring high costs or continue emitting but bear the financial responsibility for their carbon footprint.

In the middle of November 2023 the carbon price in the EU was 81€. (Tradingeconomics, 2023) Although the carbon price is a powerful mechanism, only about one-fifth of global emissions are covered by pricing programs, and the global average price is still too low in order to force major changes in climate actions. (Parry, 2021) Without a significant increase on the global carbon price, we will lose track on the road to carbon zero till 2050. (Dellink et. al., 2022)

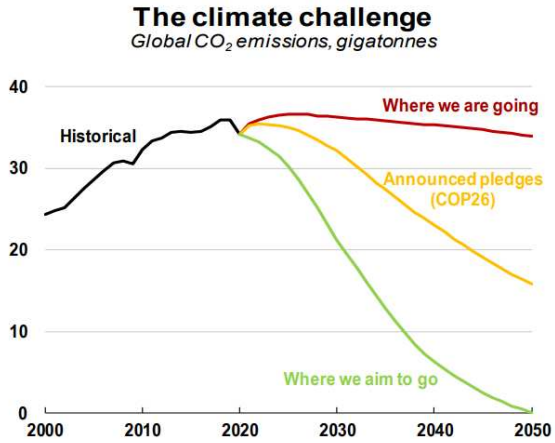

Figure 1: The climate challenge | OECD, 2021 (Measuring Carbon Pricing)

4.3 Current measurement methods

Carbon emissions refers to CO2 emissions only, while GHG emissions refers to a multitude of gas emissions with diverse global warming potential, including CO2.

The Greenhouse Gas Protocol (GHG Protocol) is a universally acknowledged set of standards and guidelines formulated for the purpose of accounting and reporting greenhouse gas (GHG)

emissions. This protocol establishes a structured framework enabling businesses and governmental entities to quantify, oversee, and disclose their greenhouse gas emissions. (Jonas, 2019)
CO2-equivalent emissions (CO2-eq) are a standardized measure used to express the total impact of various greenhouse gases (GHGs) in terms of the amount of carbon dioxide (CO2) that would exert the same warming effect over a specified time. (Allen, 2018)
This unit allows different greenhouse gases to be compared based on their global warming potential. Regarding the measurement of CO2-equivalent emissions, there is another relevant number, named GWP, that needs to be considered. (Jungbluth and Meili, 2018)
GWP is a measure of how much heat a greenhouse gas traps in the atmosphere over a specific period, usually 100 years, compared to carbon dioxide. For example, methane has a higher GWP than CO2, meaning it has a more significant warming effect over a short period.
(Shine et. al, 2005)
In order to calculate CO2-eq emissions, the emissions of different greenhouse gases are multiplied by their respective GWPs and then summed. This provides a single value in terms of CO2 that represents the overall impact of the combined greenhouse gas emissions.

The following formular shows the calculation of CO2-eq emissions:
CO2-eq = CO2 emissions + (GWPgas1×emissionsgas1) + (GWPgas2×emissionsgas2) +…

For the measurement of a whole organization, it is helpful to divide the emissions in different categories according to their causation. To simplify the emissions into categories, a standard of three scopes has been established over the last years. (Evison and Brooke, 2015)
Scope 1 are direct emissions from the companies owned or controlled sources.
Scope 2 stands for indirect emissions from purchased electricity, steam, heating, cooling, etc.
Scope 3 represents other indirect emissions, including those from the supply chain, business travel, and product use. (Braun, 2023)
Organizations that are committed to measuring and reducing their overall carbon footprint often consider all three scopes to comprehensively address their greenhouse gas emissions across the entire value chain. Each scope requires different strategies and actions for effective emission reduction. Since Scope 1 only captures emissions from the own companies, it is by far the easiest Scope to measure. In contrast, Scope 3 is significantly harder to measure because data from companies along the supply chain and subcontractors are necessary. Hence this also increase the effort and cost to measure it.

4.4 Examples of best practices

Although the measurement of Scope 1, 2 and 3 emissions capture a lot of effort, many companies already implemented it into their operations. Since Corticeira Amorim is the leading company in the cork business worldwide and the biggest exporter of cork, this chapter is dedicated to other market leaders. Furthermore, Corticeira Amorim is already implementing many sustainability initiatives. The most significant ones will be explained in the following chapter. Therefore, it is more valuable for the analysis to have a wider look on other industry leaders instead of the direct competitors of Corticeira Amorim. In order to have some differentiated examples, the following part will present three best practices of companies from different sectors.

Alphabet Inc. (formerly Google)

Google stands as a frontrunner in sustainability endeavours, steadfastly dedicated to running entirely on 100% renewable energy. Furthermore, the company issues comprehensive annual environmental reports, offering insights into its carbon footprint and the measures undertaken to diminish it. Since a couple of years ago, Alphabet Inc. started to measure their carbon footprint and communicates it in a very transparent way. (Statista, 2023) Moreover, they introduced some actions about how they can reduce their carbon emissions in the next couple of years. Besides that, the company committed to achieve net zero carbon emissions till 2030. (Google, 2023)

Microsoft Corporation

Microsoft announced in the beginning of 2020, that the company is aiming to be carbon negative by 2030. Also, the company has pledged to reduce its historical carbon emissions and invest in technologies to remove carbon from the atmosphere. Therefore, the company has set ambitious goals to reduce and ultimately eliminate its carbon footprint. One of their biggest initiatives are the investments in renewable energy. In order to address its emissions from purchased electricity (Scope 2), Microsoft has been investing heavily in renewable energy sources. The goal is to transition to 100% renewable energy by the year 2025. (Microsoft, 2023)

Inter IKEA Systems B.V.

IKEA actively measures and reports its CO2-eq emissions as part of its commitment to sustainability and transparency. The company acknowledges the environmental impact of its operations and products and has set specific goals to address and reduce its carbon footprint.

