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Decarbonizing Cocoa Supply Chains: A Case Study of Mondelēz's Decarbonization Efforts in Côte d'Ivoire

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Abstract

Cocoa has long played a central role in global agriculture and the cultural significance of chocolate remains strong. However, the sustainability of cocoa production is increasingly threatened by the impacts of climate change, market volatility, and ecological degradation. In response, major chocolate manufacturers have begun implementing sustainability initiatives to reduce their Scope 3 emissions across global supply chains. Among them is Mondelēz International, a leading multinational company, which launched its Cocoa Life program in Côte d'Ivoire, currently the world's largest cocoa-producing country.

This thesis investigates the strategic implementation of Mondelēz's decarbonization efforts within the Cocoa Life program Côte d'Ivoire and analyzes their observed and anticipated impacts on both the sustainability of cocoa production and the livelihoods of smallholder farmers Côte d'Ivoire. By combining document analysis and expert interviews, the study sheds light on how corporate climate strategies interact with local realities and structural challenges.

The findings of this research reveal that Cocoa Life has supported improved farming practices, yield gains, and greater access to income support, but the benefits remain limited in scale to address deeper issues such as persistent poverty, lack of farmer autonomy and gender inequality. Yet, this research contributes to a deeper understanding of private sector climate governance in agricultural supply chains and offers critical insights into the limitations and opportunities of such sustainability initiative.

Keywords: Mondelēz International, Cocoa Production, Supply Chain, Climate Change, Côte d'Ivoire, Decarbonization Strategy, Sustainability Initiatives, Smallholder Farmers

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List of Figures

List of Tables

List of Abbreviations

AFOLU	Agriculture, Forestry and other Land Uses
CAP	Community Action Plans
CCC	Conseil du Café Cacao
CFI	Cocoa & Forests Initiative
CLMRS	Child Labor Monitoring and Remediation System
CSSV	Cocoa Swollen Shoot Virus
ESG	Environmental, Social, and Governance
EUDR	European, Deforestation Regulation
FDP	Farm Development Plan
GAP	Good Agricultural Practices
GHG	Greenhouse Gas Emissions
GDP	Gross Domestic Product
PES	Payment for Ecosystems
VSLA	Village and Savings Loan Association

Table of Content

1. Introduction

1.1 Background

Climate change remains one of the most pressing challenges of the 21st century, affecting not only human societies but also natural ecosystems across the globe (Calvin et al., 2023). In particular, agriculture is highly dependent on stable environmental conditions, making it vulnerable to climate change and essential to mitigating its impacts (Ahmed & Almeida, 2020). Cocoa is among the crops most vulnerable to climate change. As a tropical tree cultivated for its beans, it serves as a primary ingredient in chocolate production (Kroeger et al., 2017).

Originally introduced from Brazil, cocoa cultivation expanded to West Africa during the 19th and 20th centuries. Unlike in Latin America, cocoa in Africa is predominantly grown by smallholder farmers (Schroth et al., 2016). Today, Ghana and Côte d'Ivoire dominate global cocoa production, together accounting for the majority share (Tropical Forest Alliance, 2023).

Furthermore, the global cocoa sector is facing multiple challenges as it is affected by climate change whereby Côte d'Ivoire, the world's leading cocoa producer is experiencing a loss of suitable land (World Bank, 2019) . The reduction of suitable land for cocoa production is especially threatening the livelihoods of smallholder farmers (Olwig et al., 2023). Smallholder farmers play a critical role in the global value chain but remain particularly vulnerable due to inadequate infrastructure and limited access to financial support (Beg et al., 2017). While intensifying production is often seen as a solution, it may expose smallholder farmers to greater risk. This highlights the urgent action through investment in resilient farming technologies, as well as supportive policies and institutional reform (Vanlauwe et al., 2014).

In response to growing challenges in the cocoa sector, major chocolate manufacturers have introduced sustainability initiatives aimed at addressing broader impacts, including indirect scope 3 emissions from farming, transport and processing (Renier et al., 2023). One of the key companies in this field is Mondelēz International who introduced its own sustainability initiative to reduce greenhouse gas emissions (GHG) emissions across its cocoa value chain (Mondelēz International, 2024b).

Despite the existence of different corporate sustainability initiatives, significant gaps remain between their stated goals and actual outcomes (Ingram et al., 2018). The question remains how effective sustainability initiatives are in addressing structural and environmental challenges on the ground and if the corporate sustainability efforts

truly contribute to the decarbonization of the cocoa sector while improving farmer livelihoods.

1.2 Problem Statement

This thesis holds both societal and scientific relevance. Societally, it addresses key challenges faced by smallholder cocoa farmers such as limited financial resources, environmental degradation, and market instability by evaluating the effectiveness of Mondelēz International's Cocoa Life program. The insights gained may support efforts to strengthen sustainability and resilience in smallholder farming systems. From a scientific perspective, the study contributes to the literature by analyzing a specific corporate sustainability initiative, thereby enhancing understanding of agricultural sustainability, climate change adaptation and mitigation, and the resilience of the cocoa value chain.

1.3 Research Aim and Objectives

This thesis aims to examine the decarbonization strategy of Mondelēz International in Côte d'Ivoire's cocoa sector through its Cocoa Life program. It focuses on the company's climate strategy, the extent of farmer participation and support, and assesses the resulting impacts on both environmental sustainability and farmer livelihoods. The study emphasizes the broader potential of corporate initiatives in addressing global environmental challenges through this analysis.

1.4 Research Questions

Based on the aim and objectives of the thesis, the following research questions and sub-questions guided this research.

"What strategy does Mondelēz International employ to decarbonize its cocoa value chain, and what are the observed and anticipated impacts on the sustainability of cocoa production in Côte d'Ivoire and the livelihoods of the smallholder cocoa farmers in that country?"

SQ1: What decarbonization strategy and actions are employed under Mondelēz's Cocoa Life program?

SQ2: How are smallholder cocoa farmers involved in and supported by Mondelēz's decarbonization strategy?

SQ3: How does this decarbonization strategy impact the sustainability of cocoa production and livelihoods of smallholder farmers in Côte d'Ivoire?

1.5 Thesis outline

The first chapter of this thesis introduces the research topic, outlines the problem statement, and presents the study's objectives, leading to the formulation of the research questions. Chapter 2 establishes the theoretical foundation by reviewing relevant literature and identifying existing knowledge on the topic. Chapter 3 details the research methodology, including the design and data collection methods. Chapter 4 introduces the case study and presents the findings of the empirical analysis. Chapter 5 offers a discussion that compares the findings with the theoretical framework. Finally, the conclusion summarizes the key insights, answers the research questions, and provides recommendations for future action.

2. Theoretical Framework

2.1 Cocoa production in Côte d'Ivoire and its challenges

Cocoa production is predominantly concentrated in West Africa, particularly in Ghana and Côte d'Ivoire. In 2023, Côte d'Ivoire produced approximately 2.3 million tons of cocoa, whereby this nation is generally responsible for 30% of world's cocoa (World Population Review, 2025). In 2023, Côte d'Ivoire was the world's largest exporter of cocoa beans, which also ranked as the country's second most exported product (OEC, 2024).

Over the last decade, human-driven climate change has increased the frequency of extreme heat across West Africa's cocoa belt. As a result, there are now around 40 days each year with maximum daily temperatures exceeding 90°F (Climate Central, 2025). As climate change intensifies, cocoa production in these areas faces growing risks. West Africa, in particular, is highly sensitive to its effects, largely due to unpredictable weather patterns, reliance on rainfall for farming, and limited resources to adapt (Asante et al., 2025).

A key driver of both climate change and cocoa sector emissions is deforestation. The Agriculture, Forestry and Other Land Use (AFOLU) sector contributed approximately 13-21% of global anthropogenic global greenhouse GHG emissions between 2010 and 2019, whereby deforestation alone accounting for 45% of total AFOLU emissions (IPCC, 2022). In the context of cocoa production, deforestation represents one of the most severe environmental threats which contributes to GHG emissions in the cocoa value chain (Parra-Paitan et al., 2024). Furthermore, the impacts of deforestation include land degradation, increased flood risks, and biodiversity (ICCO, 2022).

Given the 30-40 year lifespan of a cocoa tree planted today in West Africa, they will be exposed to the effects of climate change at least until mid-century (Asante et al., 2025; Wessel & Quist-Wessel, 2015).

Moreover, specific regions and local authorities in Côte d'Ivoire have been linked to illegal deforestation, including in protected forest reserves. Between 2016 and 2019, 35.000 hectares, which is 4% of the country's primary forest were lost (Higonnet et al., 2019). The interplay of these factors has altered rainfall patterns. Since forests help produce rain, their loss has led to drier conditions, making cocoa production more difficult (Christian Aid, 2025). Furthermore, El Niño, a pacific warming event that disrupts global weather, has caused unseasonal weather patterns, causing prolonged dry spells in West Africa's top cocoa-producing countries (BBC, 2024).

Further, the rapid spread of Cacao Swollen Shoot Virus (CSSV) drives GHG emissions by causing extensive damage to cocoa trees and contributed to severe soil degradation, reducing carbon efficiency cocoa farming (Cilas & Bastide, 2020).

Although climate change poses a major threat to cocoa production, the industry is also vulnerable due to the limited genetic diversity of cultivated cocoa trees. While some improvements in disease resistance have been made, little new genetic variation has been introduced to strengthen resilience against a changing climate (Christian Aid, 2025). Excessive heat reduces cocoa yields and quality by disrupting plant growth and increasing water stress, which is leading to greater land-use intensity and carbon efficiency. These conditions present key obstacles in decarbonizing the cocoa value chain (Climate Central, 2025). Climate projections indicate a potential rise if up to 1.5°C by 2050 in Côte d'Ivoire, along reduced rainfall and an increase of suitable areas for cocoa cultivation. This would threaten national cocoa production, the livelihoods of farmers and feasibility of long-term decarbonization strategies within the cocoa sector (Métangbo et al., 2023).

2.2 Vulnerability of smallholder cocoa farmers

Smallholder farmers represent a particularly vulnerable community. They typically cultivate small plots of land to feed their families and generate income often living in rural areas of the global south where access to financial resources and essential infrastructure is limited (Duşmăneanu & Jeschke, 2024). In Côte d'Ivoire the cocoa sector employs at least 1.2 million smallholder farmers, whereby they heavily rely on cocoa as their primary income source (Oxfam, 2024; USDA-FAS, 2025).The majority of cocoa farms span between 2 and 4 hectares, yet annual yields typically remain low at 300–400 kg (Brack, 2019).

