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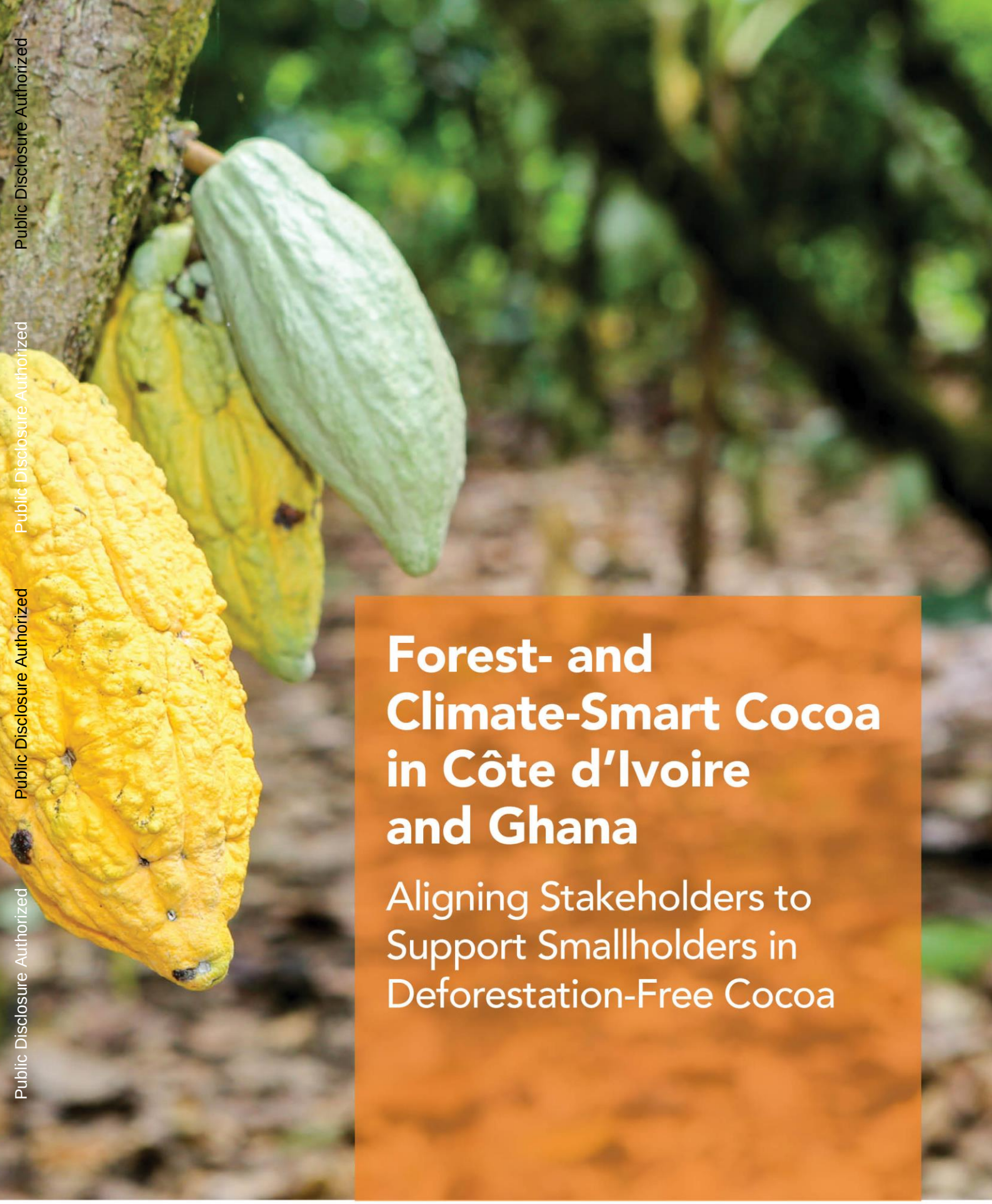

Forest- and Climate-Smart Cocoa in Côte d'Ivoire and Ghana

Aligning Stakeholders to Support Smallholders in Deforestation-Free Cocoa

PROFOR
INNOVATION AND ACTION FOR FORESTS
WORLD BANK GROUP
FOREST CARBON PARTNERSHIP FACILITY
World Cocoa Foundation
CLIMATEFOCUS

Acknowledgements

This report was prepared by a team from Climate Focus led by Charlotte Streck, together with Alan Kroeger, Simon Koenig, and Ashley Thomson.

Financing was provided by The Program on Forests (PROFOR). The team benefited from guidance and advice from senior staff at the World Bank, including Daniela Goehler, Timothy Brown, Christopher Brett, and Steven Silverstein, and the World Cocoa Foundation, including Paul Macek and Ethan Budiansky.

Communications support was provided by Breen Byrnes and Catherine Sear from the World Bank, Tim McCoy from the World Cocoa Foundation, and Esther Chak from Imaginary Office.

For valuable contributions and inputs, the Team thanks:

Sander Muilerman, World Cocoa Foundation

Gaël Lescornec, World Cocoa Foundation

Christian Mensah, Rainforest Alliance

Reuben Ottou, SNV Netherlands Development Organization

Bruce Wise, International Finance Corporation

Cassandra Colbert, International Finance Corporation

Howard Shapiro, Mars, Incorporated and the World Agroforestry Centre

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Suggested Citation:

Kroeger, Alan; Koenig, Simon; Thomson, Ashley; Streck, Charlotte with contributions from Weiner, Paul-Harvey and Bakhtary, Haseeb. Forest- and Climate-Smart Cocoa in Côte d'Ivoire and Ghana, Aligning Stakeholders to Support Smallholders in Deforestation-Free Cocoa. World Bank, Washington, DC.

Table of Contents

Acknowledgements 2
Table of Contents 3
Forewords 4
Lists of Figures, Tables, Boxes 6
Abbreviations 7
Executive Summary 8
Climate-Smart Cocoa: An Opportunity for West Africa 12
1. Status Quo: The Stressed Cocoa Sector in Côte d'Ivoire and Ghana 14
1.1. Low Productivity 14
1.2. Deforestation and Loss of Ecosystems 16
1.3. Exposure to Climate Change 16
2. Barriers for Action: Lack of Capacities, Inputs, and Finance 17
2.1. Lack of Expertise and Training 17
2.2. Insufficient Inputs and Planting Material 18
2.3. Limited Access to Finance 19
3. Opportunity: A Shared Interest in Production and Protection 21
4. Elements of Integrated Support Packages for Smallholders 23
4.1. Areas of Support 23
4.2. Delivering Integrated Support 26
5. Mobilizing and Delivering Finance for Smallholders 31
5.1. Financial Needs 31
5.2. Provision of Finance 32
6. Going Forward: An Action Agenda for Climate-Smart Cocoa 39
Annex 48
Endnotes 49
References 54

Forewords

The sustainability of cocoa rests with the success of millions of smallholder cocoa farmers.

Ghana and Côte d'Ivoire are the world's two largest cocoa producing nations, accounting for 60% of global supply. In both countries, cocoa contributes significantly to their economies and provides livelihoods for about a quarter of the population. Despite growing global demand for chocolate, smallholder farmers are seeing lower incomes because of poor agricultural techniques, lack of investment and decreasing productivity of their lands. As these farmers expand their growing areas to try to boost output, forests face mounting pressure. At the same time, food companies are increasingly striving to make their agricultural supply chains more secure, resilient to the impacts of climate change and environmentally friendly.

To address the challenge of growing cocoa demand and diminishing forests, the Cocoa & Forests Initiative, co-led by IDH the Sustainable Trade Initiative, the Prince of Wales's International Sustainability Unit and the World Cocoa Foundation, brings together the top cocoa-producing countries with leading chocolate and cocoa companies for concerted action. At the 23rd session of the Conference of the Parties (COP23) to the UN Framework Convention on Climate Change, these two governments and companies agreed to new Frameworks for Action that will speed up investments in long-term sustainable production of cocoa, with an emphasis on "growing more cocoa on less land."

Our agriculture, environment and climate teams at the World Bank support this critical agenda through collaboration with the Cocoa & Forests Initiative. Among other endeavors, we are working with Côte d'Ivoire and Ghana, cocoa companies and partners to develop large-scale emission reductions programs that aim to create incentives for more sustainable landscapes management.

This report can help guide the work of these governments and companies as they work together to operationalize their Frameworks. The report identifies eight priority areas that could boost cocoa productivity, raise smallholder incomes and expand tree cover.

A more sustainable cocoa supply chain would not only improve the lives of millions of farmers, but also generate benefits for governments and companies, and produce positive environmental returns. It is a vision worth backing for the benefit of all.

Karin Kemper
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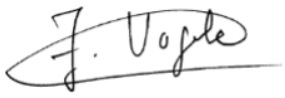

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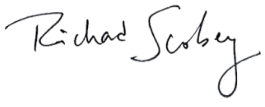
The World Cocoa Foundation envisions a sustainable and thriving cocoa sector – where farmers prosper, cocoa-growing communities are empowered, human rights are respected, and the environment is conserved.