The company publishes reports detailing its carbon footprint, which includes both direct emissions (Scope 1) and indirect emissions from purchased energy (Scope 2). The company also addresses emissions from its supply chain and other indirect sources (Scope 3) in its reporting. Furthermore, IKEA has set ambitious carbon reduction targets. The company aims to become climate positive by 2030, meaning that it seeks to reduce more greenhouse gas emissions than the entire IKEA value chain emits. (IKEA, 2023)

All the examples presented show companies that have positioned themselves as pioneers in their industry and have set the bar very high for sustainable transformation and reporting.

4.5 Limitations and problems

Since companies have no influence on the carbon price itself, this part focuses more on the limitations of measurement methods that are currently applied. Therefore, the following part briefly describes the major constraints of these measurements.

Measurement accuracy

Accurately measuring carbon emissions implies challenges, with uncertainties in the measurement process, particularly in those sectors where the data collection is challenging or even incomplete. (Glen and Hunter, 2011) For this reason, the accuracy is highly dependent on the whole data collection. If the available data is insufficient or shows lack of quality, the accuracy might vary significantly. (Queiroz, 2023) Moreover, a lot of assumptions are typically necessary to conduct the calculation of the emissions. Therefore, if many assumptions are underlying in the collected data, the results should be viewed with caution. (Braun, 2023)

Monitoring and Enforcement

Robust monitoring and enforcement systems are needed to ensure compliance with carbon pricing mechanisms. According to the lack of monitoring systems, companies may underreport emissions. Thus, they are jeopardizing the accuracy of carbon pricing and compromising the efficacy of the pricing mechanism. (Braun, 2023) Therefore, the measurement must be generalizable and controllable, preferably by a neutral and external institution. (Santos, 2023)

Country specific differences

Calculating CO2-eq emissions becomes more complex when a company operates in several international locations. This complexity is evident in scope two emissions, where each country has a different electricity mix, leading to varying carbon footprints per kilowatt hour.

For instance, Norway's electricity may contribute to significantly lower CO2-eq emissions compared to a site in China. (Braun, 2023)

5 Analysis of Corticeira Amorim

5.1 Company introduction

Corticeira Amorim is a Portuguese enterprise and the biggest producer of cork-based products worldwide. Since its invention in 1870, the company has been pivotal in the cork industry. It concentrates on the extraction, processing, and marketing of cork-derived goods. Mentionable for its dedication to sustainability, Corticeira Amorim underlining the eco-friendly nature of cork as a renewable resource. (Amorim, 2023)

The product portfolio of the company includes cork stoppers for the wine sector, cork flooring, insulation materials, and a variety of cork-centric solutions for industries like construction and automotive. In order to maximize the value of resources through product diversification, the business units are clustered into the following five categories:

Figure 2: Business units | Corticeira Amorim, 2023

Corticeira Amorim is actively seeking innovation, shifting investments towards more research and development to uncover new applications for cork and enhance its manufacturing procedures.

As a leading force in the global cork sector, Corticeira Amorim has strengthened its international presence. Thereby, they are able to serve clients across different industries worldwide. The company's success is a result of traditional craftsmanship, technological progress, and a commitment to sustainable methodologies. Hence positioning themselves as a key player and the biggest company worldwide in the cork market.

5.2 Impact at Corticeira Amorim

Sustainable by nature programme and SDG Strategy

In 2018, Corticeira Amorim aligned the company's objectives with the United Nations SDGs. Thereby laiding the foundations for the sustainable by nature programme, that includes goals with the ambition to be met by 2030. (Amorim, 2023)

This program is divided into five fundamental principles: advancing transparency and accountability; highlighting the environmental aspects of the products; fostering the development, safety, and well-being of individuals; promoting research and development (R&D+i); and enhancing economic performance.

The organization has identified ten key objectives that guide its activities, emphasizing ethics and integrity, the value chain, cork oak forests, climate change, circular economy, green products, development, health, safety and well-being, community/society, and innovation. (Amorim, 2023)

Corticeira Amorim actively ensures the consistent monitoring of its initiatives in the sustainability program. This comprehensive program includes specific quantitative goals, performance indicators, and control procedures. These measures ensure the consistent and rigorous reporting of priorities and advancements in these areas, with results disclosed transparently in the sustainability report. In the following part, the ten major objectives according to the SDGs are briefly described.

Ethics and Integrity

Acting and behaving ethical, transparent and responsible while fostering the competitiveness and value generation. For instance, integrating climate change measures and protecting the labor rights, while simultaneously sustaining economic growth.

Value Chain

Strengthen conscientious production and consumption by selecting suppliers who commit to Environmental, Social, and Governance (ESG) practices. For example, eliminating forced labour and child labour worldwide, promoting sustainable management techniques and efficient use of resources by strengthening partnerships for sustainable development.

Cork Oak Forest

Obtaining the cork oak forest and its ecosystem services through raising awareness, resource mobilization, and the proposition of initiatives. For instance, supporting efforts to protect cultural and natural heritage, promoting the implementation of sustainable forest management and and integrating the values of ecosystems and biodiversity.

Climate Change

General reduction of the environmental impact on its operations by adopting renewable, affordable and efficient solutions. For example, increasing the use of renewable energy, improving energy efficiency in general and reducing the negative environmental impacts.

Circular Economy

Implement circular economy principles by minimizing waste, expanding the lifetime of materials, and fostering the regeneration of natural systems. For instance, improving the efficiency of global resources and managing the use of chemicals in an environmentally sound manner.

Green Products

Take an active role in expanding the many possible applications of cork, supported by the characteristics of the material. For example, strengthening durability and adaptability to climate-related risks, upgrading infrastructure, reducing the negative environmental impact.