From an economic perspective, poverty portrays as a key challenge within the cocoa sector. A Fairtrade study has shown that the majority of smallholder cocoa farmers are unable to generate sufficient income from cocoa production, with only 15% of cocoa farmers even those who are certified under standards like Fairtrade earning a living income (Impact Institute, 2021). A living income is defined as the net annual income a household needs to afford a decent standard of living, including essentials such as food, water, housing, education, healthcare, transport, clothing, and a buffer for unexpected events (Living Income, 2025). The estimated monthly living income for a typical household of two adults and four children in cocoa producing areas of Côte d'Ivoire is CFA 323,941 approximately USD 531 (Anker Research Institute, 2024). However, the current income level of the smallholder farmers is not sufficient to close the gap to a living income (Oxfam, 2024), highlighting that poverty remains one of the core challenges in the cocoa sector and should therefore be a primary focus for improvement efforts (Fountain & Hütz-Adams, 2020). Furthermore, as cocoa farming is seasonal this leads to smallholder farmers being less likely to adopt to long-term adaption strategies (Schulte et al., 2020).

Multiple environmental and market-related factors contribute to their economic vulnerability. Pests and diseases are significantly contributing to financial losses for cocoa farmers (Wessel & Quist-Wessel, 2015). Aging cocoa trees, degraded soil quality, and limited access to modern farming techniques further constrain productivity and income. These conditions reduce yields and reinforce reliance on high emissions practices but also disrupt the sustainability efforts of the broader cocoa supply chain (Kouassi et al., 2021). Furthermore, cocoa is known to be a highly volatile commodity, with a long history of fragile price fluctuations. The price fluctuations put additional pressure on cocoa farmers, deepening the uncertainty of already fragile livelihoods (Brack, 2019). These challenges have driven many young people in Côte d'Ivoire to pursue alternative livelihoods outside of cocoa farming (Lalwani et al., 2018).

Moreover, the global cocoa industry is marked by economic disparity while cocoa is the foundation of a profitable luxury chocolate market, the smallholder farmers who produce it remain in poverty (Oxfam, 2024). Ongoing challenges such as volatile prices, climate change, and systemic corruption continue to undermine their financial stability. As a result, younger generations are increasingly unwilling to pursue cocoa farming as a viable future (Kroeger et al., 2017).

Beyond economic issues, many cocoa farming in Côte d'Ivoire faces significant social vulnerabilities due to limited access to education, healthcare and relevant agricultural

training. Declining public investment and poorly adapted support services leave farmers with few resources to improve their livelihoods or build long-term resilience (Coral et al., 2024).

Further, social vulnerabilities persist in the form of child and forced labor on cocoa producing farms. Many children work on plantations, and instances of debt-bonded labor among both adults and minors continue to be reported (Hütz-Adams, 2021). In addition to child labor, gender inequality persists in the cocoa sector as well. Although women significant contribute to both farm labor and household responsibilities, their work often goes unrecognized and uncompensated (Fountain & Huetz-Adams, 2022).

Moreover, most farmers lack access to credit, insurance, or banking services (Nitidae & Institute, 2021). These challenges, combined with a lack of resilience to climate-related risks, make it particularly difficult for farmers to adapt their current low-yield farming practices and adopt climate-smart, low-carbon farming systems (Schulte et al., 2020).

Despite growing prominence to sustainability in the cocoa sector, corporate decarbonization strategies prioritize an increase of productivity. Yet smallholder farmers are central to these efforts, as their practices drive most Scope 3 emissions and shape the sector's climate footprint (Fountain & Hütz-Adams, 2020).

2.3 Cocoa Supply Chain in Cote d'Ivoire

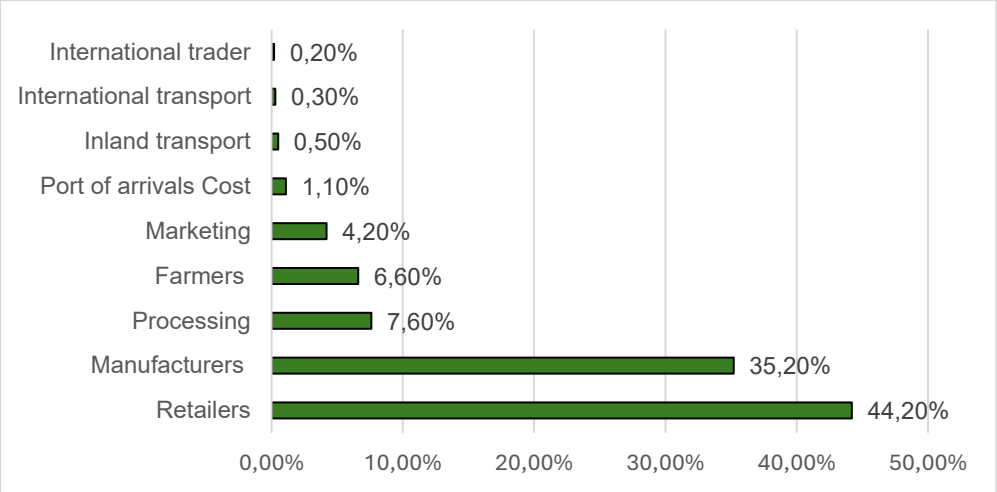
Cocoa plays an important role in Côte d'Ivoire's economy, generating accounting approximately 40% of export revenues and contributing 10-15% of the national Gross domestic product (GDP). The sector the main source of livelihood for more than a third of the Ivorian population (Kadio, 2023; USDA-FAS, 2025).

As described in 2.1 earlier cocoa is Côte d'Ivoire's leading export commodity and a key pillar of its export-driven agriculture. However, despite its leading role in global production, the decisive processing step does not take place domestically (Kadio, 2023). Around 40% of Ivorian cocoa beans processed in Europe, while the rest are processed in Africa, Asia, and the Americas. Similarly, consumption heavily concentrated in Europe and North America, where the majority of cocoa products such as chocolate and cocoa butter are consumed (Kroeger et al., 2017).

Only 3% of Côte d'Ivoire's cocoa exports are finished products, while 97% are raw or semi-processed materials. Less than 5% of processed cocoa is consumed domestically, highlighting the sector's dependence on foreign markets for value addition (USDA-FAS, 2025).

As a result, a large part of the economic value added to the cocoa supply chain remains abroad, and Côte d'Ivoire only benefits from the cocoa industry to a limited extent. The highest economic value along the cocoa supply chain is generated by chocolate manufacturers and retailers (Kadio, 2023).

***Figure 1**: Stakeholder Share in the global cocoa chain derived from World Economic Forum (2020)*



Despite being the backbone of the cocoa supply chain, cocoa farmers receive only a small share of the final value, which is demonstrated in the figure 1. While they face the greatest challenges, they continue to earn the least. This highlights the imbalance within the cocoa sector, showing that majority of the profits are captured by retailers and manufacturers further downstream (World Economic Forum, 2020).

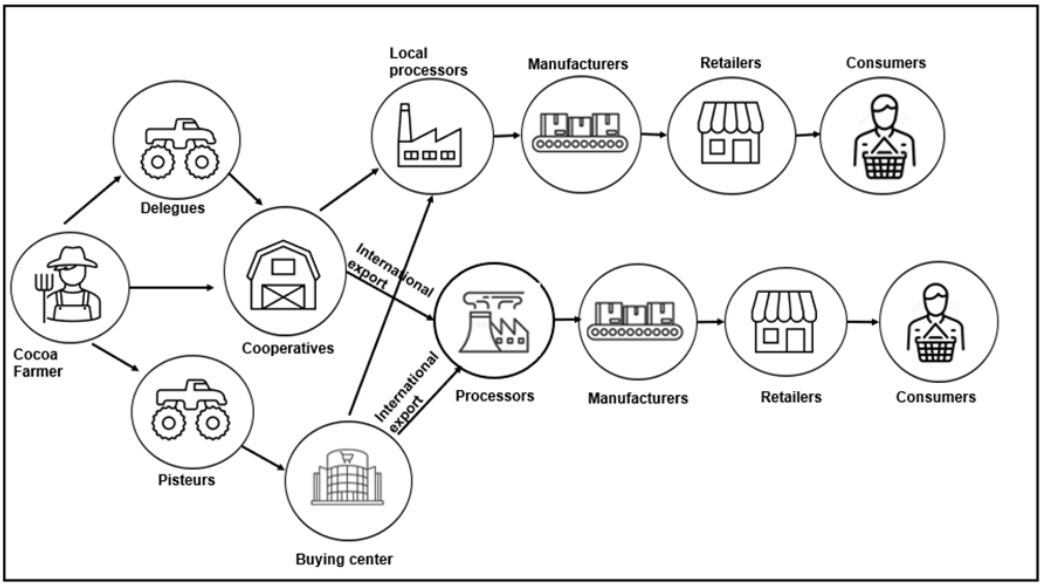
In Côte d'Ivoire, the cocoa supply chain is officially regulated by the Conseil du Café-Cacao (CCC) (Stoop et al., 2021). The CCC is a governmental institution and responsible for managing and overseeing the cocoa and coffee sector with a mandate to improve sustainability, farmer incomes, and enhance global consumption (International Cocoa Initative, 2025).

CCC is responsible for overseeing the price stabilization mechanism to protect smallholder farmers from global price fluctuations and exchange rate volatility. Cocoa bean prices are set in advance through forward sales before the harvest season, providing a predetermined pricing structure that guides transactions at various stages of the supply chain (Tröster et al., 2019). Smallholder farmers receive a set minimum price, which is at least 60% of the export value, and this price is reviewed twice a year. If there are big differences between what exporters pay and what they earn, a compensation system helps solve those gaps. A stabilization fund also protects farmers if market prices drop during the season (Mota et al., 2019).

However, the upstream supply chain remains heavily influenced by international cocoa prices. While CCC ensures price consistency across different regions, it does not directly participate in the trade of cocoa beans (Mota et al., 2019; Tröster et al., 2019). Also, the price of cocoa is unstable and influenced by factors like extreme weather, pests and disease, speculation, and political instability in producing countries (Beg et al., 2017). Since 2022 the cocoa prices have tripled, which are driven by speculative markets, yet smallholder farmers only receive a small share due to pre-set farm pricing and limited access to price control mechanisms (Tröster et al., 2024).

The cocoa supply chain consists of multiple actors, with farmers at its core. Their responsibilities include planting and maintaining cocoa trees, harvesting the pods, shelling the beans, and overseeing the fermentation and drying processes to prepare the cocoa for further stages in the supply chain (Duşmăneanu & Jeschke, 2024). Generally, the majority of smallholder cocoa farmers are organized into cooperatives, which serve as a key support structure by facilitating access to agricultural inputs, providing training, and linking farmers to more structured markets (USDA-FAS, 2025).

Figure 2: *Structure of the cocoa supply chain in Côte d'Ivoire adapted from Duşmăneanu & Jescke (2024)*



Cocoa farmers have three main channels through which they can sell their cocoa beans. Firstly, they can sell their cocoa to private buyers *(pisteurs),* who then resell it to traders. These traders, in turn, supply the cocoa to exporters and/or processing companies, where it undergoes further processing or is sold on the international market (Mota et al., 2019).

