CGIAR
SCIENCE FOR A FOOD-SECURE FUTURE

Cameroon profile

Advancing zero-deforestation cocoa in Cameroon: Stakeholder priorities, practices, and policy pathways for sustainable and climate-resilient production

December 2025

Sylvester Ogutu, Leslie Estefany Mosquera, Thea Ritter,
George Amenchwi Amahnui, Jonathan Mockshell, and Augusto Castro-Núñez

Corresponding Author: Augusto Castro-Núñez – augusto.castro@cgiar.org

Bioversity International / Brigitte Laliberté


Bioversity International / Brigitte Laliberté

Contents

Bioversity International / Shawn Landersz

Acknowledgement

This research was supported by the CGIAR Science Programs on Climate Action (CASP) and Scaling for Impact (S4I), supported by the CGIAR Trust Fund, and its contributing partners. For a full list of CGIAR funding partners, please refer this link. Additional funding was provided by the Alliance of Bioversity International and CIAT's Sustainable Cocoa Value Chains Initiative in West Africa. The initiative was developed within the framework of the Mattei Plan for Africa, which fosters strategic partnerships between Italy and African countries. It is funded by the Italian Ministry of Foreign Affairs and International Cooperation (MAECI).

Summary

Cameroon, the world's fifth-largest cocoa producer, faces the multifaceted challenge of sustaining rural livelihoods while preventing deforestation and promoting climate resilience. Cocoa production supports approximately 600,000 smallholder producers, yet expansion into forested areas contributes to biodiversity loss, greenhouse gas emissions, and environmental degradation. Cameroon's cocoa sector faces gaps in evidence, policy alignment, and governance, with limited documentation on stakeholder priorities, sustainable practices, and innovation diffusion, hindering full implementation of zero-deforestation strategies. This study employed a qualitative approach combining a comprehensive literature review with 24 key informant interviews across the cocoa value chain, including producers, cooperatives, input suppliers, buyers/exporters, government agencies, non-governmental organizations, and researchers.

Findings reveal that stakeholders share overarching aspirations for zero-deforestation, climate mitigation, and resilience, though priorities vary by group and region. Producers focus on stabilizing production through agroforestry, intercropping, and integrated pest management. Cooperatives emphasize economic diversification and high-yield cocoa varieties Buyers/exporters prioritize regulatory compliance. Lastly, non-governmental organizations, researchers, and government actors promote long-term forest protection and social inclusion, particularly for women and youth. Key practices adopted include agroforestry, mixed cropping, careful pruning, soil and water conservation, and climate-smart post-harvest techniques. Bundled innovations, such as combining agroforestry with digital traceability or assisted natural regeneration, are seen as critical for maximizing adoption and co-benefits. The enabling environment comprises policies (e.g., Revised Forest Law 2024, Reducing Emissions from Deforestation and Forest Degradation Plus, National Action Plan for Sustainable Cocoa, and the European Union Regulation on Deforestation-free Products), institutions (e.g., cooperatives and the Sustainable Cocoa Platform), and incentives (market premiums, training, certification, and payments for ecosystem services). Despite these mechanisms, financial constraints, insecure land tenure, weak enforcement, and institutional fragmentation remain major barriers. Scaling sustainable cocoa production will require coordinated investments in technical assistance, tenure security, market incentives, traceability, infrastructure, and multi-stakeholder governance to build a resilient, deforestation-free, and competitive cocoa sector in Cameroon.

Bioversity International / Brigitte Laliberté

Acronyms

CAFI	Central African Forest Initiative
CAMACO	Cameroon Marketing Commodities
ETG	Export Trading Group (ETG) Commodities
EU	European Union
EUDR	European Union Deforestation Regulation
FAO	Food and Agriculture Organization
FPIC	Free, Prior and Informed Consent
FODECC	Cameroon's Coffee and Cocoa Development Fund
GAP	Good Agricultural Practices
GHG	Greenhouse gas
GCLP	Green Cocoa Landscape Program
GIS	Geographic Information System
GIZ	German International Cooperation
GPS	Global Positioning System
IDH	IDH, The Sustainable Trade Initiative
IFAD	International Fund for Agricultural Development
IPM	Integrated Pest Management
IRAD	Agricultural Research Institute for Development
KII	Key informant interview
MINADER	Department of Agriculture and Rural Development
MINCOMMERCE	Ministry of trade
MINFOF	Ministry of Forests and Wildlife
NAPCC	National Adaptation Plan for Climate Change
NDC	Nationally Determined Contribution
NGO	Non-governmental organization
NPFE	Non-Permanent Forest Estate
PES	Payment for Ecosystem Services
PFE	Permanent Forest Estate
PSMNR	Programme for the Sustainable Management of Natural Resources
ONCC	National Cocoa and Coffee Board
OHADA	Organization for the Harmonization of Business Law in Africa
REDD+	Reducing Emissions from Deforestation and Forest Degradation Plus
SAFE	Sustainable Agriculture for Forest Ecosystems
SCI	Sustainable Cocoa Initiative
SCP	Sustainable Cocoa Platform
UNDP	United Nations Development Programme
WWF	World Wildlife Fund

Bioversity International / Brigitte Laliberté

1. Introduction

Cameroon occupies a strategic position in the global cocoa sector as the world's fifth-largest producer and a major supplier (FAO, 2024; Ingram et al., 2025). Cocoa production is the backbone of the country's rural economy, supporting about 600,000 smallholder producers and contributing significantly to export earnings and employment (FAO, 2024; Lescuyer et al., 2021). Production of around 300,000 metric tons occurred in 2020/2021 mainly in the Centre, South, East, Littoral, and South-West regions on approximately 450,000 hectares (ha), with smallholders each managing 2.5–5 ha (Gloy et al., 2025). Despite favorable soils and climate, yields are low due to aging trees and traditional practices (Läderach et al., 2013; Wessel & Quist-Wessel, 2015). Expansion of cocoa cultivation has contributed to deforestation, biodiversity loss, and increased greenhouse gas (GHG) emissions, particularly in the Congo Basin, driven by forest conversion, timber extraction, and increased human settlement (FAO, 2022; Gloy et al., 2025; Ingram et al., 2025; Kamath et al., 2025; Mukete, 2018). These dynamics underscore the urgent need to balance agricultural development with environmental sustainability and climate resilience.

The policy environment—comprising, for instance, rules, regulations, incentives, or institutional structures governing land use and tenure arrangements, forests, agricultural strategies, market regulations, and international trade frameworks—plays an important role in shaping how sustainable and equitable cocoa production can be achieved in Cameroon. A coherent and well-enforced enabling environment can align economic objectives with environmental objectives, foster traceability, and ensure compliance with international sustainability standards, such as the European Union (EU) Regulation on Deforestation-free Products (EUDR), which is a law that prohibits the

sale of commodities linked to deforestation or forest degradation after December 31, 2020, for products sold in or exported from the EU market (FAO, 2024; Trade Hub, 2024). Conversely, fragmented or weakly implemented policy frameworks risk continuing deforestation, undermining rural livelihoods, and constraining Cameroon's ability to access emerging deforestation-free markets (FAO, 2024; Mighty Earth, 2025).

Understanding stakeholder development priorities across the cocoa value chain is equally critical to aligning sustainability goals with socio-economic aspirations (FAO & European Commission, 2024; IDH, 2021). The cocoa sector in Cameroon encompasses a diverse network of actors—producers, cooperatives, traders/licensed buying agents, exporters, processors, government agencies, development practitioners, and multinational buyers—each with unique and sometimes competing interests in productivity, income generation, forest protection, and compliance with sustainability standards (Ingram et al., 2025). Aligning their priorities through inclusive, multi-stakeholder dialogue can foster shared ownership of sustainability goals and create mutually reinforcing outcomes (IDH, 2021; Lescuyer et al., 2021). For example, linking private-sector traceability initiatives with national forest governance reforms, or aligning producer livelihood programs with climate-smart agricultural practices, can create powerful synergies between conservation and development objectives (FAO, 2024; Lescuyer et al., 2021).

Despite the significance of the cocoa sector in Cameroon, the transition toward a sustainable, zero-deforestation, and climate-resilient value chain remains under-researched and weakly documented. Several key gaps emerge from the current body of literature, reflecting both policy and research gaps. While Cameroon has established national roadmaps and multi-stakeholder platforms such as the Roadmap to Deforestation-Free Cocoa to align cocoa production with forest protection, significant knowledge and policy gaps remain. Empirical evidence on how different stakeholders prioritize zero-deforestation cocoa objectives is still limited, complicating targeted policy design (IDH, 2021; Ingram et al., 2025). Documentation of sustainable practices, including agroforestry (which involves the intentional integration of trees with crops and/or livestock), diversified production systems, and climate-smart practices is also limited but growing (Nair et al., 2022; FAO, 2025). Moreover, although traceability innovations and farm mapping tools are being deployed, evaluations of bundled innovations and diffusion pathways among cocoa smallholders are scarce (IDH, 2021; Ingram et al., 2025). Governance challenges, including overlapping institutional mandates, weak enforcement, and unclear coordination also continue to limit the full implementation of zero-deforestation cocoa strategies (Ingram et al., 2025).

Against this backdrop, this study seeks to fill these research gaps by addressing the following research questions:

1. What are the stakeholder development priorities or aspirations related to achieving zero-deforestation cocoa value chains, climate mitigation, and adaptation, and how do these vary by region and stakeholder group?
2. Which sustainable or zero-deforestation practices are being adopted or promoted, and how do these relate to national strategies for climate adaptation, climate mitigation, and social inclusion, particularly for women and youth?
3. What innovations or bundles of innovations are prioritized to support zero-deforestation cocoa production and broader value chain development goals?
4. What are the enabling environment drivers, including policies, institutions, and incentives, that facilitate the scaling of sustainable practices and climate resilience?
5. Which barriers and opportunities exist for scaling zero-deforestation cocoa value chains, and what policy and investment recommendations emerge for building long-term resilience and competitiveness?

This analysis contributes to a deeper understanding of how coherent policy frameworks, inclusive governance, and innovation can jointly advance Cameroon's transition toward sustainable, deforestation-free, and climate-resilient cocoa production, aligning local development aspirations with global sustainability commitments.

2. Methodology

This study employed a qualitative research design that combined an extensive literature review with key informant interviews (KIIs) to address the research questions outlined in the preceding section. A comprehensive review of relevant academic, policy, and grey literature was conducted to establish a conceptual foundation for the study and to identify existing evidence on zero-deforestation cocoa production in relation to the study objectives. The review included peer-reviewed journal articles, government policy documents, project reports, and documents from development organizations. This process helped synthesize existing knowledge, identify gaps in the literature, and guide the formulation of interview questions for the primary data collection phase.

To complement the literature review and capture in-depth and context-specific insights, 24 KIIs were conducted in the South, West, Central and Littoral regions of Cameroon, which constitute key cocoa-producing and processing areas. Approximately three to four key informants were targeted to be interviewed from each stakeholder category. Key informants were purposively selected to represent diverse actors along the cocoa value chain. Stakeholder mapping was undertaken to identify key stakeholders in each cocoa-producing region and to ensure broad representation of views and experiences across the sector. Respondents had an average of nine years of experience in the cocoa sector and included producers (4), producer cooperative leaders (6), input suppliers (3), buyers and exporters (2), government officials (4), development practitioners (4), and a researcher (1) (see Table 1). Key actors like processors were not included in this exercise because the businesses did not grant permission for interviews. Notably, all respondents were men, highlighting ongoing gender disparities in access to leadership, voice, and representation within the cocoa sector.

Table 1. Summary of interviewed cocoa stakeholders (N = 24)

Stakeholder type	Number of respondents	Mean age (years)	Mean experience in cocoa (years)
Producer	4	44	17
Producers' cooperatives	6	36	11
Input suppliers	3	52	20
Buyers and exporters	2	35	10
Government officials	4	49.5	18.5
Researcher	1	52	25
NGOs	4	44.5	9

The interviews were semi-structured, allowing flexibility to explore emerging themes while maintaining consistency across respondents. This method enabled the research team to capture detailed, experience-based insights that might not be evident in existing literature. The combination of literature review and KIIs provided a robust basis for triangulating findings and ensuring the credibility and relevance of the study's conclusions.

Bioversity International / Brigitte Laliberté

3. Results and discussion

3.1 Stakeholders' profiles

In this section, we present the results derived from the KII data analysis and discuss their implications. We begin by presenting a brief overview of the study context and actors to position the findings within the broader sector landscape.

Producers profile

Interviews with four cocoa producers in Meme Division reveal a profile of relatively experienced producers, averaging 44 years of age and 17 years of cocoa-growing experience. Producers cultivate an average of 5.87 ha of land. Land tenure among the interviewed producers is based mainly on owned (purchased) land and rented plots. All respondents indicated that their cultivated land area has increased over the past 5–10 years, typically by about one ha per year. When asked about the drivers of this expansion, producers consistently pointed to the availability of forested land as the only option for increasing their cultivated area, indicating encroachment into forest areas. Average yields across the farms reach 312.5 kg/ha per season, which producers consider low compared to other regions with volcanic or more fertile soils. Over the past decade, yields in their own farms have been fluctuating, a result of multiple factors including the use of agrochemicals and the impacts of climate change. Notably, none of the producers reported membership in producer cooperatives or organizations, highlighting potential gaps in access to collective support, training, and market opportunities.

Producer cooperatives' profile

Respondents representing producer cooperatives are relatively young (36 years of age on average) and generally well educated (most holding university degrees), with more than a decade of experience in cocoa production and producer service delivery. Among the six cooperative representatives interviewed, four reported awareness of the EU Deforestation Regulation (EUDR), whereas two reported no awareness. Membership ranges from as high as 189 members to as low as six members, with others having 152, over 15, and more than 11.

All cooperatives work with diversified farming communities, supporting not only cocoa producers but also producers engaged in palm, plantain, staple food crops, and livestock. Through the interviews, cooperatives reported providing a wide range of services to their cocoa-farming members. These services include training and capacity building, access to inputs and organic seeds, nursery establishment, farm management support, collective marketing, transportation, access to financial resources (loans, grants, equipment), information sharing, and support in adopting sustainable agricultural practices. Together, these functions position cooperatives as central actors in strengthening producers' technical, financial, and market capacities.