The chocolate and cocoa industry is at an inflection point, addressing the significant impact that smallholder cocoa farming is having on rainforests in West Africa. We are tackling this challenge by working with the governments of Côte d'Ivoire and Ghana, leading civil society organizations, development partners, and across our member companies to craft a strategy to eliminate deforestation and forest degradation in the cocoa supply chain and restore degraded lands and forests. This commitment has been captured in Frameworks for Action that were recently announced at COP23 in Bonn, Germany, a major milestone that was made possible through support provided by key partners, including the World Bank Group, IDH the Sustainable Trade Initiative, the Prince of Wales's International Sustainability Unit, DFID's Partnership for Forests program, the Dutch Ministry of Foreign Affairs, and the Swiss State Secretariat for Economic Affairs.

Through the extensive consultations that produced the Frameworks, we learned how cocoa at a landscape level must reduce its footprint, while minimizing social and economic impacts. Our mantra became "more cocoa on less land." Achieving this will require renovation and rehabilitation of aged and diseased tree stock, and a fundamental shift toward intensification of production and away from extensification. This will allow farmers to breathe new life into abandoned lands and put an end to the destructive pattern of expansion into forests in search of fertile "new ground" for cocoa.

This report, produced by Climate Focus and in partnership with the World Bank, provides critical insights on how to finance the transformation that we seek to achieve. WCF invites our development partners, member companies, and other stakeholders in the global cocoa sector to join us in bringing long-term patient capital to the two million smallholder farmers that depend on cocoa in West Africa.



Richard Scobey
President
World Cocoa Foundation

Lists of Figures, Tables, Boxes

List of Figures

FIGURE ES1: An Action Agenda for the Cocoa Sector 9
FIGURE 2: Change in Suitability for Cocoa Growing in West African Regions in 2030 16
FIGURE 3: Institutional Context and Flows of Finance, Training and Other Inputs 17
FIGURE 4: Vicious Cycle of Low Smallholder Investment in R&R 20
FIGURE 5: Potential Activities to Support Smallholder Needs 27
FIGURE 6: Example of Individual Financial Structures for R&R 35
FIGURE 7: Example for a New Blended Finance Fund 36
FIGURE 8: An Action Agenda for the Cocoa Sector 47

List of Tables

TABLE 1: Five Key Support Areas 23
TABLE 2: Estimated R&R Costs 31
TABLE 3: Sources of Finance for Cocoa R&R 33
TABLE 4: Cocoa-Sector Actors' Contributions to Action Plans 39
TABLE 5: Actors' Contributions to Establishing Common Definitions and Operational Principles 40
TABLE 6: Actors' Contributions in Establishing Engagement and Action Platforms 41
TABLE 7: Actors' Contributions to Developing Support Packages 42
TABLE 8: Actors' Contributions to Developing a Financing Strategy 43
TABLE 9: Actors' Contributions to Delivering Finance and Support 44
TABLE 10: Actors' Contributions to Monitoring Impact and Link to Zero-Deforestation 45
TABLE 11: Actors' Contributions to Strengthening Governance 46
TABLE 12: Cocoa Rehabilitation Activities 48
TABLE 13: Cocoa Renovation Activities 48

List of Boxes

Box 1: Key Terms 12
Box 2: The Cocoa and Forests Initiative (CFI) 13
Box 3: Cocoa Swollen Shoot Virus Disease: Sickening the Cocoa Sector and Avoiding the Mistakes in Brazil 15
Box 4: Replanting Challenges in Ghana 18
Box 5: *Case Study 1 – Expanding Access to Training through Integrated Support Models* 28
Box 6: *Case Study 2 – Enhanced Access to Seedlings* 28
Box 7: *Case Study 3 – Accessing Agricultural Inputs* 29
Box 8: *Case Study 4 – Accessing Higher Value Markets* 30
Box 9: *Case Study 5 – Using Technology to Provide Access to Finance* 30
Box 10: *Case Study 6 – Expanding Access to Finance* 37
Box 11: *Case Study 7 – Costa Rica's Payment for Ecosystem Services* 38
Box 12: Public-Private Partnership Platforms in Côte d'Ivoire and Ghana 41

Abbreviations

Civil society organizations (CSOs)

Climate-Smart Cocoa (CSC)

Cocoa and Forests Initiative (CFI)

Cocoa swollen shoot virus disease (CSSVD)

Conference of the Parties (COP)

Conseil du Café-Cacao (CCC)

Emission Reduction Programs (ERPs)

Forest Carbon Partnership Facility (FCPF)

Global Agriculture and Food Security program (GAFSP)

Ghana Cocoa Board (Cocobod)

Ghana Cocoa Forest REDD+ Programme (GCFRP)

Ghana Cocoa Rehabilitation and Intensification Program (CORIP)

Good Agricultural Practices (GAPs)

Inter-American Development Bank (IDB)

International Finance Corporation (IFC)

Payments for Ecosystem Services (PES)

Program on Forests (PROFOR)

Public-Private Partnership (PPP)

Renovation and Rehabilitation (R&R)

Research and Development (R&D)

Sustainable Trade Initiative (IDH)

World Cocoa Foundation (WCF)

Executive Summary

Global cocoa production faces mounting environmental and economic challenges.

Due to continuing demand for cocoa, cocoa production is confronting the triple challenge of increasing productivity on limited land, reducing pressure on forests and ecosystems, and enhancing climate change resilience. In March 2017, leading cocoa and chocolate companies committed to work together through the Cocoa and Forests Initiative, in partnership with others, to end deforestation and land degradation in the global cocoa supply chain. The initial focus is on Côte d'Ivoire and Ghana, the world's two largest cocoa producers.

Smallholders in Côte d'Ivoire and Ghana are responsible for two-thirds of global cocoa production. Cocoa provides livelihoods for about a quarter of the two countries' populations and is important to the national economies, contributing close to 20 percent of GDP in Côte d'Ivoire and 9 percent in Ghana. Smallholders, who are critical to the success of the Cocoa and Forests Initiative, face declining yields due to poor tree and soil management, pests and diseases, aging tree stock, limited expertise in modern techniques, and a lack of access to improved inputs and affordable finance schemes. Competition from palm oil, rubber, and other commodities adds uncertainty to future cocoa production, and pressures on smallholders from illegal mining could cause long lasting negative environmental impacts.

Cocoa extensification drives deforestation in West Africa while climate change is shrinking the suitable zone for cocoa cultivation. Historically, increases in cocoa production have been achieved through expanding the area under cultivation to mine the fertile soil of cleared forests. Between 1988 and 2007, West Africa lost 2.3 million hectares of forest to cocoa cultivation. Meanwhile, smallholders are experiencing climate stresses including rainfall variability, increases in temperature, and changing patterns of pests and diseases. Whereas these stresses call for short-term adaptation, climate trends signal a likely long-term reduction in land that is suitable for future cocoa cultivation.

Today, governments and companies agree on the need to support smallholders in the improvement of their farm productivity through climate-smart cocoa production. As of December 2017, the Governments of Côte d'Ivoire and Ghana and 22 cocoa companies had signed Frameworks for Action under which they commit to promoting sustainable cocoa production, social inclusion, and forest protection. Climate-smart cocoa (CSC) encapsulates three goals: increase the productivity of agricultural lands, reduce greenhouse-gas emissions, and increase climate resilience. The aging and pest-infected tree stock in West Africa makes the replacement of aging trees, (renovation) and the improvement of existing tree stock (rehabilitation), together referred to as R&R, an essential element of CSC.

To rapidly advance CSC intervention at scale, we propose eight priority actions. Together, they will both support the transition of the West African cocoa sector toward sustainable management and eliminate deforestation from the cocoa supply chain. The actions build on each other and promote collaboration between governments and supply-chain companies, the construction and delivery of integrated support packages, and the mobilization and disbursement of finance. The eight actions are shown in **Figure ES1** and described below.

FIGURE ES1: An action agenda for the cocoa sector

Driving Alignment

PRIORITY ACTION 1:
Operationalize Cocoa Sector Action Plans

- ☐ **Cover three-fold objectives** of forest protection, increasing production, and improving smallholders livelihoods through CSC and R&R
- ☐ **Engage in partnerships and ongoing dialogue** to identify support packages for joint implementation

PRIORITY ACTION 2:
Agree on Common Operational Principles / Definitions

- ☐ **Develop common definitions and principles** to enable understanding and collaboration, esp. on key terms
- ☐ **Utilize proven frameworks** but apply to cocoa
- ☐ **Allocate operational roles** across stakeholders

PRIORITY ACTION 3:
Establish Multi-Stakeholder Engagement / Action Platforms

- ☐ **Agree on and appoint third-party management**
- ☐ **Facilitate dialogue** among actors tocoordinate in the design of a platform
- ☐ **Determine time-bound and place-specific CSC agenda**

Integrating Smallholder Support

PRIORITY ACTION 4:
Develop Integrated Smallholder Support Packages

- ☐ **Develop integrated support** that is customizable to regional CSC and R&R priority program areas
- ☐ **Design support packages** that fully consider smallholder short- and long-term economic needs, food and nutritional security, and region's climatic constraints
- ☐ **Indicate the conditions** necessary for different actors to provide further technical or financial resources in delivery
- ☐ **Define clear roles and responsibilities**,set implementation timelines, and achieve operational transparency
- ☐ **Share data and maps**, and collaborate to increase nursery capacity to meet region's need