Secondly, farmers have the option to sell their cocoa directly to cooperatives, which serve as intermediaries between farmers and buyers. These organizations are responsible for purchasing, collecting, and consolidating cocoa from multiple farmers, ensuring efficient distribution (Duşmăneanu & Jeschke, 2024). In some cases, farmers may sell to the cooperative through a *délégué,* who has direct ties to the cooperative and helps facilitate the transaction (Mota et al., 2019; Stoop et al., 2021).

Lastly, some farmers sell their cocoa directly to exporters and processing companies without intermediaries. Domestic processing companies then refine the cocoa into various products, which are sold directly on the international market (Mota et al., 2019).

At upstream level are the cocoa grinders, who purchase raw cocoa beans and convert them into cocoa liquor. This segment is highly consolidated, with just three companies accounting for 60% of the market (Folke et al., 2019). The cocoa liquor is then processed further into products such as cocoa powder and cocoa butter by manufacturers, which portrays another concentrated segment. Finally, at the downstream end of the chain are the retailers, who sell chocolate products either under

their own brand or distributing other well-known brands to consumers (Carodenuto & Buluran, 2021).

2.4 Corporate sustainability and decarbonization strategies

In response to growing awareness of the social and environmental consequences of tropical forest loss, and the persistent challenges within the cocoa sector, this has led to more companies implementing initiatives to address deforestation in global commodity supply chains (Carodenuto, 2019). Among them many companies have adopted "zero deforestation" commitments, in which companies aim to achieve traceability in their supply chain and end deforestation in cocoa-growing regions. These commitments exemplify sustainable sourcing practices in global agricultural commodities, characterized by companies implementing voluntary measures for their supply chains (Carodenuto & Buluran, 2021).

A significant regulatory development is the European Union Deforestation Regulation (EUDR), which aims to ensure that certain commodities such as cocoa and coffee are not linked to recent deforestation, aiming to promote deforestation-free supply chains and reduce the EU's environmental impact (European Commission, 2023).

In parallel, a growing number of chocolate manufacturers are committing to climate action by setting greenhouse gas reduction targets that are aligned with the Science Based Targets initiative, which ensures consistency with the Paris Agreement (SBTi, n.d.). As a sector intertwined with environmental conditions, agriculture is especially exposed to climate variability, emphasizing the need for carbon strategies (Acampora et al., 2023). Therefore, recent strategies are emphasizing reducing carbon footprint, promoting agroforestry, and adopting cleaner production methods as core elements of sustainable cocoa sourcing (Martins et al., 2023). This shift reflects an evolution from earlier corporate social responsibility approaches that relied primarily on third-party certification toward more comprehensive sustainability initiatives and explicit reduction targets (Renier et al., 2023).

An essential framework for corporate climate accountability is the classification of greenhouse gas emissions into Scope 1, Scope 2, and Scope 3. Scope 1 emissions refer to direct emissions from sources owned or controlled by a company. Scope 2 includes indirect emissions from the generation of purchased energy. Scope 3 emissions which account for most emissions in agri-food sectors like cocoa encompass all other indirect emissions occurring throughout a company's value chain, both upstream and downstream (CBI, 2023).

To address emissions across all three scopes, companies are now developing decarbonization strategies. These include greening processing and logistics operations by using renewable energy in cocoa grinding facilities (Scope 2) and optimizing transport systems that are owned by the company (Scope 1). These measures are part of broader corporate efforts to decarbonize the supply chain and reduce their overall climate footprint (Carodenuto, 2019).

However, within the agri-food sector, and especially cocoa production, scope 3 emissions account for majority of greenhouse gas emissions. These primarily stem from agricultural production and land-use change and occur at the farm level, through deforestation, fertilizer use, and on-farm energy consumption (CBI, 2023). This underscores the importance of companies measuring and addressing the need for GHG emissions along their value chains to effectively manage both risks and opportunities (Harris, 2015).

Given the dominance of scope 3 emissions in cocoa production, addressing farming practices is essential for reducing the sector's carbon footprint. For example, cocoa agroforestry has emerged as a key method, involving the planting of shade trees on cocoa farms to lower carbon footprints and contribute to climate change mitigation (Ameyaw et al., 2018). These systems provide significant ecological and economic benefits as they contribute to biodiversity, carbon sequestration, soil fertility and drought resistance while also controlling weeds and pests (Vaast & Somarriba, 2014). In addition, climate-smart agriculture is gaining recognition for its dual role in supporting climate adaptation and mitigation, while also improving food security (Nasser et al., 2020). In Ghana "Climate Smart Cocoa" initiatives encourage farmers to adopt shade trees and sustainable intensification to increase cocoa yield while preventing deforestation and enhancing carbon sequestration (Nasser et al., 2020).

However, the distribution of power within the cocoa supply chain significantly determines whose interests are prioritized in tackling sustainability issues. Despite the small number of multinational corporations controlling the sector, value remains unequally distributed, marginalizing smallholder farmers and leaving them the most vulnerable actors in the chain (Martins et al., 2023). Although investment in sustainable cocoa sourcing has increased, many corporate initiatives have demonstrated limited impact. These initiatives often reach a small number of smallholder farmers and tend to fall short in addressing deeper structural issues such as low incomes and poor working conditions (Nelson & Phillips, 2018).

A core element of corporate decarbonization strategies is boosting farm productivity to improve livelihoods and reduce environmental impact. However, this is often criticized for prioritizing broad reach over long-term, intensive support for fewer farmers (Bymolt et al., 2018).

2.5 Conceptual Framework

The conceptual framework developed for this research (Table 1) serves to structure the analysis of corporate decarbonization efforts in the cocoa sector by highlighting key interconnections between corporate sustainability strategies and smallholder farmer actions. It is based on insights from (SWISSCO, 2023), (Nitidae & Institute, 2021) and (Ingram et al., 2018) which collectively identify the seven core areas shaping cocoa sustainability interventions.

This framework will be applied to structure the analysis of empirical data, guiding the assessment of corporate documents and interviews response. It enabled a focused examination of multinational companies, particularly Mondelēz International are involved in sustainability efforts cocoa in the cocoa sector. The framework further distinguishes corporate-level mechanisms and farm-level practices enabling a clearer interpretation of how sustainability commitments are translated into concrete actions. In doing so, it supports a triangulated analysis that combines secondary data and stakeholder perspectives to assess the effectiveness and gaps in corporate decarbonization strategies.

***Table 1**: Conceptual framework of corporate decarbonization efforts in the cocoa sector, own illustration*

Category	Corporate Decarbonization Strategies	Smallholder Farmer Actions	Interlinkage between corporate & farmer strategies	Independent Corporate Strategies
Deforestation & Land Use Management	Zero Deforestation Commitments, satellite monitoring, landscape monitoring	Agroforestry practices, landscape restoration, tree planting	PES schemes, climate-smart agriculture training	Carbon Offsetting outside of cocoa farming
Programm Implementation & Multi-Level Collaboration	Implementation of corporate sustainability programs, NGO & government partnerships, jurisdictional alignment	Cooperative engagement, participation in group certification, receiving training	Capacity building at farm and institutional levels, landscape coordination	Strategic branding on sustainability platforms (e.g. ESG reports)
Climate Finance & Emission Reduction Initatives	Net-zero targets, Climate finance mechanisms	Adoption of low-emission practices (e.g. regenerative agriculture)	Carbon credit schemes; financial incentives for sequestration	Net Zero pledges, investments in carbon innovation
Traceability & Supply Chain Transparency	GPS mapping, mass balance systems, certification support	UTZ, Rainforest Alliance, Fairtrade certification	Market access enabled through traceability & certification, financial premiums for verified cocoa	Technology investments for supply chain monitoring
Financial Incentives & Farmer Income Stability	Premium payments, VSLA support, long-term sourcing agreements	Participation in saving groups, receipt of certification premiums, use of income diversification tools	Shared investment in income stability mechansims	Financial incentives tied to ESG goals through investment in sustainability initatives
Social Responsibility and Farmer Livelihoods	Gender-inclusive training, CLMRS, VSLA facilitation	Engagement in social programs (e.g. women's training, child labor remediation)	Institutional partnerships for long-term resilience programs	ESG reporting & human rights due diligence disclosures
Agricultural Productivity & Food Security	Support for yield-enhancing practices (e.g. pruning,composting, input access)	Adoption of GAP, crop diversification	Increased producitivty through knowledge transfer: training, farmer schools	Reporting on productivity outcomes; use of producitivity KPIs in sustainability reporting

3. Methodology

3.1 Research Design

This thesis adopts a qualitative research approach and applies a single case study design to explore the decarbonization strategy of Mondelēz International within the cocoa supply chain in Côte d'Ivoire. The aim is to understand how this strategy influences both the sustainability of cocoa production and the livelihoods of smallholder farmers. To ensure a comprehensive perspective, this study incorporated both primary and secondary data sources.

The research design incorporates four components, literature review, document analysis, two semi-structured expert interviews, and a case study.

3.2 Literature Review

The literature review served as a methodological tool for examining existing literature, identifying relevant theories and research approaches, and contextualizing the study within the broader academic discourse (Bryman, 2016). Its purpose was to build a theoretical grounding for the study and to inform the conceptual framework.

A systematic literature review was conducted, defined as a transparent and reproducible method for synthesizing existing research to answer specific questions, while evaluating the scope and quality of the available evidence (Lame, 2019). The review focused on academic literature related to coca-producing countries, particularly Côte d'Ivoire as well as broader themes including smallholder vulnerability, supply chain sustainability, and decarbonization in agri-food systems.

Academic sources were identified through databases such as Google Scholar, Scopus, and Web of Science. In addition, reliable grey literature was included to complement academic findings and reflect policy and theory perspectives. These included publications by organizations such as Tropical Forest Alliance, Rainforest Alliance, and International Cocoa Initiative.

The review also supported the identification of knowledge gaps and informed the design of the interview questions. A combination of keywords and search strings were used:

1. "Corporate decarbonization strategy" AND "cocoa supply chain"
2. "GHG emissions" OR "scope 3 emissions" AND "cocoa value chain"
3. "agroforestry" AND "carbon sequestration" OR "sustainable cocoa farming"
4. "Zero deforestation" AND "cocoa sourcing" OR "traceability"
5. "Smallholder cocoa farmers" AND "livelihoods" AND "Côte d'Ivoire"
6. "Climate change vulnerability" OR "resilience" AND "cocoa farmers"
7. "Living income" OR "income gap" AND "cocoa sector"
8. "Income diversification" AND "rural farming" OR "West Africa"
9. "Côte d'Ivoire" AND "cocoa production" AND "climate change"
10. "REDD+ Côte d'Ivoire" AND "agriculture" AND "land use emissions"

3.3 Data collection methods

This research utilized a combination of primary and secondary data. The combination of both employed a methodical triangulation to receive a comprehensive view of the decarbonization strategies from Mondelēz and its impact on the smallholder's farmer in Côte d'Ivoire.