Land tenure in the cooperatives' regions is dominated by inherited land, though several respondents also mentioned purchased, rented, and free allocated land. In some communities, those without inherited land may receive plots allocated freely by the community. All cooperative representatives observed an increase in the land area devoted to cocoa among their members over the past 5–10 years. They identified some key drivers of this expansion to include the recent rise in cocoa prices, greater profitability, and increased engagement of young people entering farming. Some respondents noted that favorable prices have made producers more comfortable investing in farm expansion. Regarding expansion into forest land, responses were mixed: four cooperatives reported that producers are clearing forest areas, while two said they are not. Among those reporting expansion, the main motivations include the desire to increase output and yield, secure forest land for future use, and, in some cases, socio-economic factors such as young people turning to cocoa farming after leaving school during periods of crisis. Among cooperatives reporting no expansion, constraints include limited labor (often restricted to family labor) and community or regulatory restrictions on land clearing.

Trends in cocoa yields among different cooperatives also varied. Three cooperatives observed increases in yield over the past decade, two reported stable yields, and one noted seasonal variability. Changes in yield were attributed to factors such as higher cocoa prices enabling producers to purchase more inputs, the adoption of high-quality organic seeds, increased investment in labor and farm inputs, and seasonal fluctuations linked to pests, diseases, and climate conditions. When comparing yields to other regions, responses were mixed: some cooperatives' representatives reported differences; one believed their region performed better, and others were uncertain. Explanations for yield differences pointed to climatic and environmental conditions, differences in farming methods, levels of external support, and the influence of sustainable production approaches.

Input suppliers' profile

Respondents within the supplier segment had an average age of 52 years and varied experience in cocoa-related activities, ranging from 5 to 25 years. Their educational backgrounds ranged from First School Leaving Certificate, Advance Level qualifications, to a Master of Business Administration (MBA). The organizations represented by the respondents play different but complementary roles in supplying agricultural inputs to cocoa producers. Two operate as agrochemical retail shops, providing a wide range of inputs directly to producers in the region. The third is part of a larger international company that works with agricultural dealers and producers by supplying high-quality fertilizers, including locally produced NPK blends tailored to the needs of specific crops and soils across Africa. Together, these suppliers contribute to strengthening cocoa production systems through the provision of essential farm inputs.

In terms of location, two input suppliers are in Kumba Town, while the third is headquartered in Singapore and operates across multiple African countries, including Kenya, Rwanda, Congo, Zambia, Tanzania, Cameroon, and Togo. The Kumba-based suppliers provide a full range of cocoa-related agrochemicals, while the international supplier distributes over 30,000 metric tons of fertilizer annually, including more than 10,000 tons dedicated to cocoa. Two of the suppliers are members of the Agrochemical Union, which provides coordination and representation; however, none were aware of the EUDR. Their limited awareness underscores a critical gap in the dissemination of regulatory information to upstream actors. As with producers, awareness of the EUDR within the input supplier group was lacking: All three input supplier respondents indicated that they were not aware of the regulation or its implications for the cocoa value chain.

Cocoa buyers and exporters' profile

Two cocoa-buying and exporting firms were interviewed, both staffed by professionally trained personnel with 4 and 16 years of experience individually, while their companies have been active cocoa buyers for 10 and 26 years, respectively. Their companies source cocoa directly from producers and cooperatives and manage procurement, quality control, processing, and export logistics. One is part of a multinational corporation operating in more than 60 countries, while the other is a regional actor with long-standing operations in Kumba and Douala. Purchase volumes range from 5,000 to 10,000 tons annually. Both companies export exclusively cocoa beans to global markets. One company is affiliated with national regulatory bodies overseeing quality standards and export norms while the other is not part of any buyer association. Importantly, both companies demonstrated strong awareness of the EUDR. One estimated current compliance at 60–70% and plans full compliance by 2026. The other described the regulation as an opportunity to strengthen traceability, align with international best practices, and safeguard access to European markets.

Bioversity International / Brigitte Laliberté

Researcher's profile

The one researcher interviewed was a senior researcher, PhD holder, from Cameroon's national agricultural research institution, with 25 years of experience. The institution he represents – active for 77 years – conducts extensive work on developing disease-resistant cocoa varieties, improving yields, promoting farm diversification, and mapping production zones. Its network spans six regional centers nationwide, ensuring scientific support across all cocoa-producing regions. The researcher confirmed awareness of the EUDR, noting that the regulation could help reduce forest degradation, but its direct impact on Cameroon may be limited. This is because cocoa in Cameroon is predominantly produced under agroforestry systems, typically outside protected forest zones, which may imply fewer adjustments for current production systems to meet the regulation's requirements.

Non-governmental organizations' profile

Four international NGOs that play leading roles in advancing sustainable cocoa production, environmental conservation, and rural development in Cameroon were interviewed. Respondents averaged 44.5 years of age and held strong academic credentials – including Master's, Doctorate, and engineering degrees –, reflecting a high level of technical expertise. While their personal experience in cocoa-related policy, research, and development averaged nine years, their organizations had decades of engagement in the sector, ranging from 17 years (IDH, The Sustainable Trade Initiative, hereafter IDH) to over 60 years (German International Cooperation [GIZ] and the Food and Agriculture Organization [FAO] of the United Nations, and 40 years (World Wildlife Fund [WWF]).

The NGOs operate across complementary dimensions of the cocoa value chain.

- IDH focuses on value chain transformation through public–private partnerships, sustainable production, finance, and traceability.
- GIZ supports institutional reforms, strengthens cooperatives and private-sector actors, and provides extensive guidance on EUDR compliance and capacity building.
- FAO contributes to policy support, agroforestry development, producer-organization strengthening, child labor research, orchard mapping, and EUDR alignment efforts since 2024.
- WWF promotes sustainability from soil management to post-harvest handling, enhances biodiversity conservation, and implements landscape-level interventions.

Their geographic presence is substantial. IDH, GIZ, FAO, and WWF maintain broad international footprints and long-standing operational bases in Cameroon, with offices spanning Yaoundé, Bertoua, Buea, Lobéké, Campo Ma'an, and other key areas. Several participate in global multi-stakeholder sustainability platforms such as the Cocoa and Forests Initiative and the World Cocoa Foundation, enabling strategic alignment and sector-wide knowledge exchange.

All respondents were familiar with the EUDR and viewed it positively as reinforcing their ongoing mandates. IDH described the regulation as a catalyst to scale its 2020–2025 strategy; GIZ noted that it has helped redirect priorities toward agroforestry; FAO identified it as a significant tool for policy alignment, resource mobilization, and system-wide sustainability improvements; and WWF highlighted its importance in strengthening traceability, visibility, and monitoring of sustainable cocoa production.

Government institutions' profile

Four government institutions central to the governance, regulation, and development of Cameroon's cocoa sector were interviewed. Respondents averaged 49.5 years of age and held advanced academic qualifications, including Master's, Bachelor's, and Doctorate degrees. Respondents had an average of 18.5 years of experience in cocoa-related policymaking and development support, while their institutions have long-standing sectoral mandates ranging from 34 to over 70 years. All four organizations are headquartered in Yaoundé, with one also operating in Douala, and maintain extensive national networks – including 10–11 regional delegations, branches in all forest regions, and over 55 decentralized offices – to reach key cocoa-growing and forested areas such as Ebolowa, Bafoussam, Abong-Mbang, Kumba, and Yokadouma, among others.

Collectively, the institutions interviewed represent key actors in cocoa-sector policymaking, forest governance, climate policy, and agricultural development. The institutions' mandates cover cocoa and coffee sector regulation and promotion, forest and biodiversity management, national climate change strategy, and support for agricultural production and producer organizations. Their activities span policy formulation, quality control of cocoa exports, oversight of forest and land-use management, climate mitigation, technology transfer, and coordination of agricultural extension services.

All NGO respondents are aware of the EUDR and recognize its significant implications for national policy. Some view the regulation as reinforcing efforts to promote

sustainable cocoa production, protect market access, and align Cameroon's frameworks with international environmental standards. Others noted potential restrictions on cocoa from recently deforested areas, which could affect land-use policy, export eligibility, and environmental monitoring. Several emphasized that EUDR implementation will necessitate adjustments to methodologies, traceability systems, compliance monitoring, and environmental safeguards.

In the sections that follow, we address our key research objectives by first presenting the findings of the literature review and then integrating insights from the evidence gathered through KIIs. To differentiate between the literature review and the KIIs, we will explicitly reference findings from the KIIs when presenting interview-based evidence. Where KIIs are not mentioned, the results should be understood as originating from the literature review.

3.2 Stakeholder development priorities and aspirations

Cameroon's cocoa sector is making steady progress toward protecting forests while also improving climate resilience and producer livelihoods. Stakeholders across the value chain increasingly share goals to expand zero-deforestation cocoa, raise productivity, and strengthen market access. These priorities signal a broad commitment to sustainable farming, better governance, and alignment with emerging international requirements such as the EUDR (European Commission, 2023; IDH, 2021). The following section summarizes the aspirations of each stakeholder group.

Producers' aspirations

Smallholder producers, who produce the lion's share of Cameroon's cocoa, place livelihoods at the forefront of sustainability strategies. Producers consistently emphasize that the transition to zero-deforestation cocoa must provide economic viability and ensure a living income. They note that without productivity gains and reliable markets, restrictions on forest conversion risk exacerbating rural poverty (GDA, 2024). The KIIs also revealed that producers prioritize improving yields and increasing income from cocoa. Secure land and tree tenure is also a foundational requirement and a key priority, as the literature shows that producers report that unclear land tenure rights discourage long-term investments in shade trees and agroforestry systems that enhance carbon storage and biodiversity (Folefack & Darr, 2021; Ingram et al., 2025; Kazianga & Masters, 2006).

Producers also stress the importance of practical agronomic support. Access to high-quality planting material, integrated soil fertility and pest management services, and hands-on training in good agricultural practices are seen as essential to intensifying production on existing plots without clearing forests (Alemagi et al., 2015; Essougong et al., 2020; Mbile et al., 2025). Affordable financing mechanisms, such as input credit schemes, are also critical to rehabilitate aging farms and adopt agroforestry systems without burdening smallholders with excessive debt (Alemagi et al., 2015).

Market access and fair pricing are equally critical. Producers aspire to achieve transparent and participatory traceability systems that can credibly verify deforestation-free cocoa, and for price premiums that reward sustainable practices without imposing excessive administrative burdens (René et al., 2023; Soh Wenda et al., 2024). Strengthening producer organizations and cooperative structures is another priority. Cooperatives enable collective action for forest protection, facilitate adoption of sustainable practices, improve bargaining power, and provide platforms for training and input distribution (IDH, 2021; Krumbiegel & Tillie, 2024). Moreover, improved rural infrastructure, particularly transport networks, is seen as a precondition to reduce dependence on exploitative middlemen and expand access to sustainable markets (GDA, 2024). Finally, the literature review reveals that producers seek clear guidance, georeferenced farm data, and awareness-raising on climate-smart practices, deforestation risks, and evolving regulations (SCCC, 2025). Collectively, the literature review shows that producers' priorities underscore a pragmatic and livelihood-sensitive approach to sustainability, anchored in secure tenure, productive farms, supportive institutions, and market incentives.

The KII results show that, in terms of zero-deforestation priorities, producers have limited awareness of the EUDR and do not perceive zero-deforestation requirements as a priority. Conservation practices are minimal and limited to keeping some trees on farms. The KIIs also show that most producers do not identify any GHG mitigation-related priorities. Only one producer mentioned agroforestry and mixed cropping, but these were adopted for productivity gains and resilience rather than for carbon reduction. Producers apply a few adaptation practices such as avoiding chemical weeding and limiting pruning during the dry season. They also report reducing agrochemical use to protect soils and maintain moisture.

Producer cooperatives' aspirations

Producer cooperatives priorities closely align with producers' priorities but add a broader organizational and governance perspective. Cooperatives emphasize increasing productivity and incomes by intensifying existing farms through rehabilitation, improved planting material, and soil fertility management to reduce poverty-driven forest conversion (ICRAF, 2021; IDH, 2021). They also focus on securing access

to international markets, and compliance with EUDR, which requires traceability, monitoring, and certification systems (European Commission, 2023). Legal recognition of land and tree tenure was identified as a critical component to facilitate long-term investment in agroforestry (Republic of Cameroon, 2024; Sonwa et al., 2017).

Cooperatives further aim to scale agroforestry systems that conserve biodiversity, store carbon, and maintain yields, seeking recognition of traditional shade-grown cocoa within international markets (ICRAF, 2021; Sonwa et al., 2017). Access to finance and bundled input packages is viewed as essential for producers to adopt these practices at scale without resorting to forest clearing (CAFI, 2024; IDH, 2021). Beyond production, cooperatives prioritize and emphasize organizational capacity, collective action, and value-chain strengthening through aggregation, improved bargaining, post-harvest facilities, and producer training (ONCC, 2023). Cooperatives engage in landscape-level partnerships and benefit-sharing programs (e.g., Reducing Emissions from Deforestation and Forest Degradation Plus [REDD+] and restoration initiatives), and advocate for supportive governance or regulatory frameworks that recognize smallholder realities while ensuring compliance with zero-deforestation standards (CAFI, 2024).

The KII results were consistent with those from the literature review. Cooperatives prioritize value-chain strengthening (by securing equipment such as solar dryers), improving road access, and supporting livelihood diversification for their members, including livestock and associated crops. To achieve zero-deforestation, producer cooperatives showed strong alignment with zero-deforestation objectives, explicitly prioritizing the protection of existing forest land (such as around Korup National Park) and supporting supply chain traceability. Crucially, cooperatives promote intensification rather than expansion, educating producers on the necessity of rehabilitating old, unproductive cocoa trees within the same farmland instead of clearing new land. Although respondents of producers' cooperatives did not explicitly mention GHG reduction, their strong focus on promoting agroforestry and diversification inherently supports climate mitigation goals by increasing tree cover and improving carbon stocks.

The KII results also show that producer cooperatives are at the forefront of implementing practical climate-adaptation strategies. Their priorities focus on extensive producer training in core agronomic practices – such as pruning, shade management, and disease control – while also encouraging livelihood diversification through activities like palm, plantain, and livestock production to reduce vulnerability to harvest fluctuations. They additionally promote low-cost resilience measures, including improved farm litter or waste management to enhance soil-moisture retention during the dry season. Cooperatives report that, at the individual level, producers are adopting simple but effective practices of their own, such as refraining from chemical weeding and avoiding pruning during the dry season to protect plant health.