Mobilizing Finance

PRIORITY ACTION 5:
Develop a Financing Strategy

- ☐ **Choose a funding vehicle—** individual partnerships, dedicated R&R fund, or both
- ☐ **Design and define** capital and governance structure, investment criteria, and operational criteria

PRIORITY ACTION 6:
Deliver Finance and Support to Smallholders

- ☐ **Select or establish** institutions and mechanisms to channel finance to smallholders
- ☐ **Identify intermediaries** like cooperatives and traders for on-lending
- ☐ **Identify further needs for scaling results**
- ☐ **Offer risk mitigation tools** with DFIs or local financial providers
- ☐ **Offer / utilize technical assistance facility**
- ☐ **Train smallholders** in financial management to increase their financial stability

Enhancing the Enabling Environment

PRIORITY ACTION 7:
Monitor Impact and Link to Zero-Deforestation Commitments

- ☐ **Develop strong monitoring and evaluation frameworks** to improve partner coordination, identify and eliminate inefficiencies, and improve outcomes
- ☐ **Link cocoa programs to zero-deforestation commitments** to support company supply-chain commitments and national climate change plans

PRIORITY ACTION 8:
Strengthen Governance

- ☐ **Identify policy priorities** for addressing land and tree tenure
- ☐ **Strengthen forest protection**
- ☐ **Explore climate finance and REDD+ opportunities**
- ☐ **Strengthen law enforcement and legal frameworks**
- ☐ **Identify other cocoa market inefficiencies**

PRIORITY ACTION 1:

Operationalize cocoa sector action plans

The Frameworks for Action for Côte d'Ivoire and Ghana could be operationalized through practical action plans. The frameworks formulate a series of core commitments and comprehensive follow-up action items that could serve as a basis for cocoa actors and other landscape-level stakeholders to coordinate their activities. Governments and private companies are preparing to develop their own action plans and partnerships in line with national government strategies and the frameworks' goals. To meet the threefold objective of protecting forests, increasing productivity, and improving smallholders' livelihoods, CSC activities will be a critical part of the action plans and a foundation to further define target activities.

PRIORITY ACTION 2:

Agree on common operational principles and definitions

A common set of operational definitions, principles, and guidelines is a first step to align interests and interventions. A shared understanding of key concepts can form the base for focused discussion, prioritized action, and more effective collaboration between partners. Stakeholders may streamline their coordination efforts by developing a common understanding of the concepts of "deforestation-free" and "climate-smart" cocoa and the role of agroforestry. In addition, operational principles including the definition of shared goals, a timeline to achieve them, and the allocation of roles and responsibilities would support accelerated implementation.

PRIORITY ACTION 3:

Establish multi-stakeholder engagement and action platforms

Institutional partnerships are essential to coordinate smallholder support. Engagement and action platforms bring together government agencies and supply-chain companies, and can further work to include other land-use actors in cocoa landscapes, particularly local communities and relevant sectors such as mining. These platforms may build on the experiences with existing dialogue platforms in Côte d'Ivoire and Ghana but go beyond these efforts by incorporating agreed upon definitions and operational principles and defining a time-bound, location-specific and prioritized CSC agenda that includes R&R actions. These platforms would facilitate discussion about critical issues facing smallholders, including access to seedlings and other input delivery systems, pricing and premiums, productivity goals, and land titles.

PRIORITY ACTION 4:

Develop integrated smallholder support packages

The engagement and action platforms could facilitate location-specific smallholder support packages across five areas (climate suitability assessments, climate-smart interventions, R&R technique assessments, pest and disease control measures, and financial access and management). Regional CSC and R&R programs would include an initial climate-suitability assessment, identification of climate-smart interventions at the farm level, determination of suitable R&R techniques, selection of pest and disease control measures, and support in accessing and managing finance. While some of these actions have occurred in the past, developing a standardized approach through a common platform could galvanize broader and more systematic action. The defined support packages would cover the steps leading to a CSC transition and assign clear roles and responsibilities among governments, supply chain companies, and civil society organizations (CSOs) on how to deliver the agreed-upon services.

PRIORITY ACTION 5:

Develop a financing strategy

A financing strategy would specify the funding vehicle – individual partnerships, a dedicated R&R fund, or a hybrid approach – and secure commitments from funders. The strategy could include a short-term approach relying on existing structures and the mid-term development of a blended R&R fund. In the short-term, partnerships between individual companies, cooperatives, and investors backed by risk-mitigation instruments would deploy funds without significant delay. These efforts could also inform the ongoing dialogue among actors in the cocoa sector on a dedicated R&R fund. The operationalization of the frameworks for action can facilitate discussions on such a fund.

PRIORITY ACTION 6:

Deliver finance and support to smallholders

Companies and cooperatives with strong links to smallholders are well positioned to initiate the R&R programs. Partners are asked to accelerate existing efforts to ensure that CSC and R&R programs move toward implementation. Pilot programs could pioneer action while longer-term structures are put in place. After training is initiated, early programs could rely on in-kind support to smallholders and management of seedling supply and inputs via cooperatives. In the medium- and long-terms, local financial institutions are best placed to offer credit and financial services to smallholders. This includes using technology, including mobile money, value transfer services, mobile banking, and financial-literacy training. The latter would enable smallholders to directly apply for credit and manage farm finances independently.

PRIORITY ACTION 7:

Monitor impact and link to zero-deforestation agenda

Monitoring and evaluation systems are important tools for programs to grow stronger over time and to eliminate inefficiencies. It will be important to monitor progress on government-led enforcement of the commitments and actions for forest protection and restoration agreed upon in Côte d'Ivoire and Ghana's Frameworks for Action, such as ending forest land conversion for cocoa production and eliminating all cocoa production and sourcing from national parks and reserves. Linking cocoa programs to impacts on forests would allow programs to contribute to zero-deforestation supply-chain commitments and government climate plans including emission reduction programs.

PRIORITY ACTION 8:

Strengthen governance

Efforts to reduce deforestation in cocoa supply chains must be supported by strengthening forest governance. Strengthened policy, robust legal frameworks, and effective law enforcement are essential to achieve long-term CSC. It is important that governments designate and classify cocoa production areas and protection areas, and step up institutional capacities and law enforcement. Clarifying land tenure and land titles is essential to attract farm investments. While these measures are ultimately the responsibility of governments, companies can help by committing to ensure legal compliance in their supply chains.

Climate-Smart Cocoa: An Opportunity for West Africa

Two-thirds of the world's cocoa is grown in Africa, with the majority produced by Côte d'Ivoire and Ghana. The sector contributes about 20 percent of GDP in Côte d'Ivoire and 9 percent of GDP in Ghana,[1] and contributes 40 percent of export value in Côte d'Ivoire and 30 percent in Ghana.[2,3] Cocoa is almost exclusively produced by 1.6 – 2 million smallholders that depend on the crop for their income and livelihoods, affecting roughly a quarter of the population when expanded to the household level.[4,5] The growth in cocoa production has served as an engine for growth for the economies of both Côte d'Ivoire and Ghana. Despite short-term price and demand fluctuations, forecasts predict a stable growth in long-term cocoa demand. A positive trend for global demand for cocoa and cocoa products is buttressed by increasing consumption of cocoa products in the middle classes of emerging and developing economies.[6, 7] For these reasons, the cocoa sector is of strategic economic, social, and environmental importance to both countries' governments.

However, compounded concerns about environmental degradation caused by cocoa cultivation and loss in productivity are increasingly casting doubt over the sector's long-term prosperity and sustainability. Smallholders face declining yields due to a variety of factors: poor tree and soil management, cocoa tree pests and disease, an aging tree stock, underinvestment in maintenance, and a lack of training and support. Climate change compounds this problem by shrinking the area suitable for cultivation.[8] In light of commitments to protect the remaining forest areas, future production will likely rely on the improvement of existing cocoa farms rather than extension to new land.

Increasingly cognizant of these challenges, governments, companies, civil society organizations (CSOs), and multilateral institutions have begun mobilizing resources to raise smallholder productivity. Increasing cocoa production through climate-smart practices could enhance the climate resilience of smallholders while both boosting their incomes and protecting forests and surrounding ecosystems. An important element of such practices is the renovation and rehabilitation (R&R) of cocoa farms to halt and reverse the decreasing productivity of cocoa trees. This entails improving the management of existing trees (rehabilitation) and/or replanting farms with new trees (renovation). Paired with other CSC practices such as agroforestry, appropriate fertilizer and pesticide application, and use of improved seedlings, R&R can increase productivity while sparing forested land from further expansion (**see Box 1**).

Box 1: Key Terms

Climate-Smart Cocoa: cocoa production that integrates processes, management systems, and/or techniques that increase yields while contributing to climate change mitigation and farm resilience (e.g. agroforestry and shade management).

***Renovation and rehabilitation (R&R)* refers to the following:**

Renovation: Removing old trees and replanting with new trees through underplanting, partial replanting, or complete replanting.

Rehabilitation: improving existing tree stock through better management and technology, with activities such as grafting and pruning alongside Good Agriculture Practices (GAPs) like pest and disease control, fertilizer management, and soil improvement.