3.3.1 Interviews

Interviews are especially effective when participants can offer detailed background information on a specific topic while enabling the researcher to guide the conversation in a purposeful direction (Creswell, 2017). In this research, semi-structured interviews are employed, offering a flexible and adaptive format that relies on open-ended questions to encourage in-depth responses (Jamshed, 2014). This method was well-suited to exploring key aspects of the cocoa supply chain Côte d'Ivoire, particularly appropriate for examining how smallholder farmers are involved in and supported by Mondelēz's decarbonization strategy (SQ2), and how these efforts affect both sustainability and farmer livelihoods on the ground (SQ3).

The interview followed a pre-formulated questionnaire, which can be found in the appendices. Two expert interviews were conducted with representatives from organizations that collaborate with the Cocoa Life program of Mondelēz. Interviewees were selected based on their involvement in cocoa sustainability and smallholder farmer support in Côte d'Ivoire, their partnership with Mondelēz under the Cocoa Life program, and lastly their willingness and availability to participate. Participants were identified through targeted outreach to NGO contacts and were provided with an overview of the research scope prior to the interview.

Interviews were conducted in both online and in-person settings, depending on logistical possibilities. Each interview was audio-recorded with informed consent and transcribed for qualitative coding and thematic analysis.

***Table 2**: Expert Interviews Participants*

Participant (s)	Company	Date	Format	Position	Purpose
Expert A	International NGO focused on agricultural supply chains	02.04.2025	Microsoft Teams	Corporate Engagement Manager	Insights into NGO–corporate collaboration for sustainability in cocoa
Expert B&C	Development initiative in agricultural supply chains	07.04.2025	In Person	Business Relationship Manager / Senior program manager agroforestry and environment	Understand private sector strategies for implementing sustainability projects in cocoa supply chains

3.3.2 Document Analysis

This research employed a document analysis to review and interpret secondary data. Document analysis is a structured research method that is used to assess and interpret documents based on specific criteria. This approach serves as a coherent link between insights that have been gathered from interviews and the developments documented in both literature and practice (Bowen, 2009). This method was particularly appropriate for addressing the first sub-question (SQ1), which examines what decarbonization strategy Mondelēz applies in its cocoa supply chain. Given the strategic nature of this question, the most reliable and comprehensive insights could be drawn from official corporate documents and reports by implementing partners.

The analysis focused on Mondelēz's Cocoa Life program in Côte d'Ivoire, where it was implemented in 2013 and covered a timeframe from 2013 to 2024. This research applied a two-tiered approach, using primary documents to provide data on a specific context and supplementary documents to contextualize and triangulate on other empirical data. The primary documents which were mostly corporate reports, sustainability updates, and policy evaluations were coded thematically using ATLAS.ti, while supplementary documents such as regulatory assessments informed broader interpretation.

The documents were identified through a combination of systematic and purposive searching. Search terms included: "Cocoa Life Mondelēz", "cocoa sustainability Côte d'Ivoire", "sustainable cocoa national strategy in Côte d'Ivoire", "cocoa decarbonization strategy report", "cocoa sustainability Mondelēz", "cocoa agroforestry ESG" and "Cocoa Forests Initiative." Sources included the official Cocoa Life portal, Mondelēz website, Google Scholar, and NGO and initiatives sites.

A total of 26 documents were reviewed, of which 18 were selected for primary coding based on their depth of content and relevant to the country context. Eight documents

were used in the discussion as supplementary sources to provide sectoral background and triangulate findings.

This method allowed for a nuanced understanding of corporative narratives, program goals and progress overtime. Moreover, document analysis served as a foundation for triangulation with the qualitative data. By referencing strategic claims with insights from the interview, the validity of these findings is enhanced and contributes to a more holistic understanding of Mondelēz's decarbonization approach (Bekhet & Zauszniewski, 2012).

3.3.3 Case Study

This research adopted a qualitative single case study approach to explore the decarbonization strategy of Mondelēz International within the cocoa supply chain in Côte d'Ivoire. As one of the largest chocolate manufacturers globally, Mondelēz plays a significant role in shaping sustainability efforts in the cocoa sector. Focusing on its Cocoa Life program, this case study provided a relevant lens to analyze corporate climate action and farmer support in cocoa production.

The choice of Côte d'Ivoire is due to its role as the world's largest cocoa producer and its exposure to challenges like deforestation, climate change, and smallholder farmer vulnerability. By analyzing Mondelēz's corporate activities this allows for deeper insight into sustainability interventions in a high-impact region.

A qualitative case study is suited in this context because it allows for a detailed, contextual exploration of complex real-world processes that cannot be easily separated from their settings (Johansson, 2007). The goal of the case study research is not to generalize but to offer insights into real-world processes that can inform broader academic and practical discussions on sustainable supply chains in the agri-food sector (Yin, 2017). Therefore, the focus on a single case study enables this study to capture the different dynamics of corporate decarbonization and farmer engagement.

3.4 Data analysis

The analysis followed a two-tiered qualitative approach. This structured approach focused on extracting meaning, identifying patterns, and triangulating data (Bowen, 2009).

In the first phase all 26 corporate and institutional documents were read in full and annotated. Based on their relevance to the research sub-question, 18 documents were

selected for in-depth coding in ATLAS.ti. A deductive coding was applied first, using predefined codes derived from the conceptual framework in 2.5 and sub-research questions (Bingham, 2023).

Subsequently, inductive codes were also added to capture concepts that were not by the framework. This allowed for the testing of conceptual assumptions and finding of unanticipated patterns (Bingham, 2023; Saldaña, 2021). To guide the coding process, a codebook was developed, which can be found in the annex.

After coding the documents, interview transcripts were then reviewed, and the same coding principles were applied, aligning codes with the three sub-research questions. Initial codes were derived deductively from these sub-questions. Simultaneously, the coding remained open to new insights and inductive codes were created.

Codes were organized into three main code groups which reflected the research sub-questions:

SQ1: Decarbonization Strategy

SQ2: Farmer Involvement and Support

SQ3: Sustainability and Farmer Livelihood Impacts

The coded segments were analyzed using thematic analysis to identify patterns across documents and interviews. In total 79 codes were generated which were clustered into broader themes, reflecting the main research areas. Throughout this process, memo writing was used throughout the analysis to support reflexivity and support the development of thematic insights (Saldaña, 2021).

3.5 Ethical Considerations and Data Gathering Limitations

This research ensured that ethical standards in qualitative interview research, focusing on four key areas: preventing harm, ensuring confidentiality, informed consent, and avoiding exploitation (DiCicco-Bloom & Crabtree, 2006). Participants were informed about the purpose of the research and gave verbal consent before the interviews with the possibility of their right to withdraw at any time. Additionally, interviewees signed a research consent agreement at Maastricht University.

All data were anonymized to protect the identities of participants, particularly where opinions might be sensitive or critical. The study also sought to respect the contributions of participants and to ensure that they were not used simply as a means of academic gain.

Despite careful planning, the study faces limitations. First, access to stakeholders was limited by logistical constraints and availability, which led to the reduced number of interviews conducted. Additionally, language barriers further restricted to conduct more interviews, particularly with local stakeholders. A key limitation of the document analysis is its reliance on publicly available secondary data, which may lead to reflect corporate narratives lack critical internal insights. Also restricted access to Mondelēz's confidential company data limited the range and depth of documents that could be included. Lastly as this study employed a single-case study, the findings of this research are not generalizable.

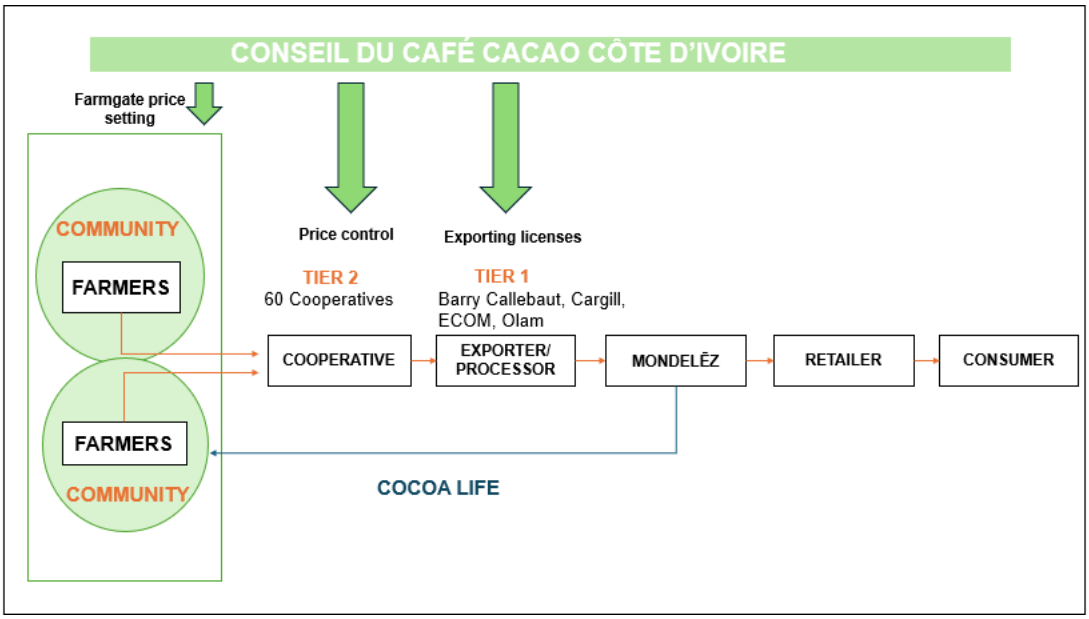
4. Results

The following chapter presents the findings of the document analysis and interviews structured around the three research sub-questions. Each section integrates corporate decarbonization strategies, farmer support and involvement, and the anticipated impact.

4.1 Introduction to the case study

Mondelēz International is one of the world's largest and most prominent chocolate manufacturers and plays an important role in the global cocoa value chain. Therefore, the company launched its own sustainability initiative Cocoa life in 2012. The program operates across nine cocoa-producing countries and intends to secure a sustainable cocoa supply while addressing systemic challenges within the sector. The key focus areas of the program are to improve sustainable farming businesses, empower local cocoa communities, and conserve and restore forests (Mondelēz International, 2024b). In Côte d'Ivoire, Cocoa Life was established in 2013 and adopts a holistic approach to advance sustainable cocoa production (Camargo & Nhantumbo, 2016).

***Figure 3**: Mondelēz Cocoa Life. Cocoa supply chain in Côte d'Ivoire derived from (IDH, 2021)*



A key element of Cocoa Life's implementation is its tracable and structured supply chain, which forms the oeprational foundation of the program in Côte d'Ivoire. As illustrated in Figure 5 the traceability system enables Cocoa Life to monitor cocoa from registered smallholder farmers through cooperatives and tier 1 suppliers, ensuring that sustainability interventions and data collection at each stage of the supply chain (IDH, 2021).