Development

Promoting development opportunities in the personal and professional area for all the employees. For instance, providing training, ensuring equal access to opportunities as well as ending all forms of discrimination.

Safety, Health and Well-being

Guarantee the well-being and safety of employees in the workplace by ensuring access to high-quality health conditions. For example, reducing the number of accidents, providing access to essential quality health services and promoting safe and secure work environments for all workers.

Community / Society

Promote sustainable and inclusive economic growth by ensuring both efficient production and decent employment opportunities. To ensure that, it is necessary to sustain economic growth and strengthen the global partnership for sustainable development.

Innovation

Encourage and advance research, development, and innovation, while cultivating sustainable solutions. Inevitable measurements for this goal are promoting development-oriented policies that support productive activities, such as entrepreneurship, creativity, and innovation. Furthermore, the scientific research needs to be enhanced.

Quantitative targets

Corticeira Amorim is actively advancing and pursuing its sustainable by nature program by outlining seven quantitative goals for 2030 and nine specific targets for the period from 2021 to 2024. The focus of these objectives encompasses Portuguese companies, that have a significant impact on the priority areas defined in the "Sustainable by Nature" program. Especially, these areas align with the majority of Corticeira Amorim's business operations. Since 63% of consolidated sales, 71% of employees, and 64% of production units are situated in Portugal.
The sustainable by nature program is observed as dynamic and responsive.
The following image provides an overview of the seven quantitative goals for 2030.

Figure 3: Quantitative goals | Corticeira Amorim, 2022 (Allocation and Impact Report)

5.3 Environmental indicator and CO2 emissions

The main data featured in this chapter belongs to the Aquamark stopper carbon footprint study in 2021, which was conducted by EY.

One of the main purposes of this study was to quantify the potential greenhouse gas emissions generated by the Aquamark stopper product, using the life cycle approach. (methodology based on ISO Standard 14040[1])

Aquamark is a cork stopper product renowned for its exceptional sealing capability and wine preservation qualities. This natural cork stopper is coated with a water-based solution, augmenting its sealing efficacy by bonding cork extracts to the stopper's surfaces.

The underlying life cycle approach is based on the following stages: forest management activities, cork treatment, cork transport from the supplier, natural cork bodies production, Aquamark stopper production, finishing and packaging. The functional unit of the study was 1000 Aquamark stoppers. For the data collection EY used internal production data from Corticeira Amorim in the year 2018 with a combination of business assumptions.

Overall, the carbon footprint of the Aquamark stopper was -4,4kg of CO-2eq emissions per 1000 stoppers. The negative carbon footprint linked to cork production is a result of the synergy between sustainable forestry practices, the carbon sequestration[2] capacity of cork oak trees, and the long-life expectancy of cork products.

Without including the sustainable practices and the carbon sequestration by cork the emissions are 3,3kg of CO2-eq/ 1000 stoppers.

The following chart demonstrates which activities contribute to the emissions to what amount.

[1] The series provides guidelines and principles for conducting life cycle assessments to evaluate the environmental impacts of products and systems.

[2] Carbon sequestration is the process by which carbon dioxide (CO2) is removed from the atmosphere and stored in long-term sinks, such as oceans, forests, or soil.

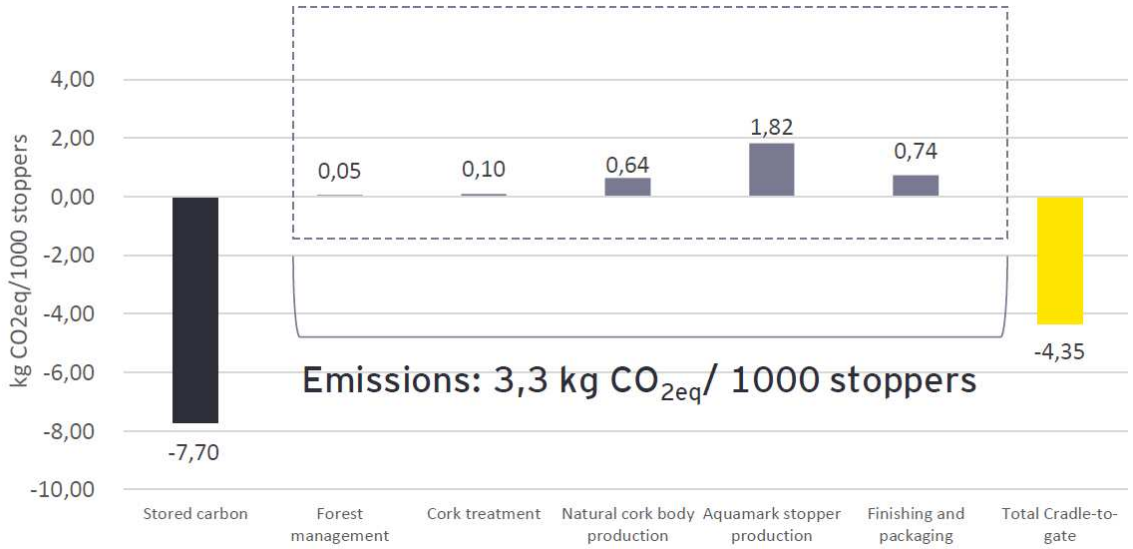

Figure 4: Emissions overview | Corticeira Amorim, 2021 (Aquamark stopper carbon footprint study)

The comprehensive findings indicate that, adopting a life cycle approach, the most significant climate change impacts are linked to stages involving elevated energy consumption and the utilization of chemical products. Consequently, the combined impact of the Aquamark stopper production stage and the finishing and packaging stage constitutes 76% of the total greenhouse gas (GHG) emissions.

The collective emissions result in an overarching climate change impact of 3.3kg CO2-eq per 1000 stoppers. When factoring the carbon sequestration within the Aquamark stopper, the product's carbon footprint amounts to -4.4kg CO2-eq per 1000 stoppers.