To address ongoing and future deforestation, chocolate companies have both committed to eliminating deforestation from their supply chains and started to support intensification of cocoa production.[9] Sixty-two percent of global cocoa production is sourced from trader and grinder companies with deforestation commitments.[10] These companies use certification to monitor their progress toward compliance with their pledges.[11] During 2017, supply-chain companies and governments have joined forces under the Cocoa and Forests Initiative (CFI, **see Box 2**). At the 2017 climate conference in Bonn (COP23), 22 companies – along with the governments of Cote d'Ivoire and Ghana – signed Frameworks for Action to support cocoa productivity increases in both countries, restore forests, and end deforestation related to cocoa production. During the first part of 2018, governments and private companies will develop strategies that operationalize these frameworks.

Box 2: The Cocoa and Forests Initiative (CFI)

The Cocoa and Forests Initiative is a joint effort by the World Cocoa Foundation (WCF), the Sustainable Trade Initiative (IDH), and the Prince of Wales' International Sustainability Unit to convene and mobilize cocoa and chocolate stakeholders across public, non-profit, and private sectors to enact an industry commitment toward ending deforestation and land degradation while also improving smallholder livelihoods. As of December 1, 2017, the governments of Côte d'Ivoire and Ghana as well as 22 companies have signed Frameworks for Action.

At the 23rd session of the Conference of the Parties (COP) to the U.N. Framework Convention on Climate Change, the CFI announced time-bound Frameworks for Action to support cocoa productivity increases, end deforestation, and restore forest areas. Central to the frameworks is a commitment to no further conversion of any forestland for cocoa production.

To accelerate the transition toward a climate-smart cocoa sector in Côte d'Ivoire and Ghana, a common vision between governments, companies, and CSOs would facilitate the coordination and implementation of CSC measures. The purpose of this report is to identify solutions and synthesize priority actions to support smallholders in sustainably intensifying cocoa production. It identifies gaps and barriers that if overcome could catalyze action among smallholders. Proposed support packages that integrate training, finance, and implementation strategies can help to promote CSC while protecting Côte d'Ivoire's and Ghana's remaining forests. With the support of the World Bank Program on Forests (PROFOR)[12] this report aims to inform policymakers, development partners, supply-chain companies, CSOs, and responsible investors about the most pressing actions needed to achieve sustainable livelihoods, protect forests, and mitigate and adapt to climate change.

The report is the result of extensive literature review, expert interviews, case study analyses, and stakeholder consultations in Côte d'Ivoire and Ghana. The analysis and consultations were conducted in parallel with the World Cocoa Foundation's (WCF) Cocoa and Forest Initiative, using the convening power of WCF to engage with key stakeholder groups to inform our ideas on sectoral alignment. A key component of this report is the analysis of a series of case studies on R&R interventions in cocoa and similar value chains in West Africa and globally.

The report's findings provide cocoa stakeholders with priority actions to implement forest and climate-smart interventions. It is organized in six chapters:

- Status Quo: The stressed cocoa sector in Côte d'Ivoire and Ghana
- Barriers for Action: Lack of capacities, inputs, and finance
- Opportunity: A shared interest in production and protection
- Elements of integrated support packages for smallholders
- Mobilizing and delivering finance for smallholders
- Going Forward: An action agenda for climate-smart cocoa

1. Status Quo: The Stressed Cocoa Sector in Côte d'Ivoire and Ghana

Globally, commodity production is facing the triple challenge of increasing agricultural productivity on a limited land area, reducing pressure on remaining forests and other ecosystems, and adapting to the current and future impacts of climate change.

Since West African smallholders are responsible for roughly 60 percent of global cocoa production, addressing these challenges is essential to reducing poverty in these countries, ensuring a stable supply of cocoa, and protecting remaining forests in cocoa-producing countries.[13] In the following sections, we briefly summarize the main challenges facing the cocoa sector in Côte d'Ivoire and Ghana.

1.1. Low Productivity

Smallholders in Côte d'Ivoire and Ghana harvest about 500-600 kilograms and 400 kilograms of cocoa per hectare, respectively.[14] Improved agricultural practices could more than double the yield to 1,000-1,500 kilograms per hectare. Declining or stagnant cocoa productivity both drives deforestation and imperils smallholder livelihoods.[15] Reduced productivity in the cocoa sector impacts the livelihoods of 800,000 to 1 million smallholder producers in Ghana and 1 million more in Côte d'Ivoire that rely on this crop for 70–100 percent of their income.[16,17,18, 19] Meanwhile, cocoa competition from other regions is growing: the Latin American cocoa sector is experiencing a revitalization with increasing yields and movement toward high-tech, large-scale farming systems to meet the growing demand for high-quality and fine-flavor chocolate products.[20]

Côte d'Ivoire's and Ghana's cocoa plantations are home to aging, diseased, and pest-infected trees. Estimates suggest that 23 percent (368,000 hectares) of Ghana's cultivated cocoa area is over 30 years old, and at least 17 percent (272,000 hectares) is affected by cocoa swollen shoot virus disease (CSSVD). The rapid spread of CSSVD is reminiscent of the fungus that dramatically reduced cocoa production in Brazil, and is a warning of the risks confronting West Africa if it does not address CSSVD with swift treatment, prevention, smallholder engagement and technology for developing CSSVD-resistant seedlings (**see Box 3**). The Government of Côte d'Ivoire estimates 12 percent (240,000 hectares) of the cocoa area is infected with CSSVD.[21] Most of the area with aging trees and all of the CSSVD-affected area is in need of renovation (replanting).[22] Some of the most important reasons for low cocoa productivity are:

- Low soil fertility due to poor management and a lack of available and affordable agricultural inputs [23, 24, 25, 26]
- An increasingly old tree stock due to a lack of R&R of cocoa plantations [27, 28]
- Reduced income through productivity losses and an increasing relative cost of R&R intervention
- A growing inability to address pests and diseases like CSSVD[29]
- An expected shift and reduction in areas suitable to cocoa cultivation as a result of climate change [30, 31, 32]
- The continued loss of vital ecosystem services, on which the sector relies, due to forest loss [33, 34, 35]

Box 3: Cocoa Swollen Shoot Virus Disease: Sickening the Cocoa Sector and Avoiding the Mistakes in Brazil

Cocoa swollen shoot virus disease (CSSVD) is the main threat to West African cocoa, causing defoliation and dieback of the plant with severe losses to yields.[a] The virus, a member of the Badnavirus (bacilliform DNA virus) genus, is transmitted through the feeding action of insects. The severest types could substantially reduce yield by about 70 percent and even cause death of cocoa trees within 2–3 years of infection at all stages of cocoa growth.[b] The disease can potentially destroy new plantations, and its presence on a farm can disqualify a smallholder from receiving government production support.[c,d] If a cocoa farm has CSSVD, all trees must be removed. Without proper follow-up support for replanting, smallholders can suffer great economic hardship. Even if smallholders replant their trees, their neighboring farms may re-infect the new trees. This risk of infection can be lessened by planting CSSVD-immune trees as a protective barrier around disease-free and newly replanted farms.[e] The situation in West Africa is similar to the crisis that emerged from Brazil's handling of the witches broom outbreak in the 1980's, but there is still time to act.

Brazil was the 3rd largest cocoa producer in the 1980s – peaking at 435,000 tons of annual production volume – when the industry was ravaged by the Witches' Broom fungus.[f, g] The fungus killed 70 percent of the country's cocoa trees.[i] Brazil initially responded to the outbreak by cutting down vast areas of infected plantations, despite evidence that targeted pruning and burning of infected tree branches was effective at stopping the spread of the fungus.[h] However, smallholders were unable to afford the labor for wide-scale pruning, and they lacked the necessary technical and labor skills to do it themselves.[h] Many smallholders, fearing that their plantations would be cut down, did not report the presence of the fungus.[h] The fungus may have been less devastating if adequate resources were mobilized through targeted technical and financial assistance to smallholders. Brazil's lack of government investment and smallholder engagement mirrors the present concerns about CSSVD in West Africa. The respective governments in West Africa could learn from Brazil and take swift action to stop the spread of this disease, and do so in a way that assuages the fears of smallholders who cannot afford the necessary treatment without government support.

Notes:

a. World Agroforestry Center, n.d.
b. Ameyaw et al., 2014.
c. Ghana Web. (2016). "Cocoa farmers to receive 60 million seedlings." http://www.ghanaweb.com/GhanaHomePage/business/Cocoa-farmers-to-receive-60-million-seedlings-423507
d. Ibid.
e. Dzahini-Obiatey et al., 2005.
f. Reuters. (2016). "Brazil cocoa output to recover in 2016/17, industry eyes expansion." https://www.reuters.com/article/brazil-cocoa-outlook/brazil-cocoa-output-to-recover-in-2016-17-industry-eyes-expansion-idUSL8N1DQ46D
g. National Public Radio. (2008). "A Not-So-Sweet Lesson from Brazil's Cocoa Farms." https://www.npr.org/templates/story/story.php?storyId=91479835
h. New Scientist (1991). "Fungus threat to Brazil's 300 million cocoa trees." https://www.newscientist.com/article/mg13117782-500-fungus-threat-to-brazils-300-million-cocoa-trees/
i. Phys.org. (2014). "Scientists seek cure for devastating witches' broom disease of the chocolate tree." https://phys.org/news/2014-10-scientists-devastating-witches-broom-disease.html

Across both countries, a total of 1,966,000 hectares would benefit from rehabilitation, and 1,300,000 hectares may require renovation.[36] In Côte d'Ivoire, cocoa-tree age profile estimates indicate that 660,000 hectares need renovation and 1.15 million hectares need rehabilitation.[37] Since Ghana does not publish data on rehabilitation needs, the global average (51 percent of total area under cultivation)[38] was used to provide a rough estimate of 816,000 hectares that would benefit from rehabilitation in the country. This estimate represents about 6 percent of the total land area[39] in both countries, roughly the size of Belgium.