SQ1 - Decarbonization strategy

The first sub-question focused on the decarbonization strategy employed by Mondelēz International and its partners in the cocoa value chain in Côte d'Ivoire under the Cocoa Life program.

Traceability, Supply Chain Transparency

The evolution of Mondelēz's decarbonization strategy reveals a structured progression throughout its implementation of Cocoa Life in Côte d'Ivoire. When the program first launched in 2013 environmental protection was defined as one of five core pillars, laying the conceptual groundwork for future climate action. The 2013 Cocoa Life report emphasized the importance of maintaining ecosystems and preserving the environmental viability of cocoa-growing areas (Mondelēz International, 2013).

As early as 2014, Cocoa Life sought to strengthen program, credibility through third-party verification systems by collaborating with different partners to assess impacts across the key areas of the program (Mondelēz International, 2014). This commitment to transparent monitoring laid the foundation for GPS mapping, as later Cocoa Life Annual Report in 2018 noting significant advances in GPS mapping with traceability systems to enhance more supply chain transparency. The 2023 Environmental, Social and Governance (ESG) report of Mondelēz highlights the importance of traceability and supplier monitoring: “We’ve mapped 95% of our direct cocoa supply in high-risk areas.”

A central pillar of Mondelēz’s decarbonization strategy is its commitment to achieve 100% cocoa sourcing for its chocolate brands through a mass balance approach 2025 (Mondelēz International, 2022). As of 2023, 85% of its cocoa volumes were sourced through its program (2023a). Additionally, Mondelēz has publicly pledged to eliminate deforestation from its cocoa supply chain by aligning with zero deforestation commitment (Mondelēz International, 2022).

Deforestation & Land-Use Management

The promotion of agroforestry has become a cornerstone of Cocoa Life’s emissions reduction strategy. While initially framed as a biodiversity and productivity measure, agroforestry gained prominence in 2018 reports a tool for carbon sequestration and resilience. The program began scaling agroforestry by training farmers and distributing shade trees (Mondelēz International, 2019). This was highlighted by Expert B as he said: “Agroforestry is part of our daily field engagement with farmers, and the results in tree survival promising” (EB, personal communication, 02.04.2025).

Yet, field-level implementation varies significantly depending on local context, technical support, and the level of farmer engagement. Expert A mentioned: “In some regions, agroforestry uptake is strong, but in others, farmers still prioritized short-term yield.” This reflects both potential and limitation, whereby agroforestry is recognized as essential but not embraced by everyone involved (EA, personal communication, 02.04.2025).

The land-use strategy has evolved toward broader landscape management to restoration as well. These reforestation efforts were not limited to farm boundaries only. Both Mondelēz International and the REDD+ national strategies emphasized off-farm reforestation programs. The REDD+ strategy promotes community-led reforestation to restore degraded areas (MINEDD, 2018).

Financial Incentives & Farmer Income Stability

The use of financial incentives, including payments for environmental services (PES), a tool to incentivize farmers and carbon credit schemes in its early stage, is a part of the Cocoa Life strategy. According to the national strategy of Cote d'Ivoire REDD+ these financial mechanisms are aimed to reward sustainable practices such as reforestation, zero-deforestation cocoa, and improved land use. However, the implementation of these mechanisms is still in the early phases. This was further clarified by Expert A:" We have been piloting PES models, but they remain limited in scope and are mostly externally funded (EA, personal communication, 02.04.2025)."

In terms of carbon incentive mechanisms, Mondelēz introduced the Carbon Booster Project as a pioneering carbon removal initiative focused on soil organic carbon agroforestry. This was however questioned in its replicability from Expert B: "Carbon Booster is promising, but how many farmers can actually access these systems in remote areas?" (EB, personal communication 07.04.2025).

Program Implementation & Multi-Level Collaboration

Another important key component of Mondelēz's decarbonization strategy is its emphasis on collaboration and multi-level partnerships across the cocoa value chain. The partnerships involve NGOs, national ministries, and initiatives like the CFI. As early as 2017, Cocoa Life began aligning with jurisdictional frameworks and REDD+ strategies to promote a collective approach to emissions reduction (Mondelēz International, 2018).

This collaborative effort reflects a shift, where responsibilities are shared across private, public, and civil society actors. Expert A emphasized: "Primarily, I also see the private sector needs to take a lead and needs to take on responsible business practices with their suppliers and the suppliers then needs to engage with the farmers." This highlights a more multi-level governance model within the cocoa supply chain (EA, personal communication, 02.04.2025).

However, structural challenges remain. While jurisdictional approaches offer potential for landscape management, their implementation often lacks cohesion. As the IDH report on smallholder inclusion notes: "Many jurisdictional programs operate in silos, and effective public-private integration is often lacking" (IDH, 2018). Expert C emphasized as well: "It's good that we work with the government, but implementation on the ground is often disconnected from national frameworks" (EC, personal communication, 07.04.2025)."

SQ2 – Farmer Involvement and Support in Decarbonization Strategy

The second sub-question examined how smallholder cocoa farmers are involved in and supported by Mondelēz 's decarbonization strategy.

Agricultural Productivity & Food Security

From the beginnings of the Cocoa Life program Mondelēz has aimed to adopt a farmer-centric model to lift cocoa communities out of poverty (Mondelēz International, 2013). Therefore, a consistent form of farmer support throughout the years has been the access to climate-smart inputs such as improved seedlings and shade trees is fundamental. Mondelēz International, through its Cocoa Life program in all of their producing countries, has distributed over 3 million shade trees since in all program regions of Cocoa Life (Mondelēz International, 2023a).

The Mondelēz ESG Report (2023a) confirmed this: “Providing farmers with access to shade trees and seedlings is central to our climate-smart cocoa approach.” Expert C highlighted the importance of supporting local nursery development to ensure these resources are accessible within farming communities (EC, personal communication, 07.04.2025). Despite these efforts, implementation varies as Expert A noted: “We want to make sure that farmers are receiving access to seedlings, fertilizers and materials for tree planting, because they are usually the ones whose needs are not seen in the supply chain” (EA, personal communication, 02.04.2025).

This was further confirmed by the CAYAT Case Study (2023) supports this, showing that agroforestry inputs provided through cooperatives led to improved productivity, yet their long-term maintenance depended on training and support. The UNDP Cocoa Brochure (2018) similarly emphasizes the critical role of input accessibility, stating: “Incentivizing agroforestry adoption requires reliable access to climate-resilient planting material and farmer-friendly finance.”

Financial Incentives & Farmer Income Stability

Financial incentives play a pivotal role in motivating smallholder farmers in taking up sustainable practices. Mondelēz’s has incorporated premium payments to cooperatives to fund climate-smart tools and infrastructure. According to the Cocoa Life 2023 report:” Premiums paid to farmer organizations help fund climate-smart tools, community infrastructure, and saving groups” (Mondelēz International, 2023b). The IDH report similarly notes that premium systems foster accountability and reinvestment into sustainability (IDH, 2018).

Village Savings and Loan Associations (VSLAs) have also been implemented by Mondelēz to support farmers to provide financial security by stabilizing income and boosting resilience (Mondelēz International, 2018). The CAYAT Case Study revealed that “members used funds to invest in pruning, school fees, and labor hiring, improving productivity and social stability” (Shared Interest, 2023).

Another prominent mechanism which was implemented by Mondelēz to ensure farmer participation is PES, whereby farmers receive a compensation for engaging in climate-friendly practices such as tree planting (Mondelēz International, 2019). Expert A confirmed that financial incentives are a huge part of the Cocoa Life program and holds promise to stabilize the income of smallholder farmers (EA, personal communication, 02.04.2025).

However, these incentives are dependent on external funding and remain limited in scale. Expert A introduced other financial incentives like carbon credit schemes, where reported: “We are working on carbon credits as a new incentive mechanism, though they’re still at a trial stage,” underscoring both innovation and ongoing limitations (EA, personal communication, 02.04.2025).

Social Responsibility and Farmer Livelihoods

Since 2017, support of smallholder farmers have been especially formalized through capacity-building programs and cooperatives became key structures of farmer empowerment (Mondelēz International, 2018).

Further Mondelēz has institutionalized structured programs, such as Good Agricultural Practices (GAP) workshops, to guide and enhance sustainable farming methods. The 2020 ESG report states that over 200,000 farmers of the Cocoa Life program in all of their producing countries could be reached through GAP training, which focused on composting, pruning, and soil health (Mondelēz International, 2021). However, Expert B noted that “individual farming coaching is an essential key support but only a limited number of farmers receive that support,” raising questions about the scalability and fair distribution of these interventions (EB, personal communication, 07.04.2025).

Additionally, Farm Development Plans (FDP) were introduced to guide sustainable practices. Farmers gained access to pest-resistant seedlings and improved farm management, with targeted programs for women and youth (Mondelēz International, 2016).

Beyond technical support, Cocoa Life is also expanded to broader community structures. Mondelēz’s Community Action Plans (CAPs) are localized planning tools

which enable villages to collectively decide on sustainability interventions. According to the 2022 Cocoa Life report, these CAPs seek to cultivate ownership and improve implementation of sustainability measures (Mondelēz International, 2023a).

Youth engagement is another key factor in farmer engagement. Within the Cocoa Life program, youth were specially trained in cocoa-related enterprises, including nursery management and agroforestry services (Mondelēz International, 2024). Expert A again reinforced this by emphasizing how important it is to engage the youth and make it more attractive for them, as many are losing interest. “Innovations, such as carbon finance, can help to re-engage younger generations” (EA, personal communication, 02.04.2025).

Another essential layer of smallholder farmer support is child protection. Multiple Mondelēz Cocoa Life reports reference Child Labor Monitoring and Remediation System (CLMRS) which were an integrated part of Cocoa Life (Mondelēz International, 2018). For example the ESG report of 2023 stated that through the implementation of CLMRS 58% of children who were at risk of child labor could be identified and then referred to support services (Mondelēz International, 2023b).

Gender equality has been progressively embedded within Cocoa Life's approach, with early focus on addressing structural issues such as unequal access to resources. By 2016, the program aimed to expand women’s access to land, finance, and training opportunities, including improved farmer training tailored for women (Mondelēz International, 2016). One example of this integration is the distribution of clean cookstoves, which reduces deforestation and indoor air pollution, benefitting women who often manage cooking activities. The 2023 ESG report confirmed that these cookstoves were distributed across Cocoa Life communities in Cote d’Ivoire (Mondelēz International, 2023a).

SQ3 – Sustainability and Farmer Livelihood Improvements

The third sub-question addresses the impact of the decarbonization strategy on the sustainability of cocoa production and the livelihoods of smallholder farmers in Côte d’Ivoire.

Financial Incentives & Farmer Income Stability

Cocoa Life has gradually contributed to enhancing the financial autonomy of smallholder farmers. A key intervention is the establishment and scaling of VSLAs

(Mondelēz International, 2019). According to Expert A: “VSLAs have helped farmers to pay school fees, hire laborers and even finance pruning activities” (EA, personal communication, 02.04.2025).