Input suppliers' aspirations

Input suppliers are emerging as critical enablers of zero-deforestation cocoa in Cameroon. Their priorities focus on ensuring that producers have access to high-quality, climate-resilient planting material and inputs, including fertilizers and plant-protection products, to enable intensification on existing plots (IDH, 2021; MINADER, 2022). Suppliers also collaborate with research institutions to develop agroforestry-friendly cocoa varieties, supporting Cameroon's national goal of "more cocoa on less land" (IDH, 2021). Beyond inputs, suppliers prioritize extension services and capacity building. Demonstration plots, producer field schools, and advisory services are employed to encourage adoption of climate-smart practices and promote agroforestry systems (IDH, 2021). Suppliers increasingly participate in digital traceability initiatives and national monitoring systems to ensure responsible sourcing and reduce deforestation risk. Public-private and multi-stakeholder engagement, such as participation in the Sustainable Cocoa Platform, allows suppliers to coordinate landscape-level interventions, support reforestation, and strengthen producer resilience (IDH, 2021). Collectively, these efforts position input suppliers as key partners for both productivity gains and forest conservation.

The KIIs revealed that input suppliers primarily operate with commercial objectives, centering their activities on the sale of agrochemicals and the expansion of their client base. Most input suppliers interviewed reported no involvement in zero-deforestation, climate-mitigation, or climate-adaptation initiatives, noting that these areas fall outside their core business mandate. Only one supplier identified sustainable farming as a strategic priority linked to potential market expansion. This supplier actively promotes zero-deforestation cocoa through producer sensitization delivered via the Farmsanta mobile app and through targeted training sessions, including discouraging the use of charcoal in production systems. In addition, this supplier frames resilience and sustainable production in terms of providing producers with high-quality inputs – such as Nutrisource fertilizer and agrochemicals – and offering training on Good Agricultural Practices (GAP). Within this perspective, resilience is understood as the consistent, effective use of inputs to maintain productivity.

Local buyers' aspirations

Local buyers align their procurement strategies with sustainability and deforestation-free objectives. Their

foremost priority is achieving farm-level traceability through mapping, geolocation, and digital purchase records to comply with market standards such as EUDR (IDH, 2023). Buyers also support farm rehabilitation and sustainable intensification, providing technical assistance, co-financing inputs, and incentivizing agroforestry through seedling provision and tree-planting programs (Cocoa Compass, 2023; Global Forest Watch, 2025).

Local buyers play a critical role in multi-stakeholder coordination, aligning private monitoring with national REDD+ and land-use systems, thereby enhancing compliance and supporting landscape-level forest protection (Cocoa Compass, 2023; Global Forest Watch, 2025). They help link producers, cooperatives, and exporters with national REDD+ and land-use systems by supporting farm mapping, traceability, and compliance checks. By aligning their private monitoring tools with national forest-governance frameworks, they improve data accuracy, reduce information gaps, and strengthen landscape-level forest protection.

Local buyers also leverage market incentives, including premium pricing and contractual guarantees, to reward deforestation-free and agroforestry-compliant cocoa production (IDH, 2023). Strengthening cooperatives is central to buyers' strategies, reducing transaction costs and scaling traceability and input delivery. These priorities collectively position local buyers as intermediaries that reinforce both producer adoption of sustainable practices and broader sector compliance (Fabre et al., 2022).

Cocoa processors' aspirations

Cameroon's cocoa processors aim to integrate deforestation-free objectives with operational and value-chain efficiency. Processors prioritize supply-chain traceability and legal compliance, including farm mapping, digital purchase records, and Geographic Information System (GIS) monitoring to ensure that cocoa is not sourced from recently deforested land (IDH, 2023). They support sustainable intensification and farm rehabilitation through co-financing, improved planting material, and technical assistance, reducing the need for forest expansion (Cocoa Compass, 2023; Global Forest Watch, 2025).

Processors also promote agroforestry and landscape restoration, encouraging shade-grown cocoa and tree planting to enhance carbon storage, biodiversity, and climate resilience (Cocoa Compass, 2023; Global Forest Watch, 2025). They aim to improve environmental performance through adoption of energy-efficient or solar-assisted dryers, upgraded fermentation and drying infrastructure, and valorization of cocoa waste into biomass energy, aligning with low-emission agricultural priorities (CAFI, 2024). Investment in extension, post-harvest training, and quality control strengthens producer income and incentivizes compliance with sustainable practices. Engagement in public–private coordination via multi-stakeholder platforms and the Sustainable Cocoa Platform further facilitates landscape-level monitoring and governance (IDH, 2021).

Cocoa exporters' aspirations

Exporters are increasingly focused on risk-managed, landscape-oriented sourcing. Traceability and compliance with EUDR are top priorities, implemented via farm geolocation, digital records, and GIS mapping (European Commission, 2023; Reuters, 2024). Exporters support farm rehabilitation and agroforestry scaling, providing improved planting material, tree seedlings, and technical assistance to increase productivity on existing land and reduce forest conversion (IDH, 2021; Sonwa et al., 2017). They further invest in producer capacity-building through training on good agricultural practices, post-harvest management, and integrated pest management, which enhances both quality and market access (ICRAF, 2021; IDH, 2021). Supply-chain monitoring and verification – including satellite imagery and ground audits – ensure compliance with zero-deforestation objectives. Exporters also promote certification uptake, low-carbon processing, and value addition, thereby securing premiums and reputational benefits while supporting domestic economic gains. Participation in multi-stakeholder initiatives, such as the Central African Forest Initiative (CAFI) and the Sustainable Cocoa Platform, reinforces alignment with national policy and REDD+ goals. Access to financing and input support completes the exporter strategy by reducing producers' incentives to expand into forests (ICRAF, 2021).

The results of the KIIs combined the priorities of cocoa buying and exporting companies. The results revealed the following. Cocoa buying and exporting companies define their sustainability priorities through the lens of risk mitigation, supply chain security, and market compliance, driven primarily by the EUDR. To advance zero-deforestation commitments, cocoa-buying and exporting companies are adopting highly technical, compliance-driven approaches. Firms such as Cameroon Marketing Commodities (CAMACO) and ETG are investing substantially in mapping and monitoring systems, using Global Positioning System (GPS) to generate polygon farm maps and applying satellite imagery to ensure that all sourced cocoa originates from non-deforested areas. This level of traceability is increasingly essential for maintaining market access. ETG further reinforces compliance by offering premium prices for organically grown, fully traceable cocoa produced on verified non-deforested land.

KIIs also indicate that cocoa-buying and exporting companies approach climate-change mitigation primarily by targeting the parts of the value chain where they have direct control. To reduce GHG emissions, their efforts focus on reducing the corporate carbon footprint linked to logistics

and post-harvest operations, notably through optimizing trucking routes and improving fuel efficiency. At the farm level, companies rely on promoting mitigation practices that are already embedded in sustainable production systems – such as agroforestry – and on improving post-harvest processes. This includes enhancing fermentation and drying methods and, in many cases, providing solar dryers to reduce reliance on wood burning. Companies consider producer resilience as integral to securing a stable and sustainable supply of cocoa. Their support focuses on training producers in soil and water conservation practices and distributing climate-resilient cocoa varieties. Their central objective is to promote income diversification – particularly through agroforestry and intercropping – so that producers are less dependent on cocoa alone. This reduces vulnerability to price volatility and crop failure, while strengthening the long-term reliability of the export supply chain.

Research organizations' aspirations

Research institutions support sector-wide goals by producing locally relevant evidence and innovations. Their priorities include breeding resilient, high-yielding, and shade-tolerant cocoa varieties and developing scalable agroforestry models that balance production with conservation objectives (Jagoret et al., 2017; Sonwa et al., 2017). Research also targets farm rehabilitation, sustainable intensification, integrated pest and soil management, climate-smart agronomy, and GHG accounting to reduce deforestation risk and ensure market compliance (ICRAF, 2021; WRI, 2021).

Policy-oriented research seeks to support tenure security, land-use planning, and alignment of agricultural expansion with forest protection (Republic of Cameroon, 2024; Sonwa et al., 2017). Research organizations additionally engage in participatory learning platforms, producer field schools, and multi-stakeholder collaborations to accelerate adoption and co-create solutions (ICRAF, 2021; IDH, 2021). They also pilot financing and incentive mechanisms tailored for smallholders, facilitating sustainable intensification and agroforestry without forest clearance (CAFI, 2024; IDH, 2021).

The KII results were consistent with the results of the literature review, revealing the following. To achieve zero-deforestation, research centers prioritize sustainable land management, particularly through the promotion of agroforestry systems and diversified agroforestry farms. These approaches aim to enhance productivity within existing farmlands, thereby reducing pressure on forested areas and supporting compliance with emerging zero-deforestation requirements in the cocoa sector. Climate-change mitigation or GHG reduction efforts focus on improving resource efficiency and lowering emissions across the cocoa value chain. Key priorities include advancing improved drying techniques – most notably the use of solar dryers to reduce dependence on firewood – as well as promoting biopesticides and biofertilizers. By limiting chemical inputs, these practices contribute to reduced GHG emissions and more environmentally sustainable production. To enhance producers' resilience to climate shocks, research centers promote livelihood diversification and adoption of disease-resistant cocoa varieties. These improved genetic

materials help producers withstand pests, drought, and other climatic stresses, while complementary income sources strengthen financial stability during periods of reduced cocoa yields.

Government's priorities

The Government of Cameroon is advancing a transition toward sustainable, zero-deforestation cocoa production by aligning the sector with national climate, forest-conservation, and rural development goals. Central to this effort is strengthening forest governance and land-use planning so that cocoa expansion no longer drives forest loss. The revised *Forest Law No. 2024/008* enhances forest protection, clarifies land and tree tenure, and formally recognizes agroforestry as a viable land-use option in cocoa-growing regions (Republic of Cameroon, 2024). Complementary land-use zoning initiatives guide agricultural, conservation, and community activities, preventing encroachment into ecologically important forests (Bruggeman et al., 2015).

The government is advancing its climate mitigation and GHG reduction commitments through the national *REDD+ Strategy*, which highlights cocoa agroforestry and sustainable intensification as key mitigation pathways (CAFI, 2020; Somorin et al., 2014). The program aims to curb emissions from forest loss and enhance carbon stocks by promoting tree planting, restoring degraded cocoa farms, and supporting sustainable livelihoods that reduce pressure on forests (Gakou-Kakeu et al., 2022; Somorin et al., 2014).

The *National Action Plan for Sustainable Cocoa* provides an integrated framework based on six priorities (SCCC, 2025):

1. Forest protection and restoration – Focuses on strengthening forest governance, establishes a national monitoring system, and supports conservation and rehabilitation of forests threatened by agricultural expansion.
2. Sustainable environment – Promotes climate adaptation and mitigation in cocoa-growing regions, enhances carbon stocks through agroforestry, and builds resilience to climate shocks.
3. Sustainable production of cocoa – Aims to improves productivity on existing farms while minimizing forest pressure through good agricultural practices, farm rehabilitation, and expanded agroforestry.
4. Sustainable cocoa marketing and producer living income – Seeks to transform markets through full traceability, national sustainability guidelines, and strategies to progressively close the producer income gap.
5. Community engagement and social inclusion – Empowers producers and communities and calls for participatory development of social and environmental safeguards, widespread awareness-raising on sustainable production, and concrete measures to eliminate child labor in cocoa supply chains.
6. Governance – Ensures effective coordination, transparency, and oversight through the Sustainable Cocoa Platform.

To meet emerging global standards, including the EUDR, Cameroon is collaborating with the EU, FAO, and industry partners to reinforce traceability systems, expand digital farm mapping, strengthen cooperatives, and provide training that enables producers to comply with environmental and legal requirements while accessing international markets. Together, these initiatives provide a coherent, actionable roadmap for building a sustainable, equitable, and deforestation-free cocoa sector.

The KII results were consistent with the results of the literature review. They revealed that government institutions' priorities aimed at steering the cocoa value chain toward greater sustainability, productivity, and climate alignment focus on raising cocoa quality and yields while advancing a transition toward sustainable and zero-deforestation production systems. These priorities also include halting the conversion of protected forest areas, promoting agroforestry, and upholding Cameroon's commitments under international environmental agreements. Institutions emphasized the need to advance low-carbon and climate-resilient agriculture in line with the country's Nationally Determined Contributions (NDCs), while simultaneously strengthening producer support to help meet national development targets, particularly those set out in the National Development Strategy 30 (NDS 30). Respondents highlighted the Centre, East, and South regions – especially the dense humid forest zone – as the key geographies where these priorities should be concentrated, given their importance for both cocoa production and biodiversity conservation.

Zero-deforestation efforts center on strengthening land governance and ensuring more effective enforcement of existing regulations, alongside the reinforcement of traceability systems through geolocation and systematic mapping of cocoa plots. Institutions view agroforestry-based cocoa systems as essential to meeting national commitments laid out in the National Investment Plan and the Roadmap to Deforestation-Free Cocoa. Their climate mitigation strategies similarly focus on reducing land-use emissions by intensifying and diversifying production on existing farmland, thereby limiting pressure on forests. Agencies such as the National Cocoa and Coffee Board (ONCC) advocate for the principle of producing "more cocoa on less land," echoing national frameworks like the Strategy for Sustainable Development and REDD+, which outline pathways for low-emission agriculture and climate-aligned land-use planning.

Resilience and climate-adaptation priorities are framed around strengthening the long-term economic stability of cocoa-producing regions. The Ministry of Agriculture (MINADER) has set an ambitious goal of processing at least 20% of national cocoa output locally, seeking to boost employment, increase value capture, and build economic resilience within rural communities. Government support for durable livelihood diversification ensures that policy goals address both environmental compliance and the financial stability of producer households, positioning resilience as a cornerstone of a sustainable and competitive cocoa sector.

Convergence and divergence of priorities across value-chain actors

Table 2 provides a summary of key stakeholder priorities for achieving zero-deforestation cocoa in Cameroon.