1.2. Deforestation and Loss of Ecosystems

Historic increases in cocoa production in Côte d'Ivoire and Ghana caused cocoa plantations to expand into millions of hectares of forests.[40,41] Smallholders, unable to afford farm investments and without knowledge of improved management systems, relied on the temporary high-fertility of soil beneath recently cleared forests to cultivate their crops.

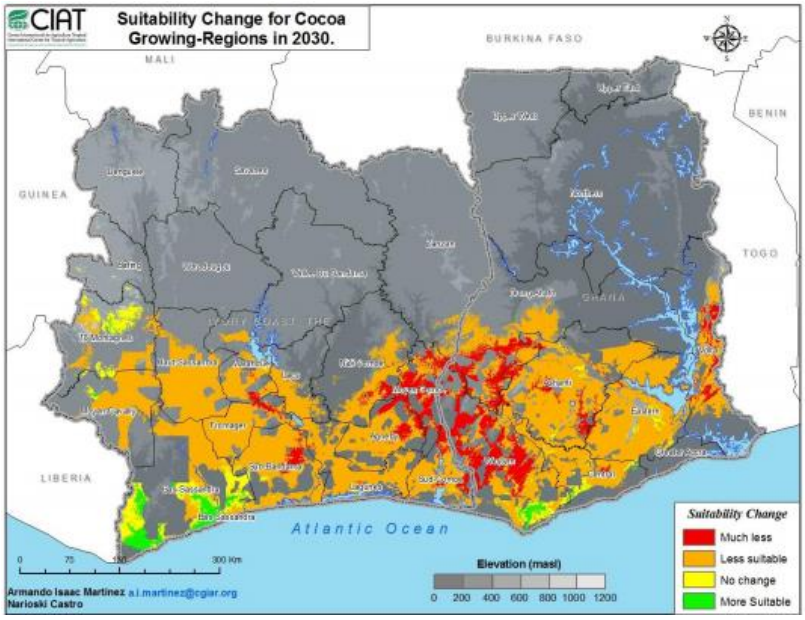
While cocoa production grew, Côte d'Ivoire and Ghana had some of the highest deforestation rates of the world. Since 2000, Côte d'Ivoire and Ghana have lost 14 percent and 11 percent of their forest cover, respectively.[42] Between 1988 and 2007, at least 2.3 million hectares of the Upper Guinean rainforest in Côte d'Ivoire and Ghana have been cleared for cocoa farms.[43, 44] The clearing of forests for cocoa production continues in Côte d'Ivoire and Ghana, and further increases the need for reforestation.

Deforestation and the degradation of ecosystems make the landscape more vulnerable to the effects of climate change. When forests are removed, the landscape loses ecological resilience. Removing forests increases the impacts of heavy rains and flooding and decreases soil fertility. Degraded soils are prone to further erosion by water or wind. Poor soils also complicate renovation of old and degraded farms because they limit the tree varieties that can be planted without expensive fertilizers.[45, 46]

1.3. Exposure to Climate Change

Climate models show a decline in the area that will be suitable for cocoa cultivation in the region. Rising temperatures, variable rainfall, and the increased frequency and severity of extreme climatic events is projected to raise the incidence of pest and diseases and subject farms to irregular rainfall. Climate projections in West Africa indicate that by 2050, many areas in Côte d'Ivoire and Ghana will suffer reduced suitability for cocoa cultivation (**see Figure 2**).[47]

FIGURE 2: **Change in Suitability for Cocoa Growing in West African Regions in 2030**



Source: Läderach, 2011

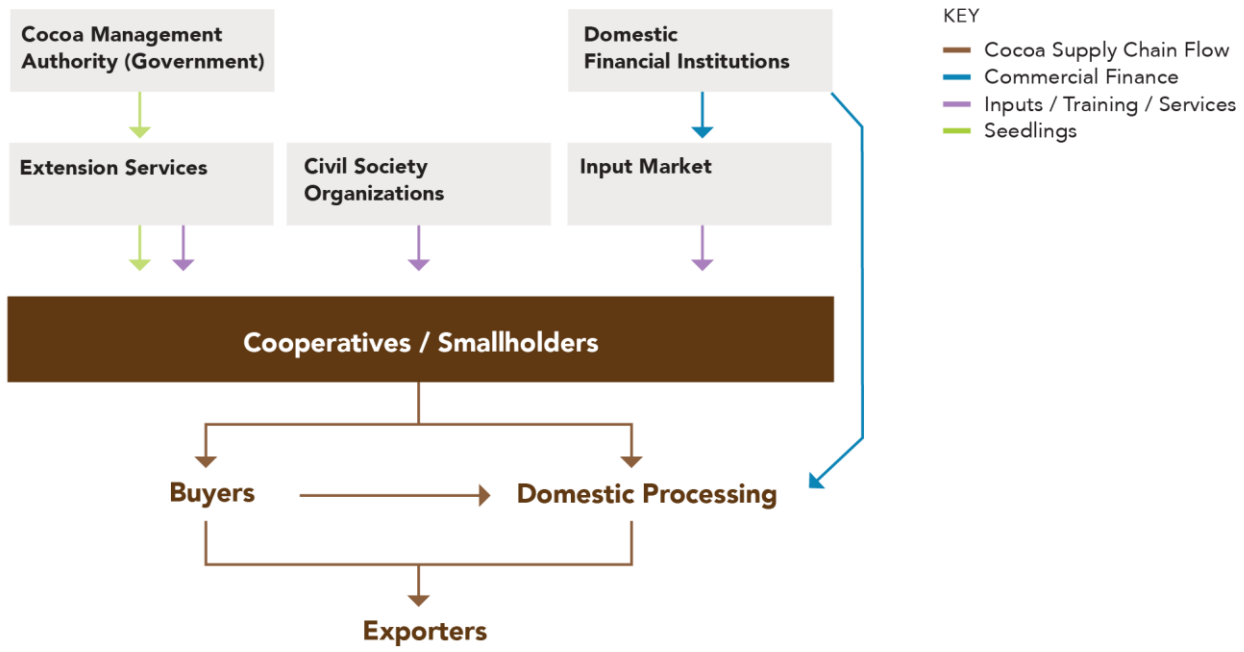
Smallholders are already experiencing some of these climatic stresses: they have observed an increase in the unreliability of seasonal rains and the changing behavior of pests.[48] The increased duration of the dry season is affecting cocoa productivity. Shade trees will be required to increase farm and landscape resilience.[49] While some areas will remain suitable, or increase in suitability for cocoa cultivation, other areas will become less suitable, or even become unsuitable to cocoa cultivation.[50]

2. Barriers for Action: Lack of Capacities, Inputs, and Finance

Smallholders lack the expertise, technology, and finance to invest in CSC. The vulnerability of their plantations and their lack of capital make it impossible for many smallholders to engage in R&R activities.

Thus, concerted efforts and help from supply-chain actors are needed. The current flows of finance, training, and inputs as shown in **Figure 3** rely on cocoa supply flowing into production, processing, and export and services, whereas finance and inputs flow to smallholders. Currently, these are not reaching smallholders at an adequate scale and it is heavily biased toward trade financing and working capital.

FIGURE 3: **Institutional context and flows of finance, training and other inputs**



2.1. Lack of Expertise and Training

Cocoa smallholders have limited knowledge of modern agricultural techniques and farm management skills.[51] Implementing many CSC interventions—including enhancing smallholder skills in planting cocoa and non-cocoa plants; choosing tree variety; planning farm operations; using rehabilitation techniques like grafting, shade management, and pruning; using fertilizer correctly, understanding pests and diseases; and properly applying pesticides and fungicides—requires imparting a higher level of technical knowledge than many smallholders currently possess.[52] Without technical skills, smallholders are less likely to either attempt R&R techniques or implement the interventions in a successful and sustainable fashion.