Mondelēz has also invested in income diversification to strengthen farmer resilience. The 2022 cocoa Life report highlighted that agroforestry not only contributes to environmental resilience but enables farmers to grow additional crops, thereby offering supplementary income opportunities (Mondelēz International, 2023a). A notable initiative example from the broader cocoa sector, as mentioned by Expert B involves transforming cocoa pulp, which is usually thrown away into a commercial juice that is sold in Dutch supermarkets. As the interviewee said: “This introduces a secondary income stream and reduces waste” (EB, personal communication, 02.04.2025).

Moreover, the number of smallholder farmers registered under Cocoa life in all nine cocoa-producing areas has increased from 188,043 in 2020 to 243,000 in 2023 (Mondelēz International, 2023a). These findings could suggest a growing amount of access to training, premiums, and incentives for the smallholder farmers.

Agricultural Productivity & Food Security

Mondelēz’s decarbonization strategy through Cocoa life has led reported gains in agricultural productivity and resilience. According to the 2017 Cocoa Life Progress Report, the program had reached 30,300 farmers across 433 communities in Côte d’Ivoire (Mondelēz International, 2018).

Between 2018 and 2022, Cocoa Life in Côte d’Ivoire trained over 70,000 farmers in GAP, with 40,769 farmers in 2018 and 31,000 more trained by 2022. This demonstrates the program’s sustained focus on boosting productivity and building climate resilience (Mondelēz International, 2018, 2023a).

These institutional and technical improvements align with national initiatives such as REDD+ (MINEDD, 2018), which similarly promote low-emission farming systems and sustainable land use. As Expert A noted that smallholder farmers in Cote d’Ivoire are now “seeing productivity gains due to better pruning and input use” (EA, personal communication, 02.04.2025).

Improvements in productivity are also tied to food security. REDD+ document noted that enhanced incomes and climate-adaptive practices help households secure more consistent food access at household level (MINEDD, 2018). Yet, disparities remain. An important concern raised by Expert B who mentioned the need for greater inclusion of women in training and decision-making. As stated by Expert B “there is a need to

expand the scope of interventions to reach more women and strengthen their capacity in decision-making." This gender gap may limit the equitable distribution of productivity gains and food security improvements (EB, personal communication, 02.04.2025).

Deforestation & Land Use Management

Cocoa Life promotes environmental sustainability through agroforestry, land-use planning, and reforestation. Mondelēz reports that from October 2021 to September 2022 alone, 1.2 million shade trees were distributed in Ghana and Côte d'Ivoire for on-farm planting, illustrating regional implementation of reforestation strategies (Mondelēz International, 2023a). The targeted agroforestry support have led to an increase of planting rate and tree survival rates (Mondelēz International, 2023a, 2025).

According to Mondelēz 2023 Cocoa Life report "no trace of deforestation was observed on or directly surrounding Cocoa Life registered farms", which demonstrates the effectiveness of its spatial monitoring and GPS mapping. (Mondelēz International, 2023a).

Through training on GAP, Cocoa Life aims to enhance the sustainability, efficiency, and resilience of farming systems beyond cocoa cultivation. Therefore, the program promotes agricultural approaches which support increasing biodiversity and preventing soil degradation (Mondelēz International, 2022).

Interview insights also point to growing farmer expertise in seedling care and tree maintenance, which contributes to better tree survival rates. However Expert B stressed that lack of farmer incentives limits its long-term commitment to tree farmer: "Farmers often won't prioritize planting unless they see a direct benefit, which is payments for ecosystem services are important." This underscores a broader challenge to ensure practices are not just top-down mandates, but beneficial for smallholder farmers as well (EB, personal communication, 07.04.2025).

Traceability & Supply Chain Transparency

The impact of decarbonization strategy has also played a role in strengthening smallholder farmers' connection to formal markets and improving their technical knowledge. This was especially emphasized by Expert A that coaching and training of smallholder farmers have significantly boosted farmers' capacity to meet buyer standards: "Training initiatives have enhanced farmers' technical understanding, enabling them to align with market demands" (EA, personal communication. 02.04.205).

Also, due to the participation of smallholder farmers in Cocoa Life it has enabled farmers to tap into certification schemes and traceable supply chains, increasingly required by global buyers (Mondelēz International, 2024a). As noted by Expert A: “Being part of a recognized supply chain opens market doors” (EA, personal communication. 02.04.205).

Social Responsibility and Farmer Livelihoods

Cocoa Life’s decarbonization strategy incorporates gender inclusion as a structural element. From its early stages, the program emphasized empowering women through land access, finance and leadership training (Mondelēz International, 2016). By 2019, it expanded efforts to support women’s income and participation in VSLAs and CAPs (Mondelēz International, 2020).

As 2016 report noted that “empowered women reinvest in education and health,” contributing to positive spillovers and greater community resilience. For example, clean cookstove programs implemented by Mondelēz help to ease domestic burdens traditionally borne by women (Mondelēz International, 2024a). As Expert B pointed out, "all the players in the sector have seen that this is a huge benefit, if informal groups start to formalize themselves, start saving together, start loaning each other money, then all of a sudden you have a system in place that can actually mature” (EB, personal communication, 07.04.2025).

Despite these gains, the need to reach more women with decision-making power and climate-relevant training remains urgent. As Expert A observed, "We have seen that there is the need to expand the scope of life interventions to reach more women (EA, personal communication, 02.04.2025)."

4.2 Summary of Results

Mondelēz’s Cocoa Life program in Côte d’Ivoire proves a structured decarbonization (SQ1). Since its launch in 2013, the program has shifted from a general focus on environmental protection to a more comprehensive program featuring GPS mapping, traceability systems, and third-party verification. Agroforestry became a widespread intervention supported by land-use planning and landscape restoration. Financial mechanisms such as PES and carbon farming pilots have appeared, though scale remains limited. The program also uses multi-level partnerships aligned with REDD+ and CFI frameworks, reflecting a governance-oriented approach.

Regarding smallholder farmer engagement, Cocoa Life follows a participatory approach to smallholder involvement in decarbonization efforts (SQ2). Smallholder farmers benefit from access to climate-smart inputs, training, financial incentives, and community-based planning tools. Furthermore, smallholder farmers are active contributors through CAPs, cooperatives, and VSLAs. Additionally, the program addresses social dimensions, including child labor and gender inequality.

Finally, the Cocoa Life program has contributed to both the sustainability of cocoa production and the improvement of farmer livelihoods in Côte d'Ivoire (SQ3). Productivity gains, income diversification, and financial services like VSLAs and PES have laid a foundation for long-term resilience. Environmental interventions such as agroforestry and traceability systems enhance ecosystem resilience. However, structural challenges remain. While Cocoa Life has made meaningful progress, further integration, scale, and equity are needed to fully realize its decarbonization ambitions.

5. Discussion

The following chapter will compare the findings of the results chapter with existing literature and conceptual framework examined in Chapter 2. Furthermore, it will reflect on the insights from both coded data and supplementary sources.

SQ1 – Decarbonization Strategy

The findings show that Mondelēz's decarbonization strategy broadly align with the examined key trends in the literature, particularly around traceability, zero-deforestation commitments, and driving agroforestry and reforestation as a climate mitigation tool (Ameyaw et al., 2018; Carodenuto & Buluran, 2021). Initiatives such as GPS mapping and jurisdictional partnerships indicate formal alignment with both voluntary sustainability frameworks which are implemented by chocolate manufacturing companies and regulatory developments like the EUDR. The 2023 ESG Report claims that 85% of cocoa volumes for Mondelēz chocolate brands are now sourced through Cocoa Life, with 71% of cocoa farms GPS-mapped (Mondelēz International, 2023a). These efforts reflect the best practices in Scope 3 emissions monitoring, particularly around land-use change. Although these findings reflect traceability efforts, Mondelēz has not yet made public how deforestation risks are being assessed or does not display the exact locations of the cocoa farms it sources from.

Furthermore, frameworks for GHG accounting in the cocoa sector such as the recent GHG Accounting Framework by the World Cocoa Foundation and Quantis (2025) have been developed to ensure consistent measurement across the cocoa value chain, Mondelēz has not yet explicitly disclosed using these tools. This creates a gap between stated climate ambitions, and the implementation of transparent, verifiable emissions reduction measures.

A comparison between Mondelēz Cocoa Life and the decarbonization strategies of other companies in the cocoa sector e.g. Ferrero and Olam reveals notable differences in emissions reporting and transparency. While Mondelēz highlights interventions such as tree planting, agroforestry, and deforestation monitoring, it does not disclose quantifiable GHG data such as actual emissions levels, reductions achieved, or clear baselines. Often, figures are only partially reported or aggregated across Ghana and Côte d'Ivoire, limiting the ability to assess intervention effectiveness at a country-specific level. In contrast, Ferrero Group (2024) reports concrete outcomes related to PES schemes and agroforestry coverage, while Olam (2023) has partnered with Quantis to model emissions and align its reporting with international standards. These differences highlight a critical gap in Mondelēz's approach that without transparent and verifiable data, the credibility and measurability of its climate actions remain limited.

The SSI Global Market Report (2020) highlights that many chocolate manufacturers are shifting to implementing their own sustainability schemes like Cocoa Life allowing them to define their own sustainability criteria. Due to this transparency is reduced, which limits external verification and makes regulatory compliance more difficult. Further, these sustainability initiatives also reinforce existing power asymmetries, leaving farmers dependent on the strategies and resources of multinational corporations.

While projects like the Carbon Booster Project demonstrate innovation, they are mostly designed and initiated by Mondelēz and its collaboration partners without meaningful farmer input, confirming a top-down dynamic. This can be explained by the asymmetric distribution of power within the cocoa supply chain, where major multinational corporations maintain both strategic and financial over sustainability frameworks and are thereby shaping implementation and compliance according to their interests. This reinforces critique in the literature that current sustainability initiatives may serve to protect market access rather than transform the underlying structure of the cocoa sector (Nelson & Phillips, 2018).

As Bymolt et al. (2018) observed, corporate strategies often prioritize broad outreach over in-depth support. Similarly, this study found that, although general training is common, only a few farmers receive tailored coaching. These findings suggest that productivity is treated as a technical fix that overlooks deeper structural issues and shifts the burden of climate adaptation onto smallholder farmers.

SQ2 – Farmer Involvement and Support in Decarbonization Strategy

A key insight from the literature previously reviewed is that successful decarbonization of the cocoa value chain must involve smallholder farmers not as recipient of support, but as central actors in sustainable transformation (Ingram et al., 2018). This requires access to training, resources for enhancing plant management, and institutional support mechanisms which are tailored to the socioeconomic realities of smallholder farmers (Nitidae & Institute, 2021). The findings from this study partially validate these claims, showing a reasonable degree of farmer-level engagement under the Cocoa Life program, while also revealing structural weaknesses that limit outcomes.