Table 2. Summary of key stakeholder priorities for achieving zero-deforestation cocoa in Cameroon

Value chain actor	Key priorities	Points of convergence	Points of divergence
Producers	Living income, secure land/tree tenure, yield improvement, access to finance, fair markets, cooperative support, infrastructure, guidance on regulations	Support agroforestry, sustainable intensification, traceability, participation in cooperatives, climate-smart practices	Emphasis on livelihood security and tenure rights; greater caution regarding the adoption of new technologies without incentives
Producer cooperatives	Market access, farm productivity, shade-grown cocoa, finance and inputs, traceability, capacity building, landscape partnerships	Alignment with producers on agroforestry, sustainable intensification, traceability, capacity building	More focus on collective action, market compliance, and landscape-level partnerships than on individual producers
Input suppliers	Improved planting material, fertilizers, agroforestry support, extension services, traceability participation	Alignment with producers and cooperatives on sustainable intensification and agroforestry	Primary focus on product supply and technical advice; limited direct focus on market access or policy advocacy
Local buyers	Farm-level traceability, support to intensification and agroforestry, premium pricing, cooperative strengthening	Convergence on traceability, producer support, sustainable production, market incentives	Focus on sourcing compliance and risk management; stronger engagement with market linkages
Processors	Traceability, sustainable intensification, agroforestry, low-emission processing, quality improvement, public-private coordination	Convergence on traceability, intensification, agroforestry, producer support, GHG reduction	Stronger focus on processing efficiency, GHG reduction, and quality standards compared to other actors
Exporters	Traceability, compliance with EU regulations, agroforestry and farm rehabilitation, producer training, monitoring and verification, certification uptake	Convergence with producers, cooperatives, and processors on traceability, agroforestry, farm rehabilitation	Emphasis on international market compliance and certification; focus on supply-chain verification at export level

Value chain actor	Key priorities	Points of convergence	Points of divergence
Research organizations	Improved planting material, agroforestry models, sustainable intensification, monitoring, climate-smart agronomy, policy support, participatory learning	Convergence on sustainable intensification, agroforestry, traceability, GHG mitigation	Emphasis on evidence generation, experimental research, and policy guidance; less direct involvement in market or finance mechanisms
Government	Forest governance, REDD+, land-use planning, low-emission agriculture, national traceability, policy & regulatory frameworks	Supports all actors through enabling environment, agroforestry promotion, sustainable intensification, traceability	Emphasis on regulatory compliance and enforcement; less on immediate livelihood concerns

Source: Authors' compilation based on literature review and KIIs.

Across the value chain, several points of convergence are evident:

1. Traceability and compliance: Producers, cooperatives, buyers, processors, and exporters all prioritize credible systems for verifying deforestation-free cocoa (European Commission, 2023; IDH, 2021; IDH, 2023).
2. Agroforestry promotion: Shade-grown cocoa and tree planting are widely recognized as key strategies to conserve biodiversity, store carbon, and maintain productivity (ICRAF, 2021; Sonwa et al., 2017).
3. Sustainable intensification: Raising yields on existing plots is consistently emphasized to reduce pressure on forests (Alemagi et al., 2015; IDH, 2021).
4. Capacity-building and extension: Training, demonstration plots, and cooperative support are critical for adoption of climate-smart practices (ICRAF, 2021; IDH, 2021).
5. Market incentives and finance: Access to fair pricing, premium markets, and affordable credit is broadly acknowledged as essential (CAFI, 2024; René et al., 2023).

Divergence arises in the emphasis on:

1. Operational efficiency versus farm-level support: Processors and exporters focus on post-harvest processing, energy efficiency, and low-carbon technologies, whereas producers and cooperatives prioritize livelihoods, tenure security, and infrastructure (CAFI, 2024; GDA, 2024).
2. Landscape-level governance: While research organizations and government emphasize policy, land-use planning, and multi-stakeholder governance, some private-sector actors focus on compliance and market alignment (Republic of Cameroon, 2024; SCCC, 2025).

Cameroon's cocoa sector demonstrates a growing alignment around zero-deforestation and climate-smart objectives. Producers, cooperatives, suppliers, buyers, processors, exporters, and research organizations collectively pursue strategies that integrate productivity, environmental stewardship, and economic incentives. Convergence is strongest in areas such as traceability, agroforestry, sustainable intensification, capacity-building, and financial access, while divergence reflects the varying operational, policy, and market roles of each actor. The combined efforts of all stakeholders, supported by robust governance, monitoring, and multi-stakeholder coordination, provide a coherent pathway for achieving a deforestation-free, low-emission, and resilient cocoa sector that safeguards both forest landscapes and rural livelihoods in Cameroon.

3.3 Adoption and promotion of sustainable or zero-deforestation practices and relation to national strategies

Cameroon's cocoa sector actors are increasingly embracing sustainable and zero-deforestation practices to align cocoa production with climate and environmental objectives. These practices presented in this subsection aim to simultaneously enhance farm productivity, strengthen resilience to climate change, and safeguard forests. They also offer opportunities for social inclusion by creating pathways for women and youth to participate in value-added activities, training programs, and enterprise development. The adoption of such practices reflects national priorities for climate adaptation, mitigation, and inclusive development, supporting both environmental sustainability and improved livelihoods across cocoa-producing regions.

Cocoa producers in Cameroon are progressively adopting agroforestry systems as a central strategy to reduce deforestation, lower GHG emissions, and enhance farm resilience. Cocoa-based agroforestry systems often incorporate coffee, timber, and fruit trees and are widely promoted and adopted across cocoa-producing regions (Alemagi et al., 2015; Awazi, 2025; Mbolo et al., 2016; Michel et al., 2024; Saj et al., 2017; Zekeng et al., 2023). These systems demonstrate significant carbon sequestration potential, storing carbon in aboveground and belowground biomass, enhancing soil organic matter, and supporting diverse plant and animal species (Awazi, 2025).

The inclusion of shade and multipurpose trees in cocoa farms directly contributes to climate mitigation by sequestering atmospheric carbon dioxide, improving soil structure, and enhancing soil fertility. Leaf litter and pruning residues enrich soils by increasing nutrient cycling and organic matter accumulation. Simultaneously, the integration of timber and fruit trees creates additional income streams, allowing producers to intensify production on existing plots rather than expanding into forested areas, thereby supporting zero-deforestation objectives (Alemagi et al., 2015).

To further enhance soil fertility and maintain sustainable productivity, producers employ multiple conservation practices. These include cover cropping with weed residues, mulching using crop residues, applying organic and compost manure to increase soil organic matter, and utilizing water conservation measures (Essougong et al., 2020). Such practices mitigate soil erosion, replenish depleted nutrients, and promote long-term sustainability, especially in areas where soils have been degraded by continuous cultivation.

Integrated Pest Management (IPM) is another core strategy among cocoa producers in Cameroon (Achu, 2009; Awazi, 2025). IPM employs a combination of mechanical, physical, biological, cultural, genetic, and chemical approaches to manage pest populations at acceptable levels while reducing reliance on synthetic pesticides. When combined with pruning practices, IPM improves plant health, enhances air circulation and sunlight penetration, removes diseased branches, and ultimately increases bean quality and farm yields (Suh & Molua, 2022).

Additional strategies complement agroforestry, soil fertility management, and IPM to boost resilience and productivity. These include: crop diversification to enhance ecological balance and household food security (Ndah et al., 2023); mulching with crop residues to conserve soil moisture and nutrients (Essougong et al., 2020); planting soil-fertilizing tree species to naturally improve fertility (Essougong et al., 2020); adoption of pest- and disease-resistant cocoa varieties to reduce losses and chemical dependence (Achu, 2009); and the replacement of dead or unproductive cocoa trees to maintain yields and optimize farm productivity (Achu, 2009).

The results of the KIIs reveal that efforts to reduce deforestation in the cocoa sector are being driven primarily through farm-level and value chain interventions that promote sustainable production within existing cultivated areas. Producers are increasingly adopting agroforestry, mixed cropping, reduced pruning, targeted chemical weeding during the dry season to conserve soil moisture, and an overall reduction in agrochemical use. Producer cooperatives reinforce these practices by promoting agroforestry and replanting old or unproductive cocoa trees on the same land rather than expanding into forested areas. Most input suppliers continue to operate outside sustainability frameworks, focusing on agrochemical sales without offering inputs tailored to zero-deforestation or sustainable intensification, revealing a significant gap in the availability of bio-inputs and other climate-smart products. Buyers and exporters are strengthening traceability and compliance by adopting and promoting mapping of farms and geo-tagging production plots, enabling them to distinguish deforested from non-deforested areas and ensure responsible sourcing. These traceability efforts are coordinated with government authorities responsible for land-use enforcement and are increasingly embedded within companies' procurement systems. NGOs, research institutions, and government agencies promote agroforestry systems that integrate native shade trees, intercropping, natural regeneration, and the rehabilitation of existing cocoa plots using improved,

high-yield varieties. Together, these interventions support sustainable intensification on already deforested land while reducing pressure on remaining forest areas.

To reduce GHG emissions and strengthen resilience, the KIIs show that producers are adopting agroforestry and mixed cropping systems. Producer cooperatives reinforce these efforts by promoting sustainable land management, the use of solar dryers, mixed farming, and organic fertilizers. Buyers and exporters contribute by encouraging tree planting within cocoa farms to enhance carbon sequestration. NGOs, research institutions, and government agencies complement these measures by advancing low-emission post-harvest practices, including the use of solar dryers and improved fermentation to reduce firewood consumption. They also promote the valorization of cocoa by-products, such as composting and biogas production, and the transition from chemical nitrogen fertilizers to organic fertilization and biopesticides. Collectively, these interventions reduce emissions across production, processing, and commercialization while strengthening the climate resilience of cocoa systems.

Results of the KIIs show that efforts to strengthen resilience in Cameroon's cocoa sector focus on practical farm-level improvements, targeted technical support, and the deployment of climate-smart technologies. Producers prioritize practices that deliver immediate protection against climate stress – such as reduced pruning, targeted weeding during the dry season to preserve soil moisture, and more efficient pest and disease management – reflecting the absence of financial incentives for longer-term climate action. Producer cooperatives play a central coordinating role by consolidating technical assistance and translating it into actionable practices. They promote mixed farming to stabilize household income during low-production periods and deploy solar dryers to reduce losses linked to climate variability. Input suppliers contribute by providing improved inputs and training on soil fertility and IPM, helping producers maintain productivity under increasingly variable weather conditions. Buyers and exporters emphasize the need for stronger policy frameworks to support a climate-resilient transition. At the farm level, they promote good agricultural practices that preserve soil health and reduce over-fertilization, ensuring greater long-term stability of the supply base. NGOs, researchers, and governmental institutions complement these efforts by advancing disease-resistant and climate-tolerant cocoa varieties, providing training through producer field schools, and deploying early warning systems for pest and disease outbreaks. Together, these interventions help producers strengthen both their technical capacity and economic resilience, positioning the cocoa sector to better withstand climate shocks and sustain productivity over time.

Collectively, these practices (summarized in Table 3) demonstrate that cocoa production in Cameroon can simultaneously achieve forest conservation, climate mitigation, and farm-level resilience while supporting producers' livelihoods through increased productivity and diversified income streams. When embedded within broader zero-deforestation and climate-smart initiatives, these strategies enable cocoa farming in Cameroon to contribute meaningfully to both local development and global environmental goals.

Table 3. Sustainable cocoa production practices and their benefits in Cameroon

Sustainable practice	Environmental benefits	Livelihood/income benefits	References
Agroforestry (cocoa + shade trees, timber, fruit trees)	Preserves forest cover; increases biodiversity Sequesters CO_2 in biomass and soil; reduces net GHG emissions	Diversifies income; reduces need for farm expansion	Alemagi et al., 2015; Awazi, 2025; Mbolo et al., 2016; Saj et al., 2017; KIIs
Soil fertility management (organic manure, compost, soil-fertilizing trees)	Improves soil structure and fertility; prevents erosion Enhances soil carbon storage	Increases productivity; reduces input costs	Awazi, 2025; Essougong et al., 2020; KIIs
Cover cropping and mulching	Reduces soil erosion; enhances soil moisture Contributes to soil carbon accumulation	Improves crop yields; reduces labor costs for weeding	Essougong et al., 2020; Ndah et al., 2023; KIIs
Integrated Pest Management (IPM), use of bio-pesticides	Reduces chemical pollution; promotes ecological balance Minimizes emissions from chemical production and use	Reduces input costs; improves cocoa quality	Achu, 2009; Awazi, 2025; KIIs
Pruning	Improves sunlight penetration and air circulation; reduces disease incidence Maintains healthy trees with better carbon assimilation	Increases yield and bean quality; facilitates farm management	Suh & Molua, 2022; KIIs
Replacement of dead/ unproductive trees using improved varieties	Maintains farm productivity without expanding land Avoids deforestation-driven emissions	Sustains income and productivity	Achu, 2009; KIIs
Crop diversification (mixed cropping, intercropping)	Reduces monoculture risks; increases biodiversity Indirectly supports soil and carbon management	Provides alternative income sources; enhances food security	Ndah et al., 2023; KIIs
Planting pest-, disease-, and drought-resistant varieties	Reduces pest outbreaks; limits spread of pathogens Reduces chemical use; indirectly lowers GHGs	Improves yield stability and quality	Achu, 2009; KIIs

Sustainable practice	Environmental benefits	Livelihood/income benefits	References
Use of farm inputs (fertilizers, improved planting material)	Enhances soil nutrient availability Increases efficiency, reducing input-related emissions	Higher productivity; allows intensification without clearing forests	Alemagi et al., 2015; Awazi, 2025; KIIs
Reduction or targeted agrochemical use	Improves soil and water quality Reduces GHGs	Reduced production costs	KIIs
Mapping farms and geo-tagging production plots	Helps to reduce deforestation Reduces deforestation-driven emissions	Guarantees access to premium markets	KIIs
Use of solar dryers	Reduces forest degradation Reduces GHGs	Improved cocoa quality, higher prices for cocoa	KIIs
Improved fermentation techniques	Shortens drying times limiting use of firewood Reduces GHGs	Higher-quality beans fetch better prices	KIIs
Early warning systems for pests and diseases	Reduces over-application of agrochemicals, lowering soil and water contamination Reductes GHGs	Cost savings, sustained yields, stable incomes	KIIs

Source: Authors' compilation based on literature review and KIIs.

3.4 How practices align with national strategies for climate adaptation, mitigation, and social inclusion

How on-farm practices align with national mitigation and adaptation goals

Agroforestry practices, such as integrating cocoa with shade, timber, and fruit trees, directly align with Cameroon's national climate-mitigation and adaptation strategies. These systems increase carbon stocks, maintain tree cover, and support landscape restoration, which are core priorities in the Cameroon–CAFI Letter of Intent and the national REDD+ strategy (CAFI, 2024; Somorin et al., 2014). Agroforestry also enhances resilience by stabilizing farm microclimate and reducing vulnerability to heat and drought, reinforcing climate adaptation commitments outlined in Cameroon's National Adaptation Plan for Climate Change and sector-level sustainability roadmaps (IDH, 2021; NAPCC, 2015).

Soil fertility measures, including the use of organic manure, composting, agroecological soil-fertilizing trees, cover cropping, and mulching, support both climate mitigation and adaptation goals by enhancing soil organic carbon, improving water retention, and reducing erosion. These outcomes align with national policies that promote low carbon, climate resilient agriculture and sustainable intensification rather than forest expansion, as outlined in Cameroon's 2024 CAFI Letter of Intent (CAFI, 2024), the National Adaptation Plan for Climate Change (NAPCC, 2015), and the Rural Sector Development Strategy/National Agricultural Investment Plan for 2020–2030 (Özkan et al., 2022). These practices also align with sector roadmaps and international guidance on climate-smart agriculture and sustainable cocoa production, reinforcing best practices for both mitigation and adaptation (IDH, 2021).