This difference clearly shows the significance impact of the carbon sequestration provided by the oak trees.

6 Main findings

6.1 Comparison Corticeira Amorim and best practices

When comparing Corticeira Amorim with the three best practices mentioned in the previous chapter, the findings can be divided into three categories: CO2-eq measurements, transparent reporting and goals setting.

Regarding CO2-eq measurements they started to conduct them in 2021 and annually repeating them. Additionally, they managed to reduce emissions in 2022 (37,221 t of CO2-eq) compared to 2021. (44,294 t of CO2-eq)

As for the transparent reporting, Corticeira Amorim is heavily invested in providing a lot of information regarding sustainability and impact on their website. They disclose information about their initiatives, policies, and performance in areas such as sustainable foresting, social responsibility, employee well-being, biodiversity, and ecosystem services. (Amorim, 2023) This transparent communication allows stakeholders, investors, customers, employees and the broader public to assess the company's commitment to sustainable practices and make informed decisions based on a holistic view of its impact on society and the environment.

Last but not least the public announcing of their sustainability goals is a major step in terms of sustainability reporting. On the one hand it establishes stakeholder trust and credibility through transparent practices. On the other hand, it points out accountability, empowering stakeholders to monitor progress and evaluate actual performance against declared ESG commitments.
Additionally, it appeals to investors by aligning with the growing consideration of sustainability in investment decisions and attracting socially responsible investors. Furthermore, it yields a competitive advantage by leading in sustainability, resonating with consumer values.
Moreover, it elevates employee engagement and satisfaction, especially among those prioritizing social and environmental responsibility, thereby fostering a positive corporate culture. Additionally, it plays a crucial role in risk mitigation by actively addressing environmental and social issues.

Furthermore, it contributes to long-term resilience by seamlessly integrating sustainable practices into business strategies, thereby enhancing operational efficiency and resource management. Lastly, it cultivates customer loyalty, responding to the growing consumer preference for products and services from Corticeira Amorim that demonstrate ethical and sustainable practices.

Finally, the cork industry is often associated with positive environmental characteristics, as cork forests contribute to carbon sequestration. Nevertheless, companies in this sector still need to manage their operational emissions and consider the broader impact of their products. This is also the self-understanding of Corticeira Amorim, being a forerunner of sustainability. However, according to their website, they are not satisfied with the status quo and keep improving their organization towards operating even more sustainable and ethically conscious.

6.2 Suggested implementations at Corticeira Amorim

In order to use the measurements of CO2-eq emissions and develop them into the concept of impact accounting, the amount of CO2-eq needs to be monetized. The simplest way is to employ the numbers of the carbon market. Before diving deeper into this, it is important to distinguish between cost value, market value and total impact value.

The cost value is equal to the actual cost the company has, because of emitting CO2-eq emissions into the atmosphere. This number is equal to the amount they spend on CO2 credits, which are certificates that basically allow them to emit greenhouse gases into the atmosphere.
According to their website, Corticeira Amorim has not purchased any carbon credits. Therefore, the cost value would be equal to zero.
In terms of market value and total impact value, the calculation is similar to each other and only differs in the Scope 3 emissions being excluded (market value calculation) or included (impact value calculation).

As already mentioned in chapter three, a market has been established for carbon pricing globally. Even though there are major differences between countries and continents, the carbon pricing serves as a powerful tool for monetizing market value and impact value.

The following calculation is based on the ideas from the Harvard Business School. Also, to simplify the calculation, the current carbon price of the EU is used.
Assuming the current carbon market price covers all the impact, caused by CO2-eq emissions, the impact of CO2-eq is the result of measured CO2-eq multiplied by the current carbon market price.
For the market value calculation, the Scope 3 emissions will not be included. However, for the calculation of the impact value, Scope 3 emissions will be captured.

These assumptions lead us to the following calculations:

Market value:

Scope 1 and Scope 2 emissions: 37,221 t (CO2-eq)[3]

Carbon market price EU: 81€/t[4]

⇨ 37,221 t (CO2-eq) x 81€ = **3,014,901€** (market value)

The market value of these emissions is calculated by multiplying the total emissions (Scope 1 and Scope 2) by the carbon market price per tonne. For this calculation, the average carbon price of the EU in November 2023 is used.

The total emissions (Scope 1 and 2) of 37,221 tonnes CO2-equivalent carry a market value of 3,014,901€ at a carbon price of 81€ per tonne. This cost reflects the expense that would be emerged if the emissions were to be compensated for in the EU carbon market.

Since Corticeira Amorim also measures their Scope 3 emissions, the market value calculation seems unnecessary. However, many companies that start to measure their emissions, conduct in only for Scope 1 and Scope 2, due to less effort and cost considerations. (Braun, 2023)

Furthermore, for other companies that only measure Scope 1 and 2 emissions, it is a useful first step towards the impact value calculation.

Impact value (gross):

Scope 1, 2 and 3 emissions: 243,866 t (CO2-eq) [5]

Carbon market price EU: 81€/t[6]

⇨ 243,866 t (CO2-eq) x 81€ = **19,753,146€** (gross impact value)

The gross impact value of these emissions is calculated by multiplying the total emissions by the carbon market price per tonne. Because of the idea that the impact value should cover the whole impact generated by the emissions, the Scope 3 emissions are now also being included. This figure provides an estimate of the financial impact of the company's total carbon footprint, considering all direct and indirect emissions.

However, because Corticeira Amorim contributes positively to climate change due to the carbon sequestration of their oak trees, the initial calculation needs to be adjusted.