Smallholders who remove forests do so for the short-term economic benefits of increased yields, which result from soil mining and giving plants greater exposure to the sun. Cocoa cultivation models are traditionally agroforestry (shade) systems that

yield cocoa, non-timber, and timber forest products for smallholders; ecosystem services; forest connectivity across the landscape; and plant diversity for wildlife.[53] However, since the 1980s, many West African smallholders have opted for full-sun or very light-shade strategies due to government advice about making short-term profits, tree tenure concerns, and the belief that shade would reduce yields.[54, 55, 56] Full-sun and/or monoculture cocoa solves the low-productivity issue temporarily, but it increases yield only in the short-term in areas with ideal soil and climatic conditions.[57, 58, 59]

While governments provide some support, it is often insufficient, poorly timed and coordinated, and accessible only to a small percentage of smallholders. For example, despite government extension programs like the Cocoa Fertilizer Initiative in Côte d'Ivoire and cocoa fertilizer subsidies in Ghana, smallholder access to fertilizers and appropriate fertilizer use is low.[60] Extension support by companies is neither widespread nor staffed to reach the number of smallholders required for landscape-scale impact through the adoption of good agricultural practices.[61] Existing efforts rarely offer a comprehensive suite of services that smallholders require to ensure long-term success.

2.2. Insufficient Inputs and Planting Material

Smallholders do not have access to the quantity and quality of cocoa seedlings required for R&R. Many smallholders receive no seedlings, and those who do often do not receive them at the optimal planting periods.[62, 63, 64] National seed gardens and nurseries struggle to meet the demands of smallholders (e.g., mislabeling tree varieties and a lack of communication to smallholders on the availability of improved varieties; **see Box 4**), have low germplasm diversity, and are over-reliant on hybrids rather than clonal planting material.[65] A poor delivery infrastructure further limits access to high-quality cocoa seedlings, leading to delayed and damaged seedling delivery[66] and an underestimation of trees lost to CSSVD. A lack of access to shade and economical trees that smallholders need and want to enhance their farms' earning potential, adaptation, and overall resilience worsens this problem.

Box 4: Replanting Challenges in Ghana

In Ghana, the government-controlled Ghana Cocoa Board (Cocobod)[a] produces all cocoa seed and seedlings in its seed production units (nurseries). The government set a goal of providing 60 million free seedlings to smallholders but has not succeeded due to a lack of seed garden capacity and high plant mortality. In general, Ghana struggles to meet demand for cocoa seeds, partly because of inefficiencies and insufficient investment. Ghana's replanting target, based on current old trees (598,000 hectares) and the cocoa swollen shoot virus disease (CSSVD) area (440,000 hectares) is 1,038,000 hectares.

According to estimates by the World Cocoa Foundation's African Cocoa Initiative seedling analysis, if 60 million seedlings (enough for 50,000 hectares) were successfully provided annually, Ghana Cocobod could meet its renovation and rehabilitation (R&R) targets with current nurseries but would require 16 years to do so.[b] In Côte d'Ivoire, the government set a goal of conducting R&R, including CSSVD replacement on 100,000 hectares/year. This would require about 100 million seedlings per year, which current seed gardens cannot supply.

Notes:

a. The Ghana Cocoa Board (Cocobod) controls prices for most of Ghana's exported cocoa, invests in research and sells seeds.
b. World Cocoa Foundation, 2015.

Regenerating soil fertility requires the proper application of limited amounts of fertilizers and, to avoid erosion during heavy rains, the planting of trees.[67] Smallholders continue to clear forests to take advantage of underlying fertile soil, driving deforestation.[68] To reduce the impacts of disease on crops and improve productivity, fungicides and pesticides are used, but not effectively. This misuse stems from both limited physical and financial access to these inputs and a general lack of technical knowledge and skills.[69, 70]

2.3. Limited Access to Finance

Smallholders are not able to invest in CSC activities. Smallholders lack liquidity and are unable to overcome the expense and short-term reduction in income from the yield losses associated with R&R activities, which often require three to five years for new plantings to generate yields. They also lack access to affordable and tailored credit.

Smallholder's low incomes are partly a result of the low producer prices set by the Côte d'Ivoire and Ghana governments.[71] In Ghana, all major buyers are required to sell their product to Cocobod (**see Box 4**), which either exports it or sells it to domestic processors. In Côte d'Ivoire, the Conseil du Café-Cacao (CCC) determines the guaranteed minimum farm-gate price through the Programme of Average Anticipated Sales. Since Côte d'Ivoire does not have a single-purchaser system, international firms hold stronger market positions. In both cases, government income through price controls could enable these firms to invest in research and extension services. Both governments cover the costs of extension services by the price difference between farm-gate and export prices. However, extension services remain weak and smallholders receive prices lower than the world price with few extension benefits in return.

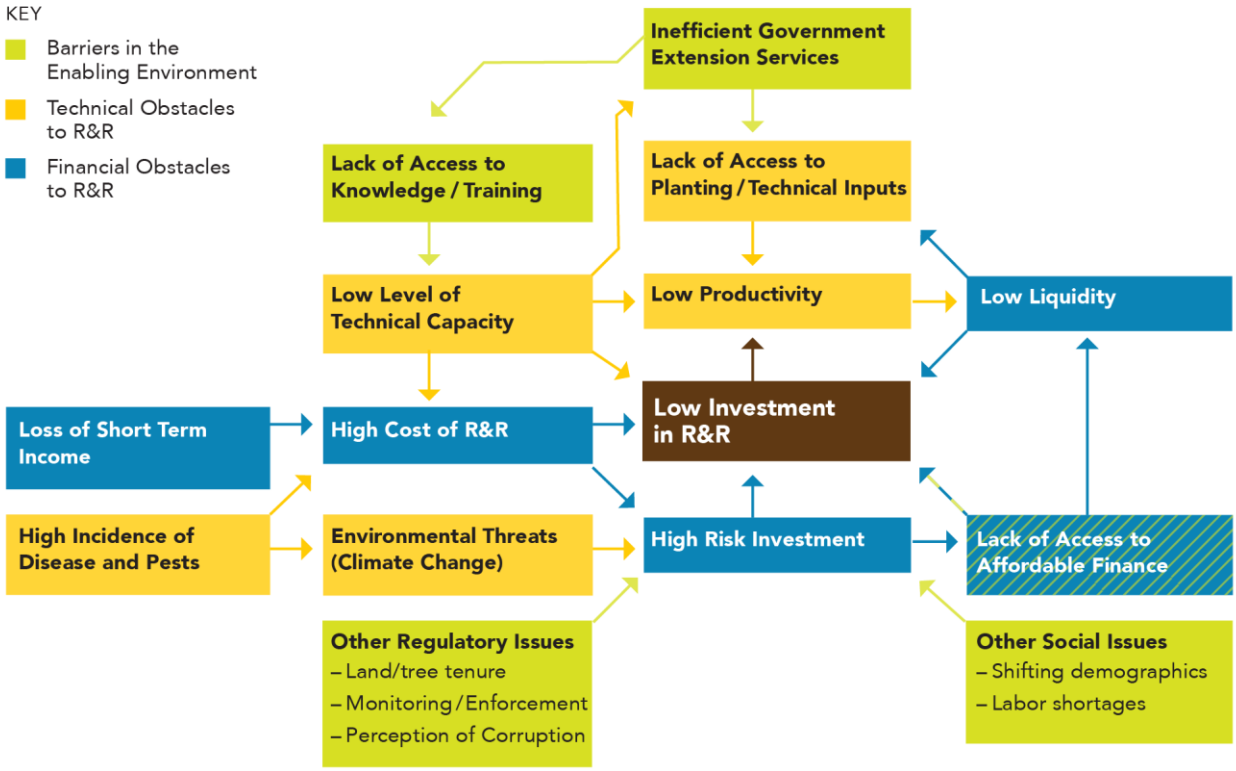
In the 2014–15 season, smallholders in Côte d'Ivoire earned 53 percent of the world price, and those in Ghana earned 48 percent.[72] Since farm-gate prices are set before the start of the season and do not account for fluctuations in either exchange rates or inflation, smallholders can lose real value even if prices rise relative to the previous season. Cocoa smallholders in Côte d'Ivoire and Ghana earn less than their counterparts in Indonesia, Nigeria, or Cameroon.[73] There is no official price differentiation for certified cocoa, and smallholders have limited access to higher-value markets.

Due to the perceived risks of lending to cocoa smallholders in these two countries, banks charge smallholders high interest rates.[74] Traditional loan products reflect banks' preferences for short-term credit products, which fail to align with the agronomic realities that require long-term financing. Banks also view smallholders as high-risk due to their lack of credit histories and collateral, issues that are further complicated by ongoing financial inclusion barriers and the lack of formal land ownership titles. While expanded insurance options could reduce risk, this underdeveloped market represents only 17 percent of financial assets in Côte d'Ivoire.[75] Cocoa insurance schemes are another strategy to expanding access to finance, but banks are unlikely to finance them given their higher risks.[76]

The high cost of R&R quickly depletes available household capital (see Table 1 in Chapter 4).[77, 78, 79] With annual income estimated at $1,840 in Côte d'Ivoire and $1,807 in Ghana and average farm size at 3.5 hectares and 2.5 hectares, respectively, smallholders are hardly able to finance the rehabilitation of a single hectare of cocoa. Considering the high opportunity costs of R&R investments – cocoa trees take approximately three to five years to produce their first crop – replanting further compromises smallholder incomes and their ability to make loan payments.

Figure 4 shows the complex interaction of barriers that impede action and investment in climate-smart cocoa.