IPM, pruning, and the use of pest-resistant varieties reduce reliance on synthetic agrochemicals and thereby lower upstream GHG emissions associated with agrochemical production and application. They also improve resilience to climate-driven pest dynamics, aligning with national adaptation measures that emphasize sustainable production systems and plant health such as the National Adaptation Plan for Climate Change (NAPCC, 2015).

Replacement of dead/unproductive trees, crop diversification and use of improved planting material support sustainable intensification. They raise productivity on existing land, reduce pressure to clear forest, and therefore support national commitments to deforestation-free cocoa production and compliance pathways (CAFI, 2024; IDH, 2021).

Social inclusion – how practices can advance women- and youth-focused goals

Many of the sustainable practices promoted in Cameroon's cocoa sector could create meaningful opportunities for women and youth, especially if deliberately supported by tailored programs. Agroforestry, nursery operations, demonstration plots, and training in sustainable practices such as IPM or postharvest handling can generate alternative income sources, build skills, and open pathways for smallscale enterprises beyond cocoa farming alone. Agroforestry is already widely recognized for delivering environmental resilience, climate mitigation, and livelihood diversification, making it a viable foundation for inclusive valuechain participation (IDH, 2021; Nadège et al., 2019; Zekeng et al., 2023).

Evidence from Cameroon demonstrates that women's engagement in agroforestry and landscape restoration can simultaneously support environmental conservation and livelihood improvement when structural barriers are addressed. Initiatives in the Dja Landscape and other restoration programs show that women involved in tree-based farming and restoration activities achieve higher household incomes while reducing pressure on protected forests (African Wildlife Foundation, 2023; CIFOR-ICRAF, 2024). Media reports further illustrate that women-led agroforestry can combine climate mitigation, biodiversity protection, and income generation when adequate access to land, seedlings, and training is provided (Reuters, 2025).

Despite these localized successes, structural constraints remain significant. Women frequently face limited land and tree tenure, inadequate access to credit and inputs, and minimal representation in governance and cocoa value-chain decision-making, which limits the broader scaling of benefits (ProForest, 2020). Consequently, while women-led agroforestry shows promise for climate, environmental, and economic outcomes, scaling these benefits across Cameroon's cocoa landscapes requires systematic policy interventions, targeted investment in tenure security, training, financial support, and mechanisms ensuring women's meaningful participation in decision-making processes (Ingram et al., 2025).

The KIIs revealed that women participate in sustainability initiatives primarily through training and capacity-building programs focused on agroforestry and post-harvest practices. Their involvement often centers on value-added activities, including alternative crop value chains that complement cocoa. At the farm level, women contribute significantly to harvesting and drying, while institutions increasingly support their access to land and property rights to enable long-term investment. Although few policies explicitly target women, actors aim to ensure equitable participation.

Youth engagement is viewed as essential for revitalizing the sector. Programs provide professional training, agroforestry skills, and income diversification to reduce rural exodus and improve economic attractiveness. However, youth participation remains limited by a preference for external opportunities, with their roles often concentrated in physically demanding tasks like land clearing. While land access is less restrictive for youth than for women, stronger financial incentives and clearer career pathways are needed to enhance meaningful involvement.

3.5 Prioritization of innovations to support zero-deforestation cocoa production and broader value chain development goals

In the following section, we present and discuss the results of the KIIs that address the question: Which innovations bundles should be prioritized to support zero-deforestation cocoa production and broader value-chain development goals? Because the literature provides limited guidance on this specific issue, the analysis draws exclusively on stakeholder insights gathered through the KIIs.

Overall, the findings show that producers emphasize scaling the sustainable practices they already know and trust, recommending a bundle built around agroforestry, intercropping, careful pruning, and targeted pest management. These practices form the core of their climate-smart strategies because they offer immediate, visible protection against drought, pests, and declining soil moisture. By prioritizing bundles grounded in existing local knowledge, producers reduce financial risk while maintaining strong adoption potential.

Producer cooperatives promote bundles that combine mixed farming, agroforestry, and livestock systems, highlighting their ability to intensify production without expanding into forested areas while maintaining soil fertility through diversified crops and animal waste recycling. For GHG reduction, they emphasize the agroforestry–mixed-farming bundle, which increases carbon sequestration and reduces reliance on synthetic inputs. To strengthen resilience, cooperatives prioritize diversified bundles integrating livestock, food crops, and cocoa to stabilize incomes against climate and market shocks. They also advance the use of high-yield seeds, bioproducts, and plantain farming on the same plot. Cooperative representatives argue that priority should be given to bundles that build economic resilience, strengthen agro-ecological land management, and expand access to information and capacity-building. They link deforestation directly to knowledge gaps and call for scaling practices that producers already implement successfully and trust.

Input suppliers remain primarily driven by productivity and market expansion. One supplier identifies the key priority bundle as improving producers' access to high-quality inputs paired with reliable supply systems, arguing that strong input quality underpins sustainable production. Another supplier prioritizes bundles focused on insecticide use to reduce disease pressure, reflecting a continued emphasis on crop protection as the sector's primary contribution to resilience. Overall, suppliers continue to frame their role through a productivity-first lens, with limited integration into broader sustainability or zero-deforestation bundles.

Cocoa buyers and exporters prioritize bundled innovations tightly aligned with meeting European market requirements – particularly the EU Deforestation Regulation. They advocate for the scaling of an integrated Digital Traceability + Satellite Monitoring + Agroforestry Support bundle: Digital traceability verifies producer identity and maps farm boundaries; satellite monitoring ensures production plots remain compliant with zero-deforestation standards; and agroforestry support provides producers a viable incentive to maintain tree cover. This bundle is seen as essential for safeguarding market access, supporting producers through compliance processes, and securing long-term supply chain stability.

NGOs promote ecological bundles that combine cocoa agroforestry systems with native shade trees, sustainable intensification on already cleared land, intercropping, assisted natural regeneration, and the replanting of old plots with improved varieties. Their approach aims to balance productivity with landscape restoration, soil health, and biodiversity. Government institutions reinforce similar bundles, emphasizing sustainable intensification, agroforestry, and replanting as the foundation for long-term productivity and environmental compliance. Research institutions highlight resilience-focused bundles that include disease-resistant cocoa varieties, sanitary pruning, integrated pest management, income diversification, and strengthened producer organizations. Across these institutions, the consensus is clear: the priority is to scale holistic agroecological bundles that simultaneously address productivity, conservation, and climate resilience.

3.6 Enabling environment drivers that facilitate scaling of sustainable practices and climate resilience

Whether policies used to promote sustainable practices are aligned with stakeholder aspirations

Cameroon's cocoa sector is undergoing significant transformation driven by national reforms, international market requirements, and growing pressure to protect forests while improving producer livelihoods. In recent years, the Government of Cameroon, development partners, private sector actors, and civil society have launched several policy instruments and initiatives (Table 4) that aim to address deforestation, strengthen governance, and prepare the sector for evolving global sustainability standards.

Table 4. Summary of the key policies and initiatives in Cameroon's cocoa value chain

Policy/Initiative	Year	Objective	Key features/mechanisms	References
Revised Forest Law No. 2024/008	2024	Strengthen forest and wildlife protection; promote sustainable forest management	Stricter penalties for illegal logging, enhanced monitoring, recognition of customary rights, landscape restoration, alignment with EUDR	Republic of Cameroon, 2024
Law No. 94/01	1994	Establish forestry, wildlife, and fisheries legal framework	Defines ownership (state, community, private), guides sustainable forest use	Bruggeman et al., 2015
Land-use zoning policy (PFE & NPFE)	1994	Reduce deforestation, regulate forest use	Permanent Forest Estate (protected and production forests), Non-Permanent Forest Estate (managed by communities)	Bruggeman et al., 2015
Roadmap to Deforestation-Free Cocoa	2021	Promote sustainable, deforestation-free cocoa production	Multi-stakeholder collaboration, forest restoration, improved cocoa quality, long-term sustainability planning	IDH, 2021
REDD+ Mechanism / National REDD+ Strategy	2015–ongoing	Reduce emissions from deforestation and degradation; climate mitigation	Financial incentives, agroforestry expansion, sustainable agriculture, landscape restoration	Gakou Kakeu et al., 2024

Policy/Initiative	Year	Objective	Key features/mechanisms	References
National Action Plan for Sustainable Cocoa	2023–2025	Align cocoa sector with sustainability and legality requirements	Integrates EUDR, traceability systems, multi-stakeholder coordination	ONCC, 2024
Ministerial Decrees on Land Use	Not dated	Operationalize forest protection measures	Regulate land use in agricultural and forest zones, define controlled Expansion Zones	KIIs
National Agricultural Investment Plan	2020–2030	Directs investment toward sustainable agricultural practices	Supports implementation of climate-smart interventions	KIIs
EU Deforestation Regulation (EUDR)	2023	Ensure imported commodities are deforestation-free and legal	Requires traceability, legality verification, full compliance by 2025	European Commission, 2025a
EU Sustainable Cocoa Initiative (SCI)	2020	Improve sustainability of cocoa supply chains	Multi-stakeholder dialogue, "Cocoa Talks", traceability strengthening, producer livelihood support	European Commission, 2025b
Sustainable Agriculture for Forest Ecosystems (SAFE)	2021–ongoing	Build capacity for sustainable cocoa and coffee production	Technical assistance, traceability systems, finance access, dissemination of best practices	SAFE, 2025
Sustainable Cocoa Platform (SCP)	2022	Coordinate national cocoa sustainability efforts	Multi-stakeholder governance, monitoring, communication, implementation of National Action Plan	ONCC, 2024
Green Cocoa Landscape Program (GCLP)	2021–ongoing	Landscape-level forest protection and sustainable cocoa production	Collaborative planning with IDH & WWF, community livelihood enhancement	IDH, 2019
CAFI-funded Project	2024–ongoing	Support smallholders to meet EU sustainability standards	USD 20M project, transition to agroecological, deforestation-free practices, geolocation traceability	CAFI, 2024

Source: Authors' compilation. Note: KIIs are key informant interviews.

A landmark regulation is the Revised Forest Law No. 2024/008, promulgated on July 24th, 2024, which updates the outdated 1994 forestry legislation. This new law strengthens forest protection, enhances wildlife governance, and increases legal penalties for illegal exploitation (Republic of Cameroon, 2024). It also introduces improved monitoring mechanisms and formally recognizes customary land and tree rights, thereby contributing to more transparent forest management (Eco Outlook News, 2024). The KIIs revealed that by serving as the legal baseline for zero-deforestation commitments, this legislation empowers the forestry authority to prevent conversion of protected areas and regulate land use, providing the domestic framework to comply with international requirements.

Cameroon's original Law No. 94/01 of 20th January 1994 continues to provide the foundational legal framework for forest management, defining ownership of forests (state, community, private) and laying out principles for sustainable use. This law also introduced a critical *landuse zoning policy*, dividing forestland into the Permanent Forest Estate (PFE) and the NonPermanent Forest Estate (NPFE). The PFE is legally protected, which has helped reduce deforestation in these zones, while the NPFE allows for managed community use (Bruggeman et al., 2015). This zoning has been credited with reducing deforestation within the PFE by regulating areas that may be cleared or converted, while allowing communities to manage forest resources within the NPFE (Bruggeman et al., 2015). Although the policy has contributed to broader forest protection, the literature does not explicitly link it to reductions in cocoa-related deforestation.

To directly address cocoa-driven deforestation, Cameroon launched *the Roadmap to DeforestationFree Cocoa in 2021* (IDH, 2021). This multi-stakeholder initiative, led by the Ministry of Agriculture with support from IDH and other partners, coordinates government, private sector, and civil society actions to improve cocoa quality, restore forests, and institutionalize sustainable cocoa sector that protects forests and enhances producers' livelihoods in Cameroon (IDH, 2021).

Cameroon is also engaged in climate-focused initiatives such as the National Strategy for Sustainable Development and REDD+, which provide financial incentives to reduce emissions from deforestation and forest degradation. The National REDD+ Strategy places emphasis on landscape restoration, sustainable agriculture, soil conservation, agroforestry expansion, and the promotion of low-impact farming systems, including cocoa (Gakou-Kakeu et al., 2024; Somorin et al., 2014). These measures aim to reduce pressure on forests while supporting climate-smart production systems. The KIIs revealed that REDD+ guides climate change mitigation efforts, aligning the cocoa sector with national carbon and climate commitments. The interviews also said that REDD+ supports practices, such as agroforestry and farm intensification to increase carbon sequestration and reduce land-use emissions.

Recognizing the changing dynamics of global markets, Cameroon officially adopted a National Action Plan for Sustainable Cocoa (2023–2025), launched by its Sustainable Cocoa Committee, whose mandate is to coordinate efforts of public partners, the private sector, technical and financial partners, and civil society engaged in the cocoa value chain. The plan seeks to meet the demands of EUDR through strengthened traceability, legal compliance, and sustainable production methods (ONCC, 2024). In support, the Sustainable Cocoa Platform (SCP) was established in February 2023 to coordinate implementation of the roadmap and national action plan, providing a multi-stakeholder governance mechanism (ONCC, 2024).

In response to the EUDR, which requires traceable, deforestation-free cocoa by the end of 2025, Cameroon is scaling up digital traceability systems to ensure compliance (European Commission, 2025a). The EU Sustainable Cocoa Initiative (SCI) also supports this transition through "Cocoa Talks" – facilitating dialogue between Cameroon and European stakeholders on forest protection, producer livelihoods, and regulatory compliance (European Commission, 2025b). The KIIs revealed that the EUDR is considered the primary external driver for sustainability and that this regulation shapes supply chain practices for exporters and government institutions.

The Sustainable Agriculture for Forest Ecosystems (SAFE) project, under the umbrella of the Team Europe Initiative, strengthens producers' capacity to meet EUDR requirements by offering technical assistance, financing options, and multi-stakeholder learning (SAFE, 2025). The Green Cocoa Landscape Program (GCLP), co-developed by IDH and WWF, pilots landscape-level interventions to conserve forests, improve cocoa yields, and support community livelihoods in priority regions (IDH, 2019).

Ministerial Decrees on Land Use were mentioned in the KIIs. These decrees operationalize forest protection measures by regulating land use in agricultural and forest zones and defining Controlled Expansion Zones, ensuring that production expansion does not compromise environmental goals.