[3] Sustainable by nature report 2023
[4] Tradingeconomics Online (2023)
[5] Sustainable by nature report 2023
[6] Tradingeconomics Online (2023)

According to the sustainability report of the company, the approximate annual carbon sequestration is 5,100,000 t (CO2-eq)[7]. Considering this number, the impact value has to be recalculated. In order to separate the following calculation from the one above, the new impact value will be called "net impact value", including the positive effects of carbon sequestration and the implied negative carbon footprint. The previous calculation will be named "gross impact value" because it excludes the positive aspects. For the net impact value, the calculation looks as it follows:

Impact value (net):

Scope 1, 2 and 3 emissions – carbon sequestration

- ⇨ 243,866 t (CO2-eq) – 5,100,000 t (CO2-eq)[8] = - 4,856,134 t (CO2-eq)

Carbon market price EU: 81€/t[9]

- ⇨ -4,856,134 t (CO2-eq) x 81€ = - **393,346,854€** (net impact value)

The net impact value is calculated by multiplying the net emissions (in negative) by the carbon market price per tonne. The net impact value of -393,346,854€ suggests a substantial environmental credit, as the company's carbon sequestration significantly outweighs its total emissions across Scope 1, 2, and 3.
This net reduction of 4,856,134 tonnes of CO2-equivalent implies that the company's operations and value chain, combined with its carbon sequestration efforts, lead to a substantial net removal of CO2-eq emissions from the atmosphere.

This analysis is critical for understanding the overall environmental impact of the company. It highlights the importance of carbon sequestration initiatives in achieving net-negative emissions, a key goal in combating climate change.

To ensure a reasonable separation of the gross impact value and the net impact value, a possible solution could be, that only one value will be used as an industry benchmark while the other one serves as a cross industry comparison. Looking at the cork industry, all operating companies usually benefit from the carbon sequestration by their oak trees. This process makes the cork production one of the most sustainable in the production business. Hence, it is logical that for this industry benchmark, only the net impact value is used. Therefore, the comparison is on a fair level.

[7] Sustainable by nature report 2023
[8] Sustainable by nature report 2023
[9] Tradingeconomics Online (2023)

Beyond this, other industries might also include this value calculation into their reports. Especially industries, in which it is common to reduce the carbon footprint by planting trees.
A typical example in this context is the aviation industry. Hence, industries like civil aviation are using tree planting as part of their strategies to reduce carbon emissions. In order to compare companies in this sector, the net impact value could be taken into consideration. Therefore, it provides the opportunity to compare companies regarding their CO2-eq emissions by also including the positive contribution they initiate. However, the actual emissions, regardless all the efforts to reduce the footprint by planted trees, still must be considered. Otherwise, companies with enormous pollution could be precepted as more sustainable because of their other measurements.

This drives us back to the calculation of the gross impact value, which puts positive contribution to the carbon footprint aside. Nevertheless, this value still has its right to exist.
For broader comparisons across different industries, the gross impact value might be more appropriate as it only considers the actual emitted emissions, providing a more level playing field.

For instance, if stakeholders would like to compare Corticeira Amorim to a global player from another industry, it would make sense to use the gross impact value exclusively. Then, only the actual emitted emissions are taken into consideration and Corticeira Amorim would not be preferred because of its carbon sequestration.

The previous calculation of the impact values considered the whole operations of the company. Another additional approach might be, to calculate the impact values for single products. This would also increase the comprehensibility regarding where the CO2-eq emissions come from and how they are distributed among individual production steps and products. Moreover, to think this further, it could allow investors and consumers to compare products regarding their impact value. There are already products and services that include carbon footprint information in their product description. Therefore, publishing information of the impact values is only one step further.

For the product calculation the numbers from chapter 3.4 are used. Since the cork stopper is one of the main products of Corticeira Amorim, it serves as a reasonable example to calculate the impact value per product. Therefore, the numbers for the following calculation also result from the Aquamark stopper carbon footprint study 2021.

Impact value (gross):

Emissions: 3,3 kg (CO2-eq) / 1000 stoppers[10]

Carbon market price EU: 81€/t[11]

- ⇨ 3,3 kg (CO2-eq) x 0,081€ = **0,2673€** (gross impact value)

According to the Aquamark stopper carbon footprint study the Emissions are 3.3 kg of CO2-equivalent per 1,000 stoppers. The carbon market price in the EU is still 81€ per tonne of CO2-equivalent.

Hence the gross impact value is calculated by multiplying the emissions (in tonnes) by the carbon market price.

Since 81€/tonnes are 0,081€/kg, the calculation is 3,3 kg * 0,081€/kg = 0.2673€.

The gross impact value (0.2673€) represents the cost of the CO2-eq emissions from producing 1,000 stoppers.

Impact value (net):

Emissions in kg (CO2-eq) / 1000 stoppers – carbon sequestration

- ⇨ 3,3 kg (CO2-eq) – 7,7 kg (CO2-eq)[12] = - 4,4 kg (CO2-eq)

Carbon market price EU: 81€/t[13]

- ⇨ -4,4 kg (CO2-eq) x 0,081€ = **- 0,356€** (net impact value)

The net impact considers both emissions and carbon sequestration captured by the cork production process. Since the emissions are 3.3 kg CO2-equivalent per 1,000 cork stoppers, while carbon sequestration is 7.7 kg CO2-equivalent, thereby we receive a net CO2-equivalent of 3.3 kg - 7.7 kg = -4.4 kg.

This negative value indicates a net reduction in CO2-equivalent, implying that the production process results in more carbon being sequestered than emitted.

Using the carbon market price, the net impact value is -4.4 kg * 81€/tonne. Since again 81€/tonnes are 0,081€/kg, the calculation is -4.4 kg * 0,081€/kg = - 0,356€.

This negative impact value reflects a net benefit or credit due to the carbon sequestration exceeding emissions. In conclusion, it can be said that the same effects can be observed at product level as when looking at the whole company.