FIGURE 4: Vicious Cycle of Low Smallholder Investment in R&R



Source: Climate Focus Analysis, 2017

3. Opportunity: A Shared Interest in Production and Protection

Governments and companies recognize the need for raising smallholder cocoa productivity in West Africa. The projected growth in demand for cocoa products, combined with declining cocoa farm productivity, is a growing concern for cocoa buyers, traders, and manufacturers.

While the long-term projections for cocoa demand are strong, temporary oversupply can depress prices. Such an event occurred in 2016, which led to a drop in export prices and concern among stakeholders in producer countries about the timing and magnitude of future demand for cocoa. There is little doubt that smallholders need assistance to maintain and increase productivity, and low cocoa prices have further reduced their ability to achieve long-term sustainability and investment in R&R. Inaction will lead to further declines in productivity and jeopardize the long-term future of the sector, imperiling smallholders' livelihoods, future export revenues, and companies' abilities to meet expected demand growth in emerging markets. Worse still, as the number of smallholders in need of R&R grows, their ability to act will not. Thus, the need for large-scale, coordinated, and immediate action is clear.[80, 81, 82, 83]

Smallholders, governments, and supply-chain companies share an interest in taking action:

- **Smallholders would benefit from R&R and other CSC interventions through increased incomes and improved farm resilience.**

  A 2017 study estimated that cocoa smallholders in Côte d'Ivoire earn roughly 568 West African francs, approximately €0.86, per day.[84] Poverty among smallholders results from low productivity on small farms and low farm-gate prices established by the local price-setting regimes.[85] Although the benefits of interventions are clear, smallholders require short- and long-term support through financial and technical assistance to implement the required farm improvements.

- **Governments would benefit from stable and increasing high-value cocoa production and exports.**

  Cocoa is an essential contributor to the national and foreign currency income in Côte d'Ivoire and Ghana, and the economies of both countries are highly sensitive to reduced cocoa exports. The International Finance Corporation (IFC) estimates that cocoa represents around 20 percent of GDP in Côte d'Ivoire and 9 percent of GDP in Ghana.[86] The sector represents an even larger percentage of export value for both countries: 40 percent in Côte d'Ivoire and 30 percent in Ghana.[87] Farm investments and R&R are essential to maintaining market share, which is threatened over the long-term by production in other countries.

- **Supply-chain companies (cocoa traders, buyers, and manufacturers) would benefit from a stable and consistently high-quality supply of cocoa from Côte d'Ivoire and Ghana.**

  Chocolate companies depend on the supply of cocoa from Côte d'Ivoire and Ghana, at least until substitute producer regions can make up for potential production decreases in these countries and satisfy global demand. Without increasing smallholder productivity, a production bottleneck in West Africa remains a concern if disease, tree-age, and climatic impacts are left unresolved. Forecasts of a future cocoa shortage represent concerns for the sector.[88, 89, 90]

- **Development finance institutions and donor governments are ready to support a transition toward sustainable practices in the West African cocoa sector.**

  Intervention in the struggling cocoa sector could set it on a sustainable growth course to reach the objectives of reducing rural poverty while also achieving climate-change mitigation and adaptation goals. The World Bank Carbon Fund is contributing $50 million to Ghana through the Forest Carbon Partnership Facility program *Ghana Cocoa Forest REDD+ Programme*, in which sustainable cocoa is an integral part of emission reduction plans.[91] Furthermore, multilateral institutions like the IFC are actively discussing the possibility of a dedicated cocoa R&R Fund.

- **Private investors are becoming increasingly interested in the land sector**, **typified by the development of specialized funds and commitments to initiatives such as the Bonn Challenge.**

  Cote d'Ivoire and Ghana have independently committed to a total of 7 million hectares of forest landscape restoration by 2030, and mobilizing private capital toward cocoa agroforestry contributes to fulfilling those commitments. The investment case for the cocoa sector in both countries needs to be strengthened and adequate investment and operation vehicles set up to tap into the financing potential of the private sector.

4. Elements of Integrated Support Packages for Smallholders

To increase smallholder productivity while protecting remaining forests, cooperation between private and public sectors is essential.

Smallholders need increased access to finance, capacity, and technology if they are to successfully transition to CSC practices. Through climate-suitability assessments, governments could help smallholders develop plans to rehabilitate and bring resilience to their plantations. Inputs that increase yields and farm resilience, regular pest and disease control, and farm-level financial management could boost cocoa productivity, increase smallholder incomes, and expand tree cover.

4.1. Areas of Support

Throughout the lifecycle of climate-smart interventions, smallholders require integrated support in five areas (**see Table 1**). The identified areas of support are described in further detail in this section and include an initial climate-suitability assessment, the identification of climate-smart interventions, the determination of suitable rehabilitation and renovation techniques, the selection of pest- and disease-control measures, and assistance with accessing and managing finance.

TABLE 1: Five key support areas

Support Areas	Ongoing Challenges	Solutions/Benefits
KEY AREA: **Climate Suitability Assessment**	• Regional climate and cocoa suitability models exist, but they are not yet widely applied during land-use planning • Growing awareness of the climate risk and need for a diversification in the cocoa sector is not translated into action	• National governments identify the regional suitability for cocoa production in the long-term to inform national land-use planning • Governments and smallholders benefit from information on regional-specific climate adaptation needs
KEY AREA: **Climate-smart Interventions**	• Since CSC was only recently identified as a priority at the government-level, awareness of CSC at the farm-level is low • There is continued disagreement on technical aspects of CSC (including agroforestry and the optimum level of shade) and lack of CSC-specific training • Practitioners and smallholders lack necessary tree seedlings for diverse agroforestry and shade systems	• Stakeholders agree on a set of CSC measures with clear benefits to farmers • Standard training and support can be offered to smallholders on agroforestry measures, shade management, and appropriate fertilization • Must be coupled with smallholders access to affordable and diverse tree seedlings

KEY AREA: **R&R Technique Selection**	• The majority of farmers do not receive support in assessing R&R needs, and existing support programs focus on short-term needs • There is low coordination on where to prioritize R&R, with current efforts consisting largely of isolated R&R needs assessments at the farm-level	• Smallholders benefit by having better information on the future suitability of their land for cocoa production to make more informed decisions on whether to: invest in cocoa, diversify crops/income, and/or transition to non-cocoa crops • Combined with R&R support to deliver ongoing support from the initial assessment stage, implementation, and in plantation maintenance
KEY AREA: **Pest & Disease Control**	• The response to CSSVD is relatively slow, and efforts generally prioritize reactive measures to deal with outbreaks as opposed to preventative measures • Training on effective disease prevention is insufficient • The timing and frequency for spraying farms is inadequate	• Smallholders benefit from training on disease prevention and access to regular spraying for pests and diseases is critical • Should be coupled with support for smallholders in selecting and installing the best species for tree protection barriers to prevent CSSVD transmission • Evaluate the potential of new service delivery models such as group spraying and area-based interventions to reach more farmers and achieve economies of scale
KEY AREA: **Financial Access & Management**	• Smallholders lack personal financial planning support and many are financially illiterate • There is limited availability of new credit delivery tools, and those credit products that are available are ill-suited to match R&R realities	• Smallholders can make more informed decisions after an assessment of their finance needs including how to mitigate short-term income loss from R&R • Smallholders benefit from credit offerings based on different R&R implementation plans, and simple credit delivery and management tools

KEY AREA: Climate Suitability Assessment

National or regional climate-suitability assessments that identify vulnerabilities for cocoa per region would help extensions determine farm vulnerability to current and future climate change. The level of suitability would determine smallholders' best course of action from one of the following:

- In areas where suitability will remain the same or even increase, production of cocoa can continue as the primary crop.
- In areas where suitability is expected to decline, production of cocoa can continue, but farms should be diversified with other cash crops.
- In areas where suitability will significantly decline, transition out of cocoa production to other cash crops can occur.

The assessment would serve as a first step to the development of suitable long-term risk-reduction strategies to prepare smallholders and the industry for the future impacts of climate change. It would also allow them to choose the best adaptation methods moving forward, including an increase in shade and crop diversity through agroforestry practices.

KEY AREA: Climate-smart Interventions

Providing a suite of services to help smallholders transition to climate-smart cocoa production would prepare the way for an increase in yields while protecting natural ecosystems and using resources more efficiently. Smallholders would receive training in climate-smart interventions, including:

- The application of appropriate levels of fertilizer and compost
- Agroforestry and the optimal levels of shade trees on-farm
- The use of improved cocoa seedlings
- The consideration of future climatic changes in farm-management plans

Access to the right composition and quantity of fertilizers, coupled with improved cocoa trees, is crucial to increasing yields that help enable the realization of other climate-smart outcomes like zero-deforestation.[92, 93] In tandem with shade management, the right companion trees provide on-farm diversification and environmental services vital for livelihoods, food security, and climate resilience.[94, 95, 96, 97] Smallholders can use these shade trees to enhance their adaptation and resilience to climate change, pest and disease resistance, and diversification of income flows.

KEY AREA: R&R Techniques

Needs assessments for farm-level R&R would determine whether tree rehabilitation, renovation, or some combination is most suitable to a farm's condition. The assessment would also determine the appropriate amount of technical support, seedlings, agricultural inputs, and financing to deploy. The R&R assessment could be embedded in smallholder coaching, which results in a farm development plan. Such a plan would formulate farm needs with respect to R&R and other CSC agronomic practices for the near and medium terms.