Mondelēz has established a range of support mechanisms aimed at strengthening farmer capacity. Smallholder farmers engaged in the Cocoa Life receive individual coaching, GAP training, access to seedlings, and are supported through tools such as FDP and VSLAs. These mechanisms align with the literature's emphasis on capacity building and farmer-level support. The interviews done in this study, affirmed that individual coaching has proven more effective than group training for encouraging behavior change, which is found in the literature as well that notes that tailored knowledge exchange fosters stronger farmer engagement (Ingram et al., 2018).

However, a key difference lies in the gap between the support that is given to the smallholder farmers and livelihood outcomes. Despite these corporate programs and the efforts to raise the living income of smallholder farmers they still face income insecurity. This ties back to sustainability programs failing to address structural poverty (IISD, 2020). While individual farm training and inputs may improve farming practices, they rarely lead to a living income or reduce economic vulnerability in an impactful way. Moreover, there is a lack of complementing support with business skills and income diversification to improve resilience (EC, 2022). Yet, these components seem to be underdeveloped in the current Cocoa Life program, where broader livelihood strategies are less visible.

The dependency of smallholder farmers on market mechanisms further complicates the picture. While Cocoa Life includes training and access to certification schemes, smallholder farmers remain tied to highly volatile global markets, with little leverage over pricing structures. According to Fern (2024) this places a disproportionate share of the sustainability burden on farmers who are expected to meet standards and adopt new practices while bearing most of the associated risks.

Cocoa farmers frequently deal with several challenges that compound and intersect, including crop diseases, declining soil fertility, income instability, and increasing climate-related risks. Although initiatives like Cocoa Life offer technical and financial support, the cumulative burden e.g. crop diseases, persisting income stability etc. raises questions about the sufficiency of these efforts. The conceptual framework in Chapter 2 emphasizes that support must extend beyond agronomy to encompass social protection, market integration, and coordination with public governance, all of which are areas in which current programs fall short.

Additionally, this study found that women have uneven access to training and resources. Cocoa Life does include gender-responsive components, such as support for women's groups and participation in VSLAs. However, these efforts need to be significantly enhanced. Evidence from Nitidae & Institute (2021) and the European Commission (2022) underscore that strengthening women's participation in decision-making and access to resources is essential for building resilience and achieving more equitable outcomes in cocoa communities.

SQ3 – Sustainability and Farmer Livelihood Improvements

The findings of this study confirm that corporate decarbonization strategy of Cocoa Life address key aspects of both environmental sustainability and farmer livelihoods. However, their overall effectiveness remains constrained by structural limitations, which are particularly significant in Côte d'Ivoire, a country that produces over 2.3 million tons of cocoa annually and where smallholder farmers form the backbone of the sector (World Population Review, 2025).

From an environmental perspective, Cocoa Life interventions, such as agroforestry support, reforestation, and improved seedling management align with the conceptual framework's emphasis on enhancing ecological resilience. Traceability efforts and forest conservation measures have also contributed to decreasing deforestation within registered Cocoa Life farms. These outcomes reflect positively on environmental

goals, particularly in the context of growing climate threats like temperature rises, droughts, and deforestation-driven emissions (IPCC, 2022; Asante et al., 2025).

However, the strategy's farm-level focus reveals its limitations when considering the broader challenges outlined in the literature. As discussed in Chapter 2, cocoa farming in West Africa is increasingly threatened by multiple stressors: declining soil fertility, the spread of pests like CSSV, and irregular rainfall patterns linked to forest degradation (Cilas & Bastide, 2020; Christian Aid, 2025). While Cocoa Life introduces important practices, the depth of these challenges raises concerns about whether such interventions are scalable and resilient over time without deeper institutional and systemic support.

On the livelihood front, Cocoa Life promotes a combination of technical support and financial empowerment tools such as FDP, VSLAs and income diversification strategies. These measures are consistent with what the literature identifies as essential to support smallholder resilience, particularly access to credit, training, and resources (Nitidae & Institute, 2021).

Yet, despite these gains, most farmers remain well below a living income (Oxfam, 2024). This reflects a wider pattern noted in the literature: that corporate sustainability initiatives frequently address symptoms like low yields without resolving structural poverty and value distribution issues (Nelson & Phillips, 2018; Fountain & Huetz-Adams, 2022). While higher productivity is positioned as a solution to poverty, its benefits often favor chocolate manufacturers, ensuring raw material supply more than farmers themselves. This is especially problematic given that only a fraction of cocoa is processed or consumed domestically, and most economic value is captured downstream (Kadio, 2023).

These findings reinforce the critique that productivity-oriented sustainability programs, while improving farm-level practices, may not automatically address the sector's deeper problems. Better yields do not necessarily lead to financial security if pricing remains volatile and farmers lack control over value chains. The focus on output can be interpreted as a response to industry pressure rather than smallholder priorities.

Moreover, the Cocoa Life program, despite reaching a growing number of farmers, operates within a broader context where over a million smallholders remain vulnerable to market shocks, climate stress, and limited institutional support. The conceptual framework underscored the importance of connecting farm-level interventions with broader governance and market reforms, an area where current strategies fall short.

6. Conclusion

6.1 Answer to Research question

The primary aim of this thesis was to examine how Mondelēz International, as one of the world's largest chocolate manufacturers, seeks to decarbonize its cocoa value chain in Côte d'Ivoire. This study focused on analyzing the company's Cocoa Life sustainability program and assessing both the observed and anticipated impacts on cocoa production sustainability and the livelihoods of smallholder farmers. Attention was also given to the extent of farmer involvement in the decarbonization strategy. Drawing on document analysis and expert interviews, the findings demonstrate that Mondelēz employs a multi-layered decarbonization strategy which includes promoting agroforestry, enhancing traceability, delivering technical training to farmers and engaging in partnerships across the cocoa sector. These actions reflect a commitment to reducing Scope 3 emissions and strengthening sustainability within the cocoa supply chain.

The study identified several positive outcomes associated with this decarbonization strategy. These include improved farming practices, modest yield increases, and expanded access to income support mechanisms such as village saving groups and premium payments. However, despite these impacts structural challenges remain. Smallholder farmers continue to face poverty, significant climate-related risks, and limited influence within the global cocoa value chain. While sustainability corporate efforts are taking place, they continue to remain uneven in scope and depth. Consequently, while the Cocoa Life program in Côte d'Ivoire contributes to localized improvements, it does not adequately address broader inequalities in value distribution and farmer autonomy.

6.2 Recommendations for Practitioners and Policymakers

This research has highlighted the critical gap between the ambition goals of corporate sustainability initiatives like Mondelēz's Cocoa Life and their measurable outcomes. Based on the findings, several recommendations can be made. For policymakers, to enhance the credibility and impact of corporate sustainability initiatives like Cocoa Life, they should establish binding regulatory frameworks that move beyond voluntary compliance. Stronger and more binding sustainability frameworks are needed to go beyond voluntary commitments and ensure accountability across the sector such as national traceability systems and standardized GHG reporting.

For Practitioners, they must position smallholder farmers as central actors in sustainability programming. Their lived experiences, challenges, and knowledge should be systematically incorporated into design, implementation, and evaluation of programs. Through their direct involvement of program components such as agroforestry models and PES schemes, this could help to improve program effectiveness and better reflect the realities on the ground. Decarbonization efforts must be also complemented by mechanisms that promote living incomes, including fairer pricing structures, financial risk protections, and equitable value sharing. Moreover, current cocoa programs must deepen their gender equality strategies to ensure that women have equal access training, resources and leadership roles. Addressing child labor also remains a pressing concern, which demands integrated investment in education, healthcare, and community infrastructure.

6.3 Reflections on Limitations

This study also acknowledges its limitations. The findings are based on a limited number of primary documents and two expert interviews, which may not fully capture the range of perspectives and the full scope of implementation activities. The conceptual framework developed for this research is based on secondary literature and may not reflect all operational nuances in the field. Additionally, analysis of corporate reports and choice of interviewees within the sector may present a biased perspective on this topic. Despite these limitations, this research advances academic understanding of corporate sustainability by critically assessing the Cocoa Life program's real-world impact. It contributes to debates on climate adaptation, supply chain resilience, and social equity. Practically, it offers actionable guidance for policymakers and practitioners to create more inclusive, transparent, and effective sustainability programs in the agri-food sector.

6.4 Recommendations for further research

For future research, it would be valuable to conduct similar studies in other cocoa-producing countries such as Ghana, Cameroon, Ecuador, or Indonesia, which share many structural challenges regarding cocoa production. Expanding the interview base to include farmers, cooperative members, and public sector representatives would also allow for a more comprehensive understanding of program impacts and barriers. Further research should examine the long-term effectiveness of decarbonization strategies implemented by other multinational companies for broader comparisons across the sector. Additionally, future studies should investigate how national policies,

and international frameworks can be better aligned to support inclusive, scalable, and accountable sustainability efforts across the cocoa value chain.

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Appendices

Appendix A - Interview Questionnaire

- Could you briefly introduce yourself and your role?
- How is your organization involved in the cocoa supply chain in Côte d'Ivoire? What are your most important goals and activities on this topic?
- How do you see the relationship between climate change and cocoa production?
- Decarbonization means the removal or reduction of GHG emissions in the cocoa supply chain. Who should lead this process, and why?
- Are you involved in or familiar with Mondelēz's Cocoa Life program? If yes, how?
- What specific decarbonization strategies or activities are employed under this program?
- What is your opinion about this program? Can you mention some benefits, problems, or risks?
    - Even if you're not directly involved with Mondelēz or the Cocoa Life program, are you aware of any ways your organization collaborates with large chocolate companies or corporate sustainability programs more generally?
    - Do you know of any decarbonization activities or sustainability programs supported by your organization that are similar to what Cocoa Life is trying to do?
    - From your perspective, what role do multinational chocolate companies (like Mondelēz, Nestlé, etc.) play in shaping climate or sustainability goals in cocoa-producing regions?
    - Even if not involved with Mondelēz, have you heard feedback from farmers or colleagues about corporate sustainability programs like Cocoa Life?
- How is the relationship between your organization and cocoa farmers in Côte d'Ivoire? For example, what activities/projects are carried out, how many farmers are involved, etc.?
- What can farmers do to reduce or remove their GHG emissions from cocoa production in Côte d'Ivoire?
- What is your opinion about the decarbonization activities of cocoa farmers? What is going well, and what are the challenges?

- How do you see the relationship between cocoa farmers and sustainability programs (such as the Mondelēz Cocoa Life program) evolving? What issues still need to be addressed?
- What is or will be the impact of sustainability initiatives on the sustainability, productivity, and livelihoods of cocoa farmers in Côte d'Ivoire?