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[11] Tradingeconomics Online (2023)
[12] Aquamark stopper carbon footprint study 2021
[13] Tradingeconomics Online (2023)

6.3 Further measurements to drive impact accounting forward

To establish a new norm in the industry, implementing a benchmark system for impact accounting could be effective. This system would reward companies that surpass the industry average in environmental performance, while imposing potential sanctions on those falling below average.

In the cork industry, the benchmark could be set by using the suggested net impact value, acknowledging the distinctive role of oak trees in carbon sequestration unique to this sector. This approach ensures equitable within-industry comparisons. Companies underperforming against this benchmark might be required to compensate through penalties, which would be directed towards sustainable initiatives like increased afforestation.

Conversely, companies exceeding the average could benefit financially. The surplus above the average would be acknowledged as a positive environmental contribution, reflected as a cost reduction in the income statement, thereby decreasing tax expenses.

For these concepts to be effective, thorough auditing and official recognition of all results are essential. Such a strategy is designed to foster a robust, equitable framework for evaluating and comparing the environmental impacts of businesses. It aims to motivate a reduction in CO2-eq emissions through financial incentives, transparent reporting, and industry-specific benchmarks, ultimately supporting ongoing enhancement of environmental performance.

A similar approach could be applied for companies investing in innovative technologies that help reducing CO2-eq emissions. Those companies may benefit from government grants, subsidies, or tax incentives.

6.4 Underlying assumptions for the implementation

Coming back to the idea on how to implement the impact value, both net and gross, into the accounts of the company, it is inevitable that a third and neutral party needs to be involved.
The aim is that companies measure and disclose the monetized impact so that eventually this approach might become a standard management and governance tool.

To enhance credibility, companies may opt for third-party verification of their emission data. Independent auditors or certification institutions can review and confirm the accuracy of the reported emissions. The same procedure should be ensured for the calculation of the impact values. Only then, all the suggested calculations and numbers can be published and compared seriously.

Another important assumption is, that the carbon price is equal to the social cost of carbon, which means it represents the estimated economic damages associated with each additional ton of CO2-eq emitted. This is necessary, in order to use the carbon price as an adequate fee to capture all the impact caused by the emissions.

Additionally, companies like Corticeira Amorim must actively seeking to measure their CO2-eq emissions and also be willing to publish their data. To foster the intra company motivation, one possible measurement could be that companies implement internal carbon pricing mechanisms. Thereby they can evaluate the financial impact of emissions on all their operations.
Furthermore, this encourages internal efforts to reduce emissions. An alternative holistic approach could be that companies with a certain size are obligated to conduct the previous calculations and publish this information.

7 Conclusion

7.1 Challenges for the implementation

The approach, presented in chapter six, on how to monetize CO2-eq emissions aligns with the global efforts to include environmental impact into corporate accounting and decision-making processes. It reflects a growing recognition for the importance of environmental responsibility in corporate governance and the potential for market-based mechanisms to incentivize reductions in greenhouse gas emissions. However, it captures several challenges that are associated with its implementation.

Firstly, capitalism is largely driven by financial motivations. To guide this system towards more sustainable practices, it is decisive to implement financial incentives. These could include tax benefits, subsidies, or other economic benefits for companies that adopt the concept of impact accounting. The goal is to make this concept not only ecologically beneficial but also financially attractive.

Secondly, the effectiveness of impact accounting relies heavily on global coordination and consistency. International standards and agreements are crucial to ensure that impact accounting principles are uniformly applied across borders, preventing disparities in environmental accountability.

Furthermore, given the diversity in how different industries affect the environment and society, tailored standards for each industry are necessary. These standards should reflect the unique environmental and social impacts of each industry, ensuring that impact accounting is both relevant and effective for different sectors. This aspect especially addresses the idea of the gross impact value, since it compares cross-industry companies with different backgrounds, opportunities, and business models.

Addressing these challenges is crucial to successfully integrating impact accounting into the global business landscape, ensuring that it effectively reflects the true environmental and social costs of business activities.

7.2 Limitations of the results

The purpose of the present dissertation was to investigate and clarify the implementation of impact accounting at Corticeira Amorim, with special reference to the CO2-eq emissions serving as an example of the environmental indicator.

The main issue of the study is how Corticeira Amorim was incorporating environmental indicators in its processes and how effective this could be for corporate sustainability and responsibility. This research unveiled that Corticeira Amorim, as an entity pioneering in the industry of cork, is significantly embracing sustainability, particularly in management of CO2-eq emissions. The company has managed to integrate impact accounting methodologies which have not only boosted transparency and accountability, but also placed it in the forefront of leaders in sustainable business practices within its industry and outside. The findings have indicated that while concentrating on the environmental indicators, especially on CO2-eq emissions, Corticeira Amorim has developed business processes that are congruent with ecological and social goals. This can be considered as a sustainable model for other firms as well.

However, the study identified several challenges and limitations in relation to impact accounting practices. Mostly they are associated with difficulties in measuring impacts that are not financial-oriented such as CO2-eq emissions. Therefore, the research indicates the need for more standardized and universally acceptable ways of accounting for impact to enhance better comparability across sectors and regions.

Building from these results, future research could investigate areas of more well-defined and general standards for impact accounting. Furthermore, an investigation on the benefits of involving environmental indicators into business processes to a company's financials may finally help strengthen the actual benefits of sustainable practices.

Therefore, this dissertation contributes to the existing knowledge on corporate sustainability and responsible business practices. It points out the importance of incorporating indicators such as those related to the environment, for e. g. CO2-eq emissions within the business activities. Also, it demonstrates the role of companies like Corticeira Amorim in setting an example of a more sustainable business model.

The findings from this study can inform businesses about the implications of impact accounting, hence making it an important reference tool for the companies seeking to embed sustainability into their mainstream business strategy.