According to the KIIs, the National Agricultural Investment Plan 2020–2030 directs public and private investment toward sustainable agricultural practices, supporting the implementation of climate-smart interventions in line with the country's NDC. From the literature review, the National Agricultural Investment Plan seems to be a broader rural development strategy that does not focus on cocoa or forest protection specifically.

Finally, a CAFI-funded project, implemented by IFAD and Cameroon's Coffee and Cocoa Development Fund (FODECC), is operationalizing a USD 20 million program to help smallholder producers transition to agroecological, deforestation-free practices and establish systems for geolocation and traceability (CAFI, 2024). This initiative is particularly crucial for smallholders, who form the backbone of Cameroon's cocoa sector.

- Overall, these policies and initiatives reflect a strong and coordinated shift toward a cocoa sector that is both environmentally sustainable and economically inclusive.

Convergence:

- Most policies and initiatives strongly align with stakeholder aspirations around sustainability, forest protection, climate mitigation, and livelihood improvement.
- Multi-stakeholder collaboration (government, private sector, civil society, international partners) is a clear point of convergence.

Divergence/gaps:

- Enforcement and monitoring capacity is limited, creating potential gaps between policy and actual outcomes.
- Producers, particularly smallholders, face resource constraints to comply with EUDR and traceability systems.
- Some forest policies (1994 law, zoning) do not explicitly target cocoa-driven deforestation.
- Short-term economic pressures may conflict with long-term sustainability goals.

Essentially, the policy frameworks are well-aligned with aspirations at a strategic level, but operational challenges and capacity gaps create divergence at the implementation level. While challenges remain in implementation and enforcement, the combined efforts of government, development partners, private companies, and civil society are laying the foundations for a deforestation-free, traceable, and climate-resilient cocoa industry in Cameroon.

Incentives used to transition toward zero-deforestation and sustainable cocoa production

A range of incentives is helping to advance the transition toward zero-deforestation and sustainable cocoa production in Cameroon. One of the most important incentives is *access to credit*, which enables producers to invest in good agricultural practices, agroforestry systems, and productivity-enhancing technologies. Evidence shows that producers with access to affordable credit are significantly more likely to adopt agroforestry practices that contribute to reduced deforestation and improved resilience (Folefack, 2016).

Another major incentive is *agricultural extension and producer training*. Extension officers provide essential technical guidance on pruning, soil management, pest and disease control, and climate-smart practices. Studies consistently show that increased interaction with extension agents leads to greater uptake of agroforestry and other sustainable production techniques (Folefack, 2016; Taku et al., 2020). These capacity-building efforts help producers increase yields without expanding into forested areas.

Certification standards, such as Rainforest Alliance, UTZ (now part of the Rainforest Alliance), and Fairtrade, also offer strong incentives for sustainability. These standards address environmental concerns such as deforestation and agrochemical use, while also promoting social goals such as fair labor conditions and gender equality. Economically, certification schemes often include productivity support and technical assistance to enable producers to increase yields on existing plots, thereby reducing pressure to expand cultivation (Ingram et al., 2025; Soh Wenda et al., 2024).

Linked to certification schemes are *price premiums*, which reward producers for meeting sustainability requirements. For instance, Rainforest Alliance/UTZ and Fairtrade premiums typically range from 50 to 150 CFA/kg (representing approximately 2%-6% of the farm-gate cocoa price that producers receive) and are paid through cooperatives, provide direct financial motivation for producers to maintain shade trees, avoid clearing protected forests, and participate in traceability systems (Ingram et al., 2025). These premiums can meaningfully supplement incomes and encourage the adoption of long-term sustainable practices.

Land tenure security is another important incentive for sustainable cocoa production. Secure land rights encourage producers to invest in long-term practices such as agroforestry and improved technologies because they are confident; they will benefit from long-term returns. Research shows that when producers adopt new, faster-maturing cocoa varieties under secure tenure, both welfare and forest conservation outcomes improve. However, the same technological adoption under insecure tenure can contribute to deforestation, as producers may clear more land to secure claims or maximize short-term gains (Alemagi et al., 2015; Kazianga & Masters, 2006).

Cooperative membership also plays a major role in motivating producers to adopt sustainable practices. Cooperatives help producers access certification schemes, agricultural inputs, and training (Sadeu et al., 2023). They also facilitate collective compliance with EUDR requirements. Membership in producer organizations is strongly associated with higher uptake of agroforestry practices (Folefack, 2016).

Payments for Ecosystem Services (PES) provide targeted incentives to conserve forests and enhance carbon storage. PES schemes in Cameroon have supported agroforestry adoption by sharing carbon credit revenues with community groups and producer associations, thereby reinforcing the economic value of forest-friendly practices (Gakou-Kakeu et al., 2022).

Finally, the *provision of inputs and input subsidies*, such as improved cocoa seedlings, has been used to reduce deforestation by increasing productivity on existing farms. Past initiatives distributed thousands of improved seedlings to producers to reduce farmland expansion into forests and enhance carbon stocks through sustainable intensification (Gakou-Kakeu et al., 2020; Gakou-Kakeu et al., 2022).

Table 5 provides a summary of these key incentives driving sustainable cocoa production and zero-deforestation in Cameroon that were found in the literature review. The table classifies them into four categories based on previous literature (Piñeiro et al., 2020; Ogutu et al., 2025). Market-based incentives, such as access to credit, input subsidies, and price premiums, support the adoption of agroforestry and productivity-enhancing technologies. Non-market incentives, including extension services, producer training, and cooperative membership, build technical skills, encourage climate-smart practices, and facilitate certification compliance. Regulatory measures, such as sustainability standards and EUDR requirements, promote responsible land use and traceability. Conditional incentives, including payments for ecosystem services, reward forest conservation and carbon sequestration, collectively fostering environmentally, socially, and economically sustainable cocoa production. These incentives, ranging from access to credit, capacity building, market rewards, governance reforms, to environmental payments, contribute significantly to the enabling environment for sustainable and zero-deforestation cocoa production in Cameroon. Strengthening and scaling these mechanisms will be essential for achieving long-term climate, forest protection, and livelihood goals.

Table 5. Incentives for promoting zero-deforestation and sustainable cocoa production in Cameroon from the literature review

Incentive type	Specific incentives	Associated sustainable cocoa practices
Market	Access to credit; price premiums; input subsidies; provision of subsidized improved seedlings	Adoption of agroforestry systems; use of improved cocoa varieties; productivity-enhancing technologies; maintenance of shade trees; participation in traceability systems
Non-market	Agricultural extension services; producer training; cooperative membership; technical support	Pruning; soil fertility management practices; pest and disease management practices; climate-smart practices; enhanced compliance with certification standards; increased uptake of agroforestry
Regulatory	Certification schemes (Rainforest Alliance/UTZ, Fairtrade); sustainability standards; EUDR compliance requirements	Reduced agrochemical use; maintenance of shade cover; traceability and monitoring; adoption of Good Agricultural Practices (GAP)
Cross-compliance	Payments for Ecosystem Services (PES); conditional rewards linked to carbon credits or conservation actions	Agroforestry expansion; protection of existing forests; carbon stock enhancement; reforestation activities

Source: Authors' compilation.

The KIIs, however, reveal that the current incentive landscape is inadequate to drive a large-scale transition from conventional to sustainable cocoa production, with the financial burden falling almost entirely on producers. Individual producers report no meaningful incentives – market-based, non-market, regulatory, or cross-compliance – to support sustainable practices. Input suppliers similarly highlight a complete absence of incentives to expand or promote sustainable input options. In contrast, cooperatives and institutional actors recognize a limited set of incentives present in the value chain, summarized in Table 6.

Table 6. Incentives for promoting zero-deforestation and sustainable cocoa production in Cameroon and their providers (key informants' perspective)

Type of Incentive	Incentive	Provider(s)
Market	Premium prices for organic certification	GIZ, International Chocolate Brands & Traders
	Quality bonuses and subsidies	MINCOMMERCE, ONCC
	Market liberalization	MINADER
	Development of partnerships with foreign buyers	WWF, IDH
Non-Market	Training and technical support	Cooperatives, SOWEDA, MINADER, UNDP, FAO, GIZ, ONCC, IRAD
	Training in GAP and agroforestry; access to improved planting material	Cocoa companies (e.g., CAMACO), NGOs, Government
	Organic seeds	Regional Delegation of Agriculture
	Tree sharing and tree planting	GEF, TRI
	Rehabilitation of farms affected by crises; provision of solar dryers	United Nations Development Programme (UNDP)
Regulatory	Laws on deforestation and sustainability compliance	OHADA, MINFOF, PSMNR
	The EU Deforestation Regulation (EUDR)	European Union

Source: Own elaboration based on interviews.

The institutional actors and cooperatives identified several incentives that should be prioritized to enable wider adoption of sustainable practices. Market incentives, particularly premium prices for certified cocoa, were highlighted as key drivers for behavioral change. Stakeholders also emphasized the need for targeted financial incentives, including subsidies for zero-deforestation practices and long-term, low-interest loans to support farm maintenance and the rehabilitation of aging cocoa trees. In addition, non-market incentives such as capacity building, technical assistance, and support for certification processes, including the costly geo-localization requirements, were viewed as essential for reducing adoption barriers and ensuring that producers can meet emerging sustainability standards.

Barriers for scaling zero-deforestation cocoa value chains

The adoption of zero-deforestation cocoa in Cameroon faces multiple interrelated barriers that span governance, technical, economic, and social dimensions. *Weak land governance* and *insecure tenure* are among the most significant constraints. Many cocoa producers lack clear land ownership or face unresolved land disputes, discouraging them from making long-term investments in agroforestry systems or improved cocoa varieties that protect forests. Research indicates that secure land tenure encourages adoption of faster-maturing cocoa varieties, increases producers' welfare, and reduces deforestation, whereas insecure tenure can lead to increased forest clearing as producers attempt to secure short-term benefits or assert land claims (Alemagi et al., 2015; Carodenuto, 2018; Kazianga & Masters, 2006).

Limited technical support and agricultural extension services further hinder sustainable cocoa production. Many producers lack access to trained extension officers and relevant training programs, reducing their ability to implement complex agroforestry systems, manage pests and diseases, and adopt climate-smart practices effectively. Even when extension services exist, they are often underfunded, understaffed, or unevenly distributed across rural areas, creating knowledge gaps that limit the adoption of sustainable practices (Alemagi et al., 2015; Awazi, 2025).

Economic and infrastructure challenges also act as significant barriers. Smallholder producers often face *poor access to inputs, agricultural equipment, and affordable credit*, making it difficult to transition from conventional practices to sustainable, zero-deforestation methods. *Rural infrastructure limitations, such as poorly maintained roads*, hinder market access, increasing the costs of transporting cocoa and reducing farm profitability. These constraints are compounded by *low cocoa prices, fragmented market structures, and limited organization among producer cooperatives*, which weaken incentives to invest in sustainable practices (Awazi, 2025).

Social factors exacerbate these challenges. *High levels of rural poverty* compel many producers to rely on deforestation and traditional slash-and-burn practices to sustain their livelihoods (Essougong, 2023). *Population pressures and demographic growth* increase the demand for farmland, further contributing to forest clearing (Ingram et al., 2025). In addition, many producers often lack *the technical knowledge and skills* necessary to manage complex agroforestry systems, including proper tree-crop integration, soil fertility management, and pest control, which limits the effectiveness of interventions aimed at promoting sustainable cocoa production (Michel et al., 2024).

Weak policy coordination and enforcement undermine efforts to scale out zero-deforestation cocoa. Fragmented policy implementation across multiple agencies creates confusion among producers about available support. Furthermore, environmental laws are not consistently enforced, allowing illegal logging and forest degradation to continue despite existing regulatory frameworks (Awazi, 2025).

The KIIs revealed the following challenges faced by different stakeholders. **Producers** interviewed demonstrate very limited awareness of national-level policies or institutional frameworks guiding sustainable cocoa production. Their understanding of regulation is largely confined to the Ministry of Agriculture's controls on agrochemical use, indicating a significant gap between national policy ambitions and the information that reaches producers at field level. Producers also cite the lack of capital for farm maintenance and rehabilitation as a key constraint to adopting sustainable cocoa production practices. Producers also face mounting climate and input-related pressures, including temperature increases, drought, pest outbreaks, and limited access to tools and inputs. Though some resilience practices exist, producers lack the resources needed to implement them at scale. Persistent land tenure insecurity further limits long-term investment, particularly in agroforestry systems that require years to mature. This constraint is coupled with socioeconomic pressures to expand into forest areas where available land is scarce.

Producers' cooperatives report that the current policy and institutional environment fail to address the structural drivers of unsustainable practices. They emphasize that existing regulations place disproportionate responsibility on producers without providing the financial instruments required to make sustainable production economically feasible. Rising production costs and restricted access to finance push some producers toward illegal extraction or expansion into forested areas, particularly when cocoa prices increase. Cooperatives stress that the absence of viable alternative income opportunities – such as diversified crops or non-farm activities – further entrenches dependence on cocoa and reinforces incentives for deforestation.

Input suppliers highlight the lack of any targeted policy framework supporting zero-deforestation or low-emission inputs. They note that while compliance standards exist, there are no institutional incentives to encourage sustainability-oriented business models. Their most significant constraint is limited access to capital for business expansion, which prevents them from offering a wider range of environmentally aligned products. In their view, the current regulatory landscape enforces minimum standards but does not facilitate or de-risk a transition toward greener input systems.

Buyers and exporters operate under strong external compliance pressures, especially from international regulations, but face domestic constraints – most notably ambiguity in land tenure. Because cocoa must comply with national laws, the prevalence of customary or undocumented land creates legal and reputational risks across the supply chain. In response, buyers and exporters have initiated measures to establish a verifiable social license to operate, including working with local authorities to secure customary land certificates and formalizing Free, Prior and Informed Consent (FPIC) agreements to strengthen due diligence processes.

NGOs identify structural weaknesses in national governance as a major barrier to achieving zero-

deforestation cocoa production. They emphasize that institutional fragmentation – stemming from numerous ministries with overlapping mandates – creates conflicting priorities, poor coordination, and slow administrative processes that hinder effective implementation. Beyond governance challenges, NGOs highlight persistent socioeconomic pressures that drive forest clearing, including limited alternative income sources, financial hardship, and external pressures from illegal logging and wildlife exploitation. Rising cocoa prices further incentivize producers to expand into forest areas, undermining sustainability efforts. In response, NGOs focus on field-level sensitization and multi-stakeholder engagement to promote sustainable land management, while stressing that these actions must be complemented by broader structural reforms to address the root causes of deforestation.