Appendix B - Codebook for Document Analysis

Category	Code	Examples
Decarbonization Strategies	• Traceability Systems • GPS Mapping • Agroforestry • Reforestation • Good Agricultural Practices (GAP) • Climate-Smart Agriculture • Climate-Resilient Practices • Land-Use Management • Deforestation Monitoring • Scope 3 Emission Reduction	"*Through farm mapping, we can help identify problem areas and take action where it's most needed."*
Collaboration & Partnerships	• National Strategy Alignment • Jurisdictional Approaches • Public–Private Partnerships • Multi-Stakeholder Collaboration • Local Governance Structures • Implementation Partners • Policy Integration • Corporate-NGO Collaboration	*"In Côte d'Ivoire, we have established a partnership with government agencies (Ministry of Environment and Ministry of Forests)."*
Social & Community Wellbeing	• Village Savings and Loan Associations (VSLAs) • Child Labor Monitoring and Remediation Systems (CLMRS) • Gender Inclusion and Empowerment • Additional Income Streams • Income Diversification Activities • Access to Finance • Youth Engagement	"*At Mondelēz International, women's empowerment is cutting across the entire Cocoa Life program because we recognize that for our crops and our cocoa-growing communities to thrive while respecting human rights and safeguarding the*

	• Community Action Plans (CAPs) • Community Resilience • Health and Education Investment	*environment, we must recognize the critical role women play all along the cocoa value chain.*"
Farmer Inclusion & Support Mechanisms	• Training and Coaching • Technical Assistance • Knowledge Transfer • Farm Development Plans (FDP) • Premium Payments • Payments for Ecosystem Services (PES) • Access to Inputs (seedlings, fertilizers) • Youth-specific programs • Individual Farmer Support • Women-Specific Training Programs	*"For example, our innovative Payment for Ecosystem Services (PES) program, the first to be introduced in the cocoa sector, pays farmers a combination of financial and in-kind incentives to plant non-cocoa trees on their farms."*
Monitoring, Reporting & Verification	• Emission Accounting • Spatial Data Collection • Transparency & Disclosure in Reporting • Third-Party Verification • Certification Standards • Independent Verification • Reporting Gaps and Limitations	"*FLOCERT, a leading global certification body, verifies the flow of cocoa from Cocoa."*

Appendix C – Codebook for Expert Interviews

Category	Code	Examples
Decarbonization Strategy (SQ1)	• Agroforestry Adoption • Knowledge of Climate Practices • Reforestation Participation • Traceability and Emission Awareness • Technology Use	"*We offer tree planting as one of the ways to reduce their emissions, and that could be, for example, shade trees, multipurpose trees that we plan on farm with the crop."*
Farmer Involvement & Support (SQ2)	• Training & Capacity Building • Access to Inputs and Tools • Financial Support • Gender and Youth Inclusion • Community Participation	"*We coach farmers on agroforestry and better farming on individual level really adapted to their plots*."
Impacts on Livelihoods & Sustainability (SQ3)	• Income Changes or Stability • Farm Productivity Trends • Community Benefits • Resilience to Climate Events • Perceived Environmental Change	"*We have the VSLAs that has become quite prominent in communities which has also raised their financial capacity of some of these smallholder farmers and the communities respectively*."

Appendix D – Analyzed Documents

Document Title	Year	Source/Author	Type	Focus Area	Côte d'Ivoire Mentioned?	How Used
Mondelez International Cocoa Life 2023 & Cocoa Forests Initiative Progress Report	2024	Mondelez	Corporate Report	Decarbonization, farmer support, cocoa sustainability, agroforestry	Yes	Primary coding
Cocoa Life 2022 CFI Progress & 2.0 Action Plans	2023	Mondelez International	Corporate Sustainability Progress & Planning Report	Decarbonization, farmer support, cocoa sustainability, agroforestry	Yes	Primary coding
MDLZ Cocoa Life CFI 2020 Progress Report (April 2021)	2021	Mondelez International	Corporate Report	Cocoa sustainability, CFI, deforestation	Yes	Primary coding
MDLZ Snacking Made Right Report 2019	2020	Mondelez International	Corporate Report	Corporate sustainability strategy, Cocoa Life overview	Yes	Primary coding
Cocoa Life Annual Report 2018	2019	Mondelez International	Corporate Report	Cocoa Life implementation, farmer engagement, sustainability progress	Yes	Primary coding
Cocoa Life 2017 Progress Report	2018	Mondelez International	Corporate Report	Early implementation of Cocoa Life, farmer programs, sustainability progress	Yes	Primary coding
Cocoa Life Women's Empowerment Report	2017	Mondelez International	Corporate Report	Gender equality, women's roles in cocoa farming, empowerment initiatives	Yes	Primary coding
Cocoa Life Progress Report 2015	2016	Mondelez International	Corporate Report	Early program goals, farmer support, community development	Yes	Primary coding
MDLZ News General Release (June 2014)	2014	Mondelez International	Corporate News	Launch updates, Cocoa Life expansion, corporate communications	Yes	Primary coding
Cocoa Life: Committing to empowering women through community-centered program	2013	Mondelez International	Corporate News	Launch of Cocoa Life, corporate communications	Yes	Primary coding
Cocoa Life – Committing to Empowering Women Through Community Programs	2016	Mondelez International	Corporate Communication	Gender empowerment, community programs, women's leadership	Yes	Primary coding
Mondelēz Cocoa Life Roadmap 2022 (EN)	2022	Mondelēz Intl. / GISCO	Corporate Report	Program strategy, climate goals, farmer resilience, decarbonization	Yes	Primary coding
Snacking Made Right – Mondelez ESG Report 2020	2021	Mondelez International	Corporate ESG Report	Decarbonization strategy, Cocoa Life program expansion, farmer training, agroforestry, early emissions reduction steps	Yes	Primary coding
Cocoa and Forests Initative Annual Report	2021	Initative Cacao et forests	NGO Report	Forest conversation, reforestation, agroforestry promotion	Yes	Primary coding
REDD+ Cote d'Ivoire National Strategy	2019-2020	Government of Cote d'Ivoire	National Climate Strategy	Deforestation reduction, farmer incentives, sustainable agriculture	Yes	Primary coding
How IDH is Making a Difference – Smallholder Inclusion (Côte d'Ivoire)	2020	IDH – The Sustainable Trade Initiative	Public-private partnership Report	Farmer inclusion, access to finance, service delivery models, cooperative professionalization	Yes	Primary coding
CAYAT Longitudinal Case Study	2023	Cayat	Farmer Cooperative Report	Shows cooperative-led initiatives, agroforestry, social impact, training	Yes	Primary coding
UNDP Green Commodities – Local Action	2018	UN Agency (UNDP)	Report	Describes REDD+ support, Cocoa Life collab in Ghana & Côte d'Ivoire	Yes	Primary coding
Sustainable Cocoa Initiative – Roadmap	2022	European Commission / Cocoa Talks	Policy / Initiative Roadmap	Sustainability standards, traceability, income, deforestation	Yes	Supplementary document
SSI Global Market Report: Cocoa	2020	IISD / SSI	Industry Report	Sustainability standards,cocoa markt, policy	Indirectly	Supplementary document
WCF-Quantis GHG Accounting Manual for Cocoa	2025	World Cocoa Foundation & Quantis	Sector-Specific Technical Manual	GHG accounting methods, traceability, land management, removals	Yes (indirectly)	Supplementary document
EU Deforestation-Free Commodities Regulation Overview	2023	European Commission	Policy/Legal Regulation Overview	Traceability, deforestation-free supply chains, cocoa sector sustainability	Yes	Supplementary document
Cocoa Compass Impact Report 2023	2023	ofi (Olam)	Corporate Report	Sustainability Initative, Progress of Initative	Yes	Supplementary document
Fern Assessment of the EU Sustainable Cocoa Initiative	2024	Fern	NGO Report	Smallholder farmer inclusion, transparency, limitation of corporate action	Yes	Supplementary document
Forest- and Climate-Smart Cocoa in Côte d'Ivoire and Ghana	2023	GIZ, EU REDD Facility, ICRAF	Technical Policy Report	Focus on national decarbonization efforts, agroforestry, PES, farmer training in Côte d'Ivoire	Yes	Supplementary document
Ferrero's Cocoa & Forests Initative	2023	Ferrero	Corporate Report	Agroforestry, traceability, farmer support, Scope 3 strategies	Yes	Supplementary document

Statement on the use of Generative AI (GenAI) in the master thesis

I hereby certify that I adhered to the SBE guidelines on the use of GenAI tools such as ChatGPT in the master thesis. In the box below, I document how and for what purposes I used GenAI.

During the preparation of this work, I used GenAI for the following purposes:

- Search engine: Perplexity AI and ChatGPT for search of academic and contextual information
- Ideation helper: ChatGPT used for supported brainstorming of argument structures
- Text summarizer: ChatGPT used to summarize lengthy text passages
- Explanation provider: ChatGPT used to understand complex concepts
- Language assistant: DeepL Write was used paraphrasing and refining English academic writing
- Translator: DeepL Translator used to translate relevant content from german to englisj
- Other: DeepL Write used to rephrase paragraphs to align with academic standards

After using any tool, I reviewed, quality-checked, and edited the content as needed and take full responsibility for the content of the thesis.

By signing this statement, I explicitly declare that I am aware of the fraud sanctions as stated in the Education and Examination Regulations (EERs) of the SBE.

Place: Maastricht, Netherlands

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Date: 20.06.2025

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First and last name: Ama Asante

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Study programme: Sustainability Science, Policy and Society

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Course/skill: Master Thesis

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Signature: 

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Sustainable Development Goals (SDG) Statement

Name	Ama Asante
ID	i6396095
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Date	20.06.2025

Through the research conducted for this master's thesis, I seek to contribute to one or more of the 17 SDG(s) set forth by the United Nations (https://www.undp.org/sustainable-development-goals). Specifically:

SDG Code(s): 1,13,10

Explanation:

This thesis directly contributes to the understanding and evaluation of Sustainable Development Goals (SDGs), 1-No Poverty, 10 - Reduced Inequalities, and 13 - Climate within the context of cocoa production in Côte d'Ivoire.

This thesis examined how the decarbonization strategy of Mondelez intersect poverty reduction because this remains one of the biggest challenges of the cocoa sector. Within the program, measures such as VSLA and income diversification were implemented. This research investigated where these interventions effectively address structural poverty. Further, this research contributes to SDG 13, as it evaluates climate mitigation practices embedded in corporate cocoa sourcing strategies, such as agroforestry and traceability systems. It was critically assessed how corporate strategies and actual implementation are aligned, particularly in relation scope 3 emissions. This study highlighted the need for more transparent and verifiable GHG reporting to support credible climate action in supply chains. Lastly this study contributed to SDG 10 as it explored how limited access to training, finance and decision-making weakens farmer agencies. It also considers gender inclusion and community-based mechanisms as potential ways to address these gaps. By focusing on Côte d'Ivoire, the research displayed how private sector initiatives can either reinforce or reduce local inequalities.