These results also contribute to shift the system towards companies aiming to achieve higher positive impact with a lower level of risk.

8. Appendices

Protocol Interview 1 20.10.2023

PARTICIPANTS	**MAZE**: Sofia Queiroz **CLSBE:** Franziska Rieger, Katharina Mößle, Jeremias de Biasi
RECORDER	Jeremias de Biasi
AGENDA	Introduction of MAZE

TOPIC	HOW TO MEASURE IMPACT OF COMPANIES

0. Introduction MAZE

- There are different approaches: Impact advisory, accelerator program etc.
- Mainly VC funds – budget from 100,000€ up to 1 Mio. €
- Impact portfolio multiple => need to define KPIs
- Improve the metric for the company
- Always measure, improve and adjust the multiples
- Also MAZE is working in health, education and carbon accounting
- Current portfolio of 38 companies

1. How does Maze measure impact in general?

- Look on how to invest in companies (same way looking into their impact)
- Link impact KPIs to financial KPIs
- For e. g. Bootcamp -> number of people graduating and salary
- Goes hand in hand with impact KPI
- Fashion: selling in 2nd market instead of producing => saving CO2 emissions on production
- Metrics is linked to the business model
- SFDR => Article 7/9 definition
- Start reporting other externalities (CO2, gender pay gap)

Impact KPIs: Atlas Metrics website

- Reporting platform
- Benchmarking the market / what are the emissions / what should be reported?
- Plan A (company)

1.2 What do you report concerning Impact /gender pay gap?

- Through platform atlas metrics
- Consolidates the numbers
- Link to SFDR => see consolidated reporting
- Impact Management project => check platform
- Impact Factsheet can be downloaded on the MAZE website
- Good help in the sense of how to communicate Impact

1.3 How are the KPIs defined?

- Completely individual from company to company
- Can be CO2 emissions, gender pay gap etc.
- List that is defined in cooperation with the founders

2. What are the biggest challenges when measuring impact?
Early-stage companies: Hard to link impact KPIs to financial KPIs
- Not a big reporting history
- Missing profit or even revenue

More developed firms:
- Lack of information problem
- CO2 emission => which scope? 1st, 2nd, or more? What should be included?
- The more a company wants to measure, the more assumptions have to be made

3. How can the impact of the chosen indicators (CO2 emissions, water savings, gender pay gap, in-kind donations) be measured?
- Do they already report on something? => Could be a good starting point
- If there is a platform it can be a big support

CO2:
Use a service provider that is familiar with these measurements (benchmarks, templates…)

Gender:
Directly asking the management or HR

Donations:
Some companies have platforms that have the information about their donations

Two options:
1) Understand end users
2) Make assumption and focus on one indicator => average, benchmark etc.

4. More Examples
CO2:
- Market research on averages – benchmark 1st hand item / 2nd hand item
- Outcome different from output => try to measure in the metrics

5. Food waste example
Check the following company: Footsteps (UK)

6. Can you recommend any best practices for measuring impact in general or for the specific chosen indicators?
- Companies already mentioned
- In the end it all comes down to the data available
- The deeper the analysis, the more assumptions are necessary

Protocol Interview 2

25.10.2023

PARTICIPANTS	**Steering committee**: Filipe Santos, Nuno Moreira da Cruz, Paulo Alves **CLSBE:** Franziska Rieger, Katharina Mößle, Jeremias de Biasi
RECORDER	Jeremias de Biasi
AGENDA	How to measure impact of companies

TOPIC	IMPACT ACCOUNTING

0. Introduction of the project

- Briefing to SONAE & Corticeira is planned to be next week
- Interviews are scheduled for November/December
- Accounting for positive/negative impact possible (right now not measurable)
- End solution? Guidelines => only covers a few, exemplary for other accounts
- Interviews: starting from cost till the willingness to go deeper down till impact
- For thesis: cost with measurement is enough, however there need to be developed some ideas how to focus more on impact => major indicators (looking on SDGs?!)
- Approach should be very robust so it can be defended against accusations

1. In-kind donations

- Example company A/B:
- How do we consider the difference?
- Donation is an expense => how should it be implemented into the accounts?
- Probably market value (actual cost)
- FS: conservative approach better to begin with (expense instead of market value)
  - ⇨ Cost
  - ⇨ Market
  - ⇨ Impact
- How do we deal with the hours spend? (how to quantify)
- Accounting issue still open to discuss
  - ⇨ How to quantify impact? (less hunger because of donations/how to price this impact?)
  - ⇨ EBITDA (70/100) example of Nuno
- Focusing on cost => going deeper (market, impact) it is going to be more difficult to measure

2. Gender pay gap

- Already hard to measure at the first stage (cost)
- If we stay at cost it is just an accounting exercise
- Harvard research to intel gives a lot of numbers (Nuno)

3. CO2 emissions

- market value of carbon pricing (PWC methodology)
- emission of each scope is similar => focus on scope 1 & 2 (3 is a guess)
  - ⇨ focus on the direct emissions
- positive externality in the accounts
- choice between carbon market price and actual impact (but how to quantify?)
- Corticeira Amorim is carbon sink => currently not in the carbon market
- Benchmark to use
- Carbon price using as a starting point => if price is changing it might be included

- Identify difficulties and milestones that will come up in the long run

4. Other comments

- Starting with costs, stay very conservative and think about which externalities we have to include to go more in the direction of impact
- Regarding impact: Maybe focus on SDGs to propose a framework on how to measure and monetize

Protocol Interview 3

06.12.2023

PARTICIPANTS	**Decarbonization platform (Company anonymized)**: Lukas Braun **CLSBE:** Jeremias de Biasi
RECORDER	Jeremias de Biasi
AGENDA	Measurement of CO2 emissions and Impact Accounting

TOPIC	HOW TO MEASURE IMPACT OF COMPANIES

1. Why do companies measure their CO2 emissions?

In principle, there are many reasons why companies want to measure their CO2 emissions and keep track of them. These reasons vary depending on the type of company. For example, if you consider internationally operating companies, different regulations apply than for medium-sized companies that mainly operate in Europe or Germany.