Government institutions describe a dense regulatory environment encompassing numerous laws, strategies, and inter-ministerial bodies. While the legal framework is comprehensive, implementation is weakened by institutional fragmentation, overlapping mandates, and administrative delays. Government actors rely heavily on partnerships with development partners and national financing mechanisms to scale sustainability initiatives. They also face persistent structural challenges: aging plantations, low productivity, limited youth engagement, and competing land pressures. Current responses – such as farm renewal efforts, community sensitization, and multi-stakeholder dialogue platforms – are helping address these issues, but progress remains gradual.

Finally, the stakeholders report that policy implementation weaknesses – including low producer awareness of national strategies and insufficient incentive mechanisms – restrict the translation of national zero-deforestation commitments into farm-level action.

Overall, the findings demonstrate that Cameroon's transition toward zero-deforestation cocoa remains severely constrained by financial, institutional, and structural barriers that hinder adoption and scalability. Producers, input suppliers, and cooperatives consistently identify limited capital, inadequate incentives, insecure land tenure, and weak policy implementation as central obstacles. Despite growing efforts by value-chain actors to promote sustainable practices, existing incentives are fragmented, insufficient, and place disproportionate responsibility on producers. Advancing sustainable cocoa production therefore requires coordinated reforms – expanding financial support, strengthening land governance, enhancing technical assistance, and improving market-based rewards – to create an enabling environment capable of driving widespread and sustained transformation across the cocoa value chain.

Opportunities in policy and investment for building long-term resilience and competitive cocoa value chains

To overcome the barriers discussed in the previous subsection, coordinated and strategic investments are needed across the value chain. Strengthening land governance through tenure clarification, tree-ownership reform, and farm mapping will create the foundation for traceability and compliance with emerging international regulations. Expanding and professionalizing agricultural extension services is essential for improving producers' technical capacity in agroforestry, pest management, and climate-resilient production. Enhancing access to finance, including tailored credit and input-support schemes, will enable smallholders to make the long-term investments required for sustainable cocoa. Upgrading rural infrastructure and improving market logistics can reduce transaction costs and increase competitiveness, while market-based incentives, such as sustainability premiums and improved cooperative structures can reward producers for maintaining forest cover.

Strengthened policy coordination and enforcement will be critical to curb illegal land clearing and align actions across agriculture, forestry, land, and trade sectors. Simultaneously, social programs that address rural poverty and promote alternative livelihoods will be required to reduce dependence on forest conversion. Finally, investments in research, data systems, and innovation will be needed to provide the evidence base needed for adaptive management and the long-term transformation of the cocoa economy. Together, these measures provide a comprehensive pathway for Cameroon to build a resilient, competitive, and environmentally sustainable cocoa value chain that meets international market expectations while supporting rural livelihoods and conserving forest landscapes.

CIAT / Neil Palmer

4. Conclusion

Utilizing existing literature and KIIs, this profile of Cameroon's cocoa sector examined stakeholder development priorities and aspirations, sustainable practices and innovations, enabling environment drivers, and barriers and opportunities for scaling zero-deforestation value chains.

Cameroon's cocoa sector stakeholders share overarching aspirations to achieve zero-deforestation, strengthen climate mitigation, and enhance resilience, while improving livelihoods. Producers prioritize practices that stabilize production and income, particularly agroforestry, mixed cropping, and integrated pest management. Cooperatives emphasize economic diversification through livestock, food crops, and high-yield cocoa varieties to buffer against climate and market shocks. Input suppliers focus on supporting productivity through improved inputs, whereas buyers and exporters aim to ensure compliance with international regulations, particularly the EUDR, while maintaining supply chain stability. NGOs, research institutions, and government agencies prioritize long-term forest protection, climate-smart production, and social inclusion, particularly for women and youth. Regional variations exist, with forest-proximate areas placing higher emphasis on land conservation, while interior cocoa regions focus on productivity and economic resilience.

Key practices across the value chain include agroforestry, intercropping, mixed farming, careful pruning, soil and water conservation, reduced agrochemical use, organic fertilization, and climate-smart post-harvest techniques such as solar dryers and improved fermentation. These practices align closely with national strategies for climate adaptation and mitigation, including REDD+, the National Strategy for Sustainable Development, and the Roadmap to Deforestation-Free Cocoa. They also contribute to social inclusion, as cooperatives and extension programs provide training and access to improved planting materials for women and youth, supporting equitable participation in the cocoa sector.

Stakeholders prioritize bundled interventions that simultaneously enhance productivity, conservation, and resilience. Producers focus on integrating agroforestry, intercropping, pest management, and careful pruning. Cooperatives combine mixed farming, livestock, and high-yield cocoa varieties to stabilize income and reduce forest encroachment. Buyers and exporters bundle digital traceability, satellite monitoring, and agroforestry support to comply with EUDR while incentivizing tree cover. NGOs, researchers, and government actors promote integrated bundles including assisted natural regeneration, replanting degraded plots, climate-resilient cocoa varieties, and low-emission processing technologies. These bundles maximize adoption, deliver multiple co-benefits, and reinforce compliance with both national and international standards.

The enabling environment consists of policies, institutions, and incentives. Policies include the Revised Forest Law (2024), the 1994 Forest Law and land-use zoning, REDD+, the National Action Plan for Sustainable Cocoa, and EU regulations such as EUDR. Institutions such as cooperatives, the Sustainable Cocoa Platform, and technical agencies provide capacity building, coordination, and technical assistance. Incentives include market-based mechanisms (price premiums, input subsidies, credit), non-market incentives (training, extension services, cooperative support), regulatory drivers (certification schemes, compliance standards), and conditional incentives (payments for ecosystem services). Together, these drivers facilitate adoption and scaling of sustainable practices, though gaps remain in awareness, enforcement, and access for smallholders.

Financial constraints, insecure land tenure, limited technical capacity, weak enforcement, and institutional fragmentation remain major barriers. Opportunities exist in expanding technical assistance, strengthening tenure security, deploying market incentives, enhancing traceability systems, and promoting alternative livelihoods. Investment recommendations include scaling agroecological practices, upgrading infrastructure, professionalizing extension services, improving access to finance, and enhancing multi-stakeholder coordination. These measures can support a competitive, resilient, and deforestation-free cocoa sector that meets international sustainability standards while safeguarding forest landscapes and rural livelihoods.

Based on our findings, we provide the following key policy and investment recommendations:

- Scale agroforestry and climate-smart cocoa systems: Prioritize the large-scale adoption of agroforestry, intercropping, soil and water conservation, and IPMD. These systems simultaneously stabilize yields, enhance climate resilience, and reduce deforestation risks, particularly in forest-adjacent cocoa regions.
- Promote bundled innovation packages: Shift from isolated interventions to bundled solutions combining climate-resilient planting material, agroforestry, assisted natural regeneration, organic or reduced-input fertilization, and improved post-harvest technologies.
- Strengthen cooperatives and diversify livelihoods: Support cooperatives as key delivery platforms for extension, finance, and traceability. Promote income diversification through food crops, livestock, and off-

farm activities to reduce pressure on forests and enhance resilience, with targeted inclusion of women and youth.

- Invest in inclusive traceability and EUDR compliance systems: Expand digital traceability, farm mapping, and satellite monitoring to support compliance with EUDR while ensuring that smallholders are not excluded from export markets. Capacity-building and cost-sharing mechanisms are essential to make compliance accessible and incentive-based.
- Improve policy coherence and institutional coordination: Enhance alignment between agricultural, forest, climate, and trade policies, including the Revised Forest Law, REDD+, and cocoa sector strategies. Strengthen multi-stakeholder platforms to reduce fragmentation and improve implementation efficiency.
- Expand access to finance and incentives: Scale blended finance, credit schemes, input subsidies, and results-based incentives, such as payments for ecosystem services. Financial tools should reward sustainable practices and reduce adoption risks for smallholders and cooperatives.
- Secure land tenure and strengthen land-use governance: Advance land tenure clarity and participatory land-use planning, especially in forest-proximate areas. Secure tenure encourages long-term investment in sustainable cocoa systems and reduces incentives for forest encroachment.
- Professionalize extension and capacity building: Invest in coordinated extension services and technical training, integrating public agencies, NGOs, research institutions, cooperatives, and the private sector. Tailored support for women and youth should be prioritized.

Overall, this profile demonstrates that the transition towards a deforestation-free and climate-resilient cocoa sector in Cameroon is achievable, but depends on coherent, inclusive, and well-coordinated action across the value chain. Aligning stakeholder priorities with bundled technical innovations, supportive policy frameworks, and appropriate financial and non-financial incentives can generate reinforcing benefits for productivity, forest conservation, and livelihood security. Effective implementation will require sustained institutional coordination, improved access to finance and extension services for smallholders, and governance arrangements that reduce fragmentation while enhancing accountability. Ensuring that international sustainability requirements, including EUDR compliance, are translated into accessible and incentive-based mechanisms rather than exclusionary barriers will be critical. Taken together, these conditions position Cameroon's cocoa sector to advance climate and forest objectives while maintaining competitiveness in global markets and supporting inclusive rural development.

Bioversity International / Brigitte Laliberté

References

Achu CC. (2009). Sustainable Cocoa Production In Southern Cameroon: Potential and Constraints of Integrated Pest Management (IPM). In *Conference on International Research on Food Security, Natural Resource Management and Rural Development. edTropentag* (pp. 6–8).

African Wildlife Foundation. (2023). *AWF's agroforestry initiative empowers women, conserves Dja landscape*. https://bit.ly/4sf3xLH

Alemagi D; Duguma L; Minang PA; Nkeumoe F; Feudjio M; Tchoundjeu Z. (2015). Intensification of cocoa agroforestry systems as a REDD+ strategy in Cameroon: Hurdles, motivations, and challenges. *International Journal of Agricultural Sustainability, 13*(3), 187–203. https://doi.org/10.1080/14735903.2015.1023731

Awazi N. (2025). Agroforestry and carbon sequestration in Cameroon's cocoa landscapes. *Journal of Climate-Smart Agriculture, 2*(1), 1–15.

Bruggeman D; Meyfroidt P; Lambin EF. (2015). Production forests as a conservation tool: Effectiveness of Cameroon's land use zoning policy. *Land Use Policy, 42*, 151–164. https://doi.org/10.1016/j.landusepol.2014.09.016

CAFI. (2024). *Cameroon CAFI letter of intent 2024: Advancing sustainable cocoa and forestry practices*. Central Africa Forest Initiative. https://cafi.org/country/cameroon/

Carodenuto S. (2018). Land tenure security and sustainable agriculture in West Africa. *Journal of Land Use Policy, 71*, 123–135. https://doi.org/10.1016/j.landusepol.2017.12.024

CIFOR-ICRAF. (2024). *Land restoration enhances opportunities for rural and Indigenous women, spurs poverty reduction in Cameroon* [Press release]. https://bit.ly/4lBW9rn

Cocoa Compass. (2023). *Sustainable cocoa sourcing in Cameroon: Sector report*. Mondelēz International. https://bit.ly/3NxnChl

Eco Outlook News. (2024). President Paul Biya Signs decree on Cameroon's New Forestry Law. *Eco Outlook News*. Retrieved from https://bit.ly/4sjiiNJ

Essougong UPK. (2023). Achieving sustainable cocoa intensification in Cameroon: current constraints and effectiveness of service delivery (Doctoral dissertation, Wageningen University).

Essougong UPK; Slingerland M; Mathé S; Vanhove W; Tata Ngome PI; Boudes P; ... Leeuwis C. (2020). Farmers' perceptions as a driver of agricultural practices: Understanding soil fertility management practices in cocoa agroforestry systems in Cameroon. *Human Ecology, 48*(6), 709–720. https://doi.org/10.1007/s10745-020-00165-2

European Commission. (2023). *EU regulation on deforestation-free products (EUDR)*. https://bit.ly/4vds59g

European Commission. (2025a). Regulation on Deforestation-free Products. https://bit.ly/4vdsmZQ

European Commission. (2025b). The Sustainable Cocoa Initiative. Retrieved from https://bit.ly/4sZ8UyR

Fabre T; Bassanaga S; Ricau P; Fomou G; Sanial E. (2022). Traceability, transparency and sustainability in the cocoa sector in Cameroon. European Forest Institute. https://bit.ly/4uDQntn

Folefack AJJ. (2016). Descriptive and logistic regression approaches for analyzing the factors affecting the adoption of cocoa agroforests by farmers in the centre region of Cameroon. *Russian Journal of Agricultural and Socio-Economic Sciences, 53*(5), 125–134.

Folefack AJJ; Darr D. (2021). Promoting cocoa agroforestry under conditions of separated ownership of land and trees: Strengthening customary tenure institutions in Cameroon. *Land Use Policy, 108*, 105524. https://doi.org/10.1016/j.landusepol.2021.105524

Food and Agriculture Organization (FAO) & European Commission. (2024). *Living income studies and stakeholder workshops in Cameroon*. Food and Agriculture Organization. https://bit.ly/4sRySEf

Food and Agriculture Organization (FAO). (2022). The State of Agricultural Commodity Markets 2022: Leveraging trade for sustainable development. Food and Agriculture Organization of the United Nations.

Food and Agriculture Organization (FAO). (2024). *Navigating sustainability: Cameroon's cocoa agroforestry in the face of EU regulations*. Food and Agriculture Organization. https://bit.ly/4f24KT1

Food and Agriculture Organization (FAO). (2025). "Beyond the canopy: Mapping cocoa fields in Cameroon's agroforestry systems for a deforestation free cocoa." https://bit.ly/4wTAUXm

Gakou Kakeu J; Di Gregorio M; Paavola J; Sonwa DJ. (2024). REDD+ policy implementation in Cameroon's cocoa landscapes: Insights from governance and restoration strategies. *Forest Policy and Economics, 135,* 102642.

Gakou-Kakeu J; Di Gregorio M; Paavola J; Sonwa DJ. (2020). REDD+ policy implementation and institutional interplay: Evidence from three pilot projects in Cameroon (Vol. 264). CIFOR.

Gakou-Kakeu J; Di Gregorio M; Paavola J; Sonwa DJ. (2022). REDD+ policy implementation and institutional interplay: evidence from three pilot projects in Cameroon. *Forest policy and economics, 135*, 102642.