There are differences in the B2B sector compared to the BTC sector, as reputation is much more important to customers of BTC companies. Very few companies do this because of their intrinsic motivation to combat climate change. It is used much more as a competitive and differentiating advantage.

For energy intensive companies, CO2 measurement and the resulting CO2 reduction measures often go hand in hand with cost savings, which is why measuring CO2 emissions can also be very lucrative for companies from this point of view. Especially in the EU with the EU Green Deal. However, the point of regulations takes on a new significance and will probably be the most important reason. If a company wants to actively reduce CO2 emissions, one starting point is of course to measure its own emissions first.

2. Which regulations and guidelines are relevant for your measurements?

The regulations that are primarily covered by our tool are the Corporate Sustainability Reporting Directive (CSRD). For more in-depth considerations, for example, the Green House Gas Protocol is used to calculate the CO2 scopes. This provides a concrete structure of how the individual emissions caused by the production process, by the use of energy and heat, but also by the upstream and downstream value chain, are generated and interrelated.

3. What kind of problems can occur when you measure CO2 emissions?

There are many difficulties in the exact calculation of CO2 emissions. Following on from the previous question, I would say that the calculation of scope three emissions in particular poses considerable problems for companies with a very large supplier network. The 15 sub-categories of the Green House Gas Protocol make it possible to classify all emissions into different categories. However, it is virtually impossible for companies to obtain the exact CO2 balance, which is why they usually work with assumptions.

For example, the basic CO2 factor for 1 kg of stainless steel is used and extrapolated based on the amount of stainless steel used in the product. However, these are often only estimates. It is therefore easy to imagine that such a calculation can become very complex for machines with more than 100 different materials and parts. Another point that complicates the CO2 calculation is if the company has many international locations.

For example, when it comes to scope two, each country has a different electricity mix, which leads to a different carbon footprint per kilowatt hour. In Norway, for example, the electricity may cause significantly lower CO2 emissions than at a site in China, for example. Another point is not actually measuring emissions, but coordinating and collecting them within the company.

4. Which relevant constraints are included in the current measurement methods?
I would say that the biggest limitations arise in the scope three calculation. As mentioned above, it is almost impossible to keep track of a complex supply chain and add up the emissions. However, this also applies to downstream emissions, which are also included in scope three. If you take companies like BASF with a product portfolio of over 50,000 different products, it is extremely time-consuming to calculate the emissions here.

5. Do you offer any consulting or implementation services about how to reduce emissions?
In fact, the company is primarily a company for implementing reduction plans. When measuring, only basic features are available, and work is done with partners. However, as soon as the company knows which CO2 emissions it is imitating and to what extent, we come into play. With our software, we offer a concrete CO2 management tool that works like a dashboard. Every location and every measure can be adjusted and monitored from anywhere, and it is also possible to check how this contributes to the overall achievement of CO2 targets in accordance with the regulations.

6. What is your opinion about the concept of Impact Accounting?
Impact accounting as a topic is not yet high on our agenda. What I would say, however, is that I think it is a necessary concept to enable the green transformation and the path to net zero emissions. Because in the end, there also needs to be a financial incentive to steer the capitalist system in the right direction. My biggest concern, however, is that there actually needs to be an international approach to this, similar to the international financial reporting standards. I don't see that happening in the near future.

7. Do you think CO2 emissions can be monetized and used for the concept of Impact Accounting?
Yes, I think it is possible per se. However, you have to work with industry-specific standards that can be applied internationally. So it's possible in theory, but probably hardly feasible in practice.

8. What potential problems do you see when companies try to implement it?
It only works if there is an independent audit system that cannot be influenced. Without this, there is a major internal conflict of interest, and it can very easily lead to the falsification of emissions, as is already often the case with companies.

Protocol Interview 4

08.12.2023

PARTICIPANTS	**Sustainability consultancy (Company anonymized)**: Finn Scheff **CLSBE:** Jeremias de Biasi
RECORDER	Jeremias de Biasi
AGENDA	Measurement of CO2 emissions and Impact Accounting

TOPIC	**HOW TO MEASURE IMPACT OF COMPANIES**

1. Why do companies measure their CO2 emissions?

- As a baseline for a climate strategy
- Regulatory pressure (CSRD)
- Pressure from stakeholders such as customers and investors
- To learn about emissions hotshots

2. What kind of problems can occur when you measure CO2 emissions?

- Insufficient knowledge about accounting standards and insufficient data
- Responsibility diffusion
- Not knowing how to set up proper project management
- Not having access to proper emission factors
- Budget

3. Which relevant constraints are included in the current measurement methods?

- Data constraints, for e. g. spend-based emissions calculations are unprecise
- For some sectors the accounting standards are hard to apply, for i. e. digital advertising

4. What is your opinion about the concept of Impact Accounting?

- Sounds promising in theory but don't really see it being applied yet in the industry
- I think Enel uses a similar concept in their integrated report
- CO2 can and is already being translated in monetary terms by the ETS or internal carbon pricing, but I think it's hard to apply this to social issues

5. Do you think CO2 emissions can be monetized and used for the concept of Impact Accounting?

- Yes, see before
- Emission trading schemes, internal carbon pricing, transition plans that quantify CO2 emissions

6. What potential problems do you see when companies try to implement it?

- It increases cost
- Social impacts (positive and negative) are hard to quantify
- But it's actually quite a good method to steer a company because accountants think in monetary terms so quantifying impacts makes the topic of sustainability better to understand for accountants

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