GDA. (2024). *Deforestation-free cocoa in Cameroon: Questions, concerns and priorities from smallholder farmers*. Green Development Advocates. https://bit.ly/41aRfIn

Global Forest Watch. (2025, February 10). Better cocoa for the planet: How ECOM is reducing deforestation in their supply chain. https://bit.ly/41cRiDz

Gloy N; Chemura A; Tchindjang M; Gornott C. (2025). Mapping climate change impacts on cocoa agroforestry systems in Cameroon to mitigate future deforestation. *Agronomy for Sustainable Development, 45*(6), 1–20. https://doi.org/10.1007/s13593-025-01042-1

ICRAF – World Agroforestry. (2021). *On the road to deforestation-free cocoa in Cameroon*. https://bit.ly/4f7tNnK

IDH – The Sustainable Trade Initiative. (2019). Cameroon "Green Cocoa Landscape" Program. Concept Note, April 10, 2019. Available at https://bit.ly/4cR7Acr

IDH – The Sustainable Trade Initiative. (2021). Roadmap to Deforestation-Free Cocoa in Cameroon: Towards a sustainable cocoa sector that protects forests and enhances farmers' livelihoods in Cameroon. Joint Framework for Action. https://bit.ly/4sQEvT3

IDH – The Sustainable Trade Initiative. (2023). *Traceability systems and market compliance for cocoa in Cameroon*. https://bit.ly/4rBj47t

Ingram V; Janssen V; Akenji Neh V; Pratihast AK. (2025). Cocoa driven deforestation in Cameroon: Practices and policy. *Forest Policy and Economics,* 177, 103533. https://doi.org/10.1016/j.forpol.2025.103533

Jagoret P; Eskes A; Tchatat M. (2017). Cocoa breeding and propagation in Cameroon: Improving productivity for sustainable landscapes.

Kamath V; Nguiffo S; Esono M. (2025, January). *New study assesses threat to wildlife from cacao expansion in the Congo Basin*. Mongabay. https://bit.ly/4lEMgJp

Kazianga H; Masters WA. (2006). Property rights, production technology, and deforestation: Cocoa in Cameroon. *Agricultural Economics, 35*(1), 19–26. https://doi.org/10.1111/j.1574-0862.2006.00003.x

Krumbiegel K; Tillie P. (2024). Sustainable practices in cocoa production. The role of certification schemes and farmer cooperatives. *Ecological Economics, 222*, 108211. https://doi.org/10.1016/j.ecolecon.2024.108211

Läderach P; Martinez-Valle A; Schroth G; Castro N. (2013). Predicting the impact of climate change on cocoa in West Africa: Combining climate suitability models with farm-level assessments. *Climatic Change, 119*, 841–854. https://doi.org/10.1007/s10584-013-0860-0

Lescuyer G; Bassanaga S; Mbile P. (2021). Positive influence of certification on the financial performance of cocoa production models in Cameroon. *Frontiers in Sustainable Food Systems, 5*, 743079. https://doi.org/10.3389/fsufs.2021.743079

Mbile JGN; Saj S; Enock S; Mala WA; Harmand JM. (2025). Cacao stand rehabilitation practices affect long-term cocoa production in agroforestry systems in Cameroon. *Agroforestry Systems, 99*(7), 1–16. https://doi.org/10.1007/s10457-025-01162-1

Mbolo MMA; Zekeng JC; Mala WA; Fobane JL; Djomo Chimi C; Ngavounsia T; ... Tamanjong YV. (2016). The role of cocoa agroforestry systems in conserving forest tree diversity in the Central region of Cameroon. *Agroforestry systems, 90*(4), 577–590.

Michel I; Blanco J; Essouma FM; Carrière SM. (2024). Complex cocoa agroforestry systems shaped within specific socioeconomic and historical contexts in Africa: Lessons from Cameroonian farmers. *Agricultural Systems, 221*, 104111.

Mighty Earth. (2025, August). *Cocoa boom fuels new wave of deforestation in Cameroon*. Mongabay. https://bit.ly/3Ps0Ho8

Ministry of Agriculture and Rural Development, Cameroon (MINADER). (2022). *Baseline study of fertilizers and plant protection products in the cocoa and coffee sectors*. https://bit.ly/47bL8ad

Mukete N. (2018). Drivers of deforestation in Cameroon: Cocoa expansion and land use change. *Journal of Environmental Management*, 223, 219–228. https://doi.org/10.1016/j.jenvman.2018.05.012

Nadège MT; Louis Z; Cédric CD; Louis-Paul KB; Funwi FP; Ingrid TT; ... Julliete Mancho N. (2019). Carbon storage potential of cacao agroforestry systems of different age and management intensity. *Climate and Development, 11*(7), 543–554.

Nair PR; Kumar BM; Nair VD. (2022). Definition and concepts of agroforestry. *An introduction to agroforestry: Four decades of scientific developments*, 21–28.

NAPCC. (2015). National Adaptation Plan for Climate Change (NAPCC) 2015. Ministry of Environment, Protection of Nature and Sustainable Development. https://bit.ly/4rLM1hb

Ndah NR; Ekole PN; Agwa MH; Taku J; Lucha CFB; Agbor DT. (2023). Crop diversification and sustainability in a cocoa agroforestry system in Meme Division South West Region, Cameroon. *Asian journal of Research in Agriculture and Forestry, 9*(2),1–15.

Office National du Cacao et du Café (ONCC). (2023). *Annual sector report*. https://www.oncc.cm/reports

Office National du Cacao et du Café (ONCC). (2024). Official ceremony to present the National Action Plan for Sustainable Cocoa in Cameroon 2023–2025. Retrieved from https://bit.ly/3Nch5bR

Ogutu S; Mockshell J; Minh T; Remans R. (2025). A scoping review of the incentives for promoting the adoption of agroecological practices and outcomes among rice farmers in Vietnam. *PLoS One, 20*(4), e0321029.

Özkan Ş; Nana A; Ziebe R; Agbor EK; Chaherli NM; Germer LA; ... Mottet A. (2022). Cameroon moves towards low-carbon livestock systems. https://bit.ly/4bl0X0U

Piñeiro V; Arias J; Dürr J; Elverdin P; Ibáñez AM; Kinengyere A; ... Torero M. (2020). A scoping review on incentives for adoption of sustainable agricultural practices and their outcomes. *Nature Sustainability, 3*(10), 809–820.

ProForest. (2020). *Gender analysis of the laws and policies that govern the cocoa, palm oil, rubber and timber supply chains in Cameroon*. https://bit.ly/4bSaQDl

René N; Luc NN; Bergaly KC; Daniel G. (2023). Economic performance of certified cocoa-based agroforestry systems in Cameroon. *Environment, Development & Sustainability, 25*(5). https://doi.org/10.1007/s10668-023-03712-9

Republic of Cameroon. (2024). Law No. 2024/008 of 24 July 2024 to lay down forestry and wildlife regulations. https://bit.ly/4dGqFwG

Reuters. (2024). Cameroon cocoa sector traceability initiatives. https://bit.ly/4a2SzSn

Reuters. (2025). How women-led agroforestry has planted the seeds of climate resilience in Cameroon. https://bit.ly/47dQx0C

Sadeu MBT; Mathe S; Nzie JRM. (2023). Do cocoa certification schemes improve producers' performance? Evidence from Centre Region Cameroon. *Tropicultura, 41*, 2268.

SAFE. (2025). *Sustainable Agriculture for Forest Ecosystems (SAFE) project in Cameroon*. Zero Deforestation Hub. https://zerodeforestationhub.eu/projects/safe/cameroon/

Saj S; Jagoret P; Etoa LE; Fonkeng EE; Tarla JN; Nieboukaho JDE; Sakouma KM. (2017). Lessons learned from the long-term analysis of cacao yield and stand structure in central Cameroonian agroforestry systems. *Agricultural systems, 156*, 95–104.

Soh Wenda BD; Nken H; T. Takam HN; Eloundou CE; Fon DE. (2024). Rainforest Alliance-UTZ cocoa certification scheme adoption: Determinants and financial implications for cocoa production in the Centre region of Cameroon. *PLOS Sustainability and Transformation, 3*(7), e0000115. https://doi.org/10.1371/journal.pstr.0000115

Somorin OA; Visseren-Hamakers IJ; Arts B; Sonwa DJ; Tiani AM. (2014). REDD+ policy strategy in Cameroon: Actors, institutions and governance. *Environmental Science & Policy, 35*, 87–97. https://doi.org/10.1016/j.envsci.2013.08.005

Sonwa DJ; Weise SF; Tchatat M; Nkongmeneck B; Janssens MJJ. (2017). Structure and composition of cocoa agroforests in southern Cameroon. *Agroforestry Systems, 91*(5), 1093–1107. https://doi.org/10.1007/s10457-016-9942-y

Suh NN; Molua EL. (2022). Cocoa production under climate variability and farm management challenges: some farmers' perspective. *Journal of Agriculture and Food Research, 8,* 100282.

Sustainable Cocoa Committee in Cameroon (SCCC). (2025). *Newsletter of the Sustainable Cocoa Committee in Cameroon, No. 001, February 2025*. https://bit.ly/479Pizu

Taku JD; Njoh RN; Meliki NS; Amungwa FA; Manu IN. (2020). The role of agricultural extension in cocoa production and livelihood of farmers in Meme Division, Cameroon. *Asian Journal of Agricultural Extension, Economics & Sociology, 38*(11), 58–65.

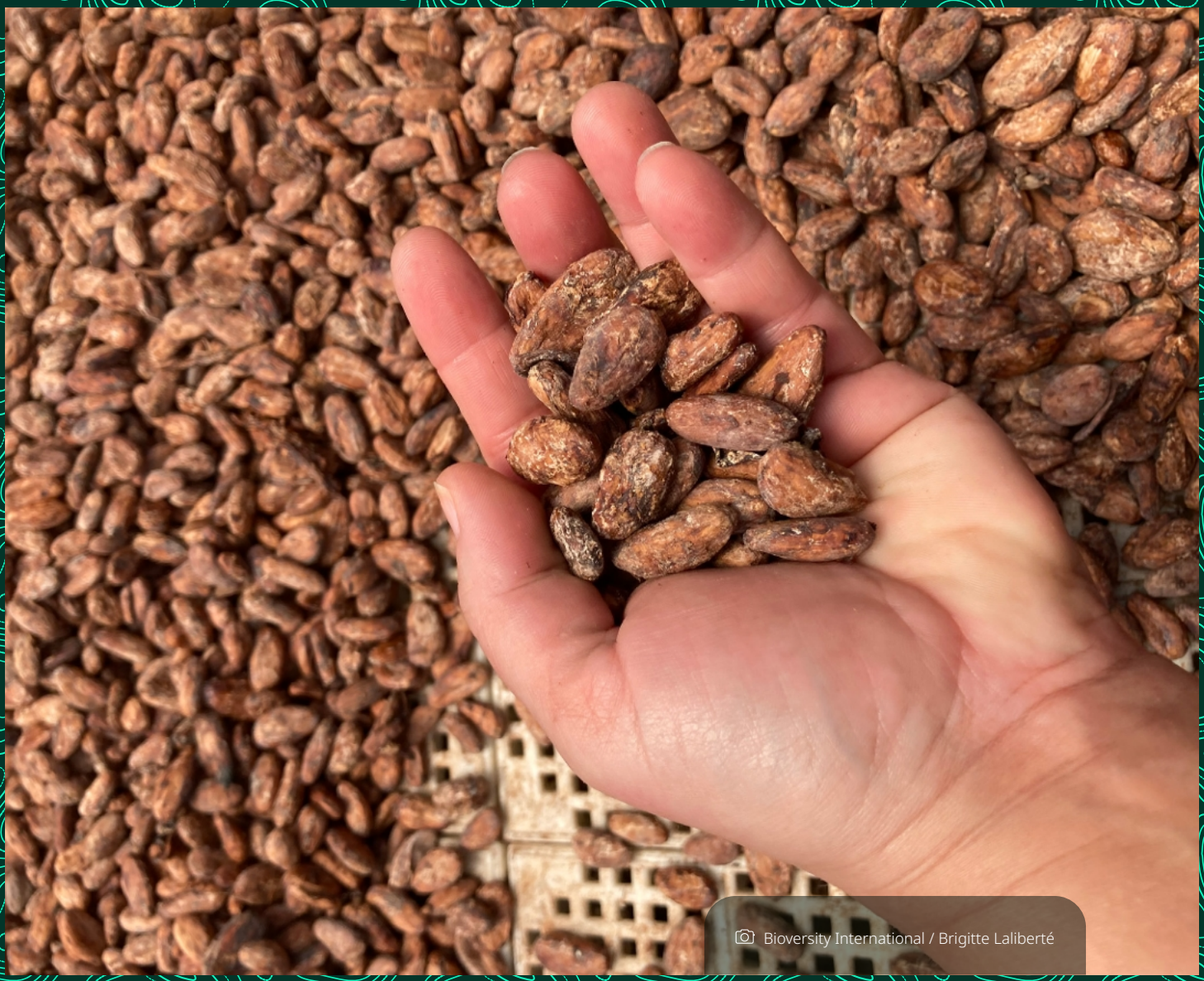
Trade Hub. (2024). *Cocoa farming in the Tridom landscape associated with higher rates of deforestation than other production-based livelihoods*. Trade, Development and the Environment Hub. https://bit.ly/4nN1GfL

Wessel M; Quist-Wessel P. (2015). Cocoa production in West Africa, a review and analysis of recent developments. *NJAS - Wageningen Journal of Life Sciences, 74–75,* 1–7. https://doi.org/10.1016/j.njas.2015.09.001

World Resources Institute (WRI). (2021). Drivers of deforestation and forest degradation in Cameroon.

Zekeng JC; Fobane JL; Biye HE; Cédric DC; Abada Mbolo MM. (2023). Impact of useful species preferences on carbon stocks and annual increments in various cocoa-based agroforestry systems in Central Region of Cameroon. *Journal of Sustainable Forestry, 42*(4), 399–420.

Bioversity International / Brigitte Laliberté



Bioversity International / Brigitte Laliberté

About the authors

Sylvester Ogutu, Postdoctoral Fellow, International Center for Tropical Agriculture (CIAT)* – s.o.ogutu@cgiar.org
Leslie Estefany Mosquera, Visiting Researcher, CIAT* – l.mosquera@cgiar.org
Thea Ritter, Consultant, Bioversity International** – t.ritter@cgiar.org
George Amenchwi Amahnui, Postdoctoral Fellow, CIAT* – g.amahnui@cgiar.org
Jonathan Mockshell, Senior Scientist, CIAT* – j.mockshell@cgiar.org
Augusto Castro-Núñez, Senior Scientist, CIAT* – augusto.castro@cgiar.org

*CIAT is part of the Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT).
**Bioversity International is part of the Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT).

Corresponding author: Augusto Castro-Núñez – augusto.castro@cgiar.org

CGIAR CLIMATE ACTION SCALING FOR IMPACT

SIX-STEP APPROACH Scaling Solutions, Transforming Food Systems

Alliance Bioversity & CIAT