The rehabilitation of cocoa trees involves better management and the improvement of the current tree stock, whereas renovation entails the removal of old and the planting of new cocoa trees (see Annex). Rehabilitation involves grafting and pruning, and the introduction of agricultural practices like pest and disease control, fertilizer management, and soil improvement, all of which are likely to increase existing trees' yield. Cocoa trees younger than 30 years old benefit most from rehabilitation, as the economic life of a cocoa tree is 30 to 40 years.[98] Rehabilitation requires fewer resources than renovation and involves less short-term income loss. However, it is possible only if the tree stock is of a suitable age and if there is no evidence of CSSVD. If CSSVD is present, replanting is necessary. Renovation comes with significant investment and opportunity costs. However, replanting sections or planting new trees underneath existing cocoa trees and then gradually thinning/removing the old trees can mitigate the severity of this loss.

To undertake R&R activities, smallholders require support in the following areas:

- Training in grafting techniques
- The provision of high-quality seedlings (locally grown and/or provided)
- The removal of diseased or moribund trees
- Land and soil preparation
- The planting of trees

KEY AREA: Pest & Disease Control

To prevent disease transmission, smallholders would benefit from the installation of tree-crop protection barriers around their cocoa farms and conventional control measures. Disease barriers are highly effective at reducing CSSVD infection rates.[99] Even though barrier plantings take away area from cocoa trees, they can also provide income as an extension of an agroforestry system (e.g., citrus fruits, oil palm, rubber).

Smallholders require training in pesticide application and monitoring. If smallholders could monitor tree health, they could prevent major pest and disease outbreaks.

KEY AREA: Financial Access & Management

Most smallholders lack access to finance and the requisite financial management expertise to effectively invest in or plan for R&R. Smallholders' capital is held mostly in physical assets, making it difficult to self-finance costly R&R or other farm investments. Some R&R interventions, like replanting, carry high initial costs and a loss of income for several years, further increasing the need for financial support. However, smallholders are often excluded from formal financial systems. Financial institutions have difficulty reaching smallholders in remote regions and perceive them as a risky prospect because smallholders often lack a financial history or collateral. Where credit is available, it often carries high interest rates and focuses only on short-term loans. Such credit is unsuitable to R&R and smallholders are reluctant to apply. Technology and mobile-based solutions hold great potential in better reaching smallholders, lowering transaction costs, creating digital credit histories, enhancing financial literacy, offering better interest rates due to reduced risk, and in offering financial products aside from loans, such as savings accounts and insurance.

It is important for smallholders to receive financial management training. Smallholders should have a solid understanding of the financial implication of R&R on their personal incomes and household finances. Only when access to finance is paired with sound financial management will R&R have a chance to result in long-term gains for smallholders and the sector at large. Financial training could form part of smallholder coaching that combines an assessment of R&R and agronomic needs with a strategy on how to finance the recommended action

4.2. Delivering Integrated Support

Smallholder support relies on a set of activities that support the five areas. Some of these activities are specific to one area; others cut across some or all areas (**see Figure 5**). Activities in these areas are complementary and build on each other. They are delivered by various actors and at different scales. Offered and supplied in coordination by public and private partners, they form the elements of integrated support packages that lead smallholders through the transition to CSC.

It is essential that these activities are embedded in broader efforts to strengthen forest and land governance. Absent, weak, or overlapping land titles; conflicting laws; and inadequate enforcement present major challenges to smallholders and companies seeking to invest in sustainable intensification. Several companies have reported that incoherent forest legislation and insufficient implementation of laws are barriers to meeting their zero-deforestation commitments. For instance, unclear or conflicting forest laws can prevent compliance with commitments to ensure legality in supply chains. Moreover, frequent changes in the law make compliance challenging and add an element of unpredictability that can inhibit decision-making for long-term investments.

Insecure land tenure is both an important underlying cause of deforestation and an impediment for investments in sustainable landscapes. Smallholders must prove title to their land to access credit and engage in long-term investments, such as sustainable forest management. Landholders strengthen their claim to land by clearing the forest and using the land "productively", thus there is greater risk of land-grabbing or speculation when tenure is unclear or insecure.

The long-term success of efforts to limit, and ultimately end, cocoa-driven deforestation depends on greater state efforts to protect standing forests and prevent their conversion. This requires increased law enforcement.

FIGURE 5: Potential Activities to Support Smallholder Needs

ACTIVITIES:	KEY SUPPORT AREAS: Climate Suitability Assessment	Climate-Smart Interventions	R&R Techniques	Pest & Disease Control	Financial Access & Management
Suitability Modeling and Decision Tools	●	—	—	—	—
Enhanced Training, Capacity Building, and Knowledge Sharing	—	●	●	●	●
Enhanced Access to Planting Material	—	●	●	●	—
Enhanced Access to Agricultural Inputs	—	●	●	●	—
Access Ecosystem Service Payments	—	●	—	—	●
Access to Market	—	●	●	—	●
Specilized Financial Products	—	—	●	—	●
Expanded Financial Services	—	—	●	—	●
Enhanced Enabling Environment (secure tenure, forest protection, law enforcement)	●	●	●	●	●

Training and Capacity Building

Purpose: Training and individual smallholder coaching enables smallholders to undertake CSC interventions, ensures reliable implementation, and contributes to results' longevity. Training and direct implementation assistance could cover the following areas:

- Farm needs assessment
- Planning/management training
- Pest and disease control
- Soil and quality management
- Agroforestry and shade systems
- Diversification
- Financial planning
- Smallholder coaching could result in individual farm development plans

Delivery: CSOs, value-chain companies, public entities, and partnerships between these stakeholders typically deliver support. **Box 5** provides examples for delivery of support by a CSO in Peru and an agro-industrial enterprise in Ghana.

Financing Sources: Public agencies could support extension agents, donor-funded grants to public agencies or CSOs, or company balance sheets can be used for corporate supply chains.

Key success factors: If combined with access to inputs, seedlings, markets, and finance, training is effective. Strong coordination between delivery agents is also essential. Training should be targeted to smallholders' needs and circumstances and complementary to clarifying land titles and improvements in governance.

Box 5: ***Case Study 1 – Expanding Access to Training through Integrated Support Models***

In **Peru,** to increase the competitiveness of the cocoa value chain, the international civil society organization **Technoserve** relies on dissemination through small demonstration plots and training modules of the productivity-enhancing "Synchronized Fertilization and Pruning Technique" known as TAPs. It also relies on the adoption of a "trainer-of-trainers" approach for regional government extension agents to teach in smallholder field schools. Over half of all trained smallholders adopted TAPs, increasing their yields by 38 percent and experiencing a 16.1 percent growth in income. Offering follow-up technical assistance, using additional delivery networks (i.e., cooperatives or producer organizations), improving the trainer-to-smallholder ratio, and increasing participation of female smallholders continue to strengthen the program.

Ecom Ghana, a subsidiary of Ecom Agro-industrial Corp, a global commodity trading and processing company, integrates smallholder support with other services. Through smallholder development centers, SMS (an Ecom subsidiary) provides lead smallholder training on good agricultural practices, manages nurseries, and runs demonstration farms. Cocoa is sourced from smallholders receiving the services, strengthening the traceability and sustainability of Ecom's supply chain. In addition to training and capacity building, the project builds boreholes and village resource centers for education services.

Enhanced Access to Planting Materials

Purpose: Access to appropriate quantity and quality of disease- and drought-resistant cocoa and other trees (for shade, diversification, or disease barriers) allows smallholders to renew tree stock, introduce shade, and diversify their income. Seedling disbursement could be complemented with efforts to increase the development of local nurseries.

Possible activities include:

- Identifying and developing new hybrids and clonal varieties through government-led research and development (R&D).
- Increasing the availability of seedlings through community nurseries and scaling up government-run nursery capacity with grafted materials and somatic embryogenesis.
- Diversifying nursery stock with shade trees and intercropping species.

Delivery: National research institutions already conduct R&D for adapted cocoa and other seedlings, which could be delivered through value-chain actors, government extension agents, or CSOs to producer organizations. **Box 6** gives examples of how seedlings were delivered to coffee and cocoa farms.

Financing sources: Public agencies could build or support extension agents, donor-funded grants to public agencies and CSOs, company balance sheets for corporate supply chains, or domestic financial institutions for credit.

Key success factors: Combining the provision of seedlings with technical support for training and capacity building will be essential. Long-term support and financing for community nurseries could be provided together with smallholder credit to purchase material unless provided in-kind or through government-funded entities.

Box 6: ***Case Study 2 – Enhanced Access to Seedlings***

After a La Roya (coffee rust) outbreak in Central America, a joint public-private initiative led by **Ecom subsidiary Exportadora Atlantic** focused on the renovation of diseased coffee plants. The project offered long-term financing to smallholders to purchase rust-resistant seedlings to replant and renovate their farms. This arrangement was made possible largely due to the involvement of the Inter-American Development Bank and the International Financial Corporation. Each provided investment capital, and the Global Agriculture and Food Security program (GAFSP) of the IFC provided a first-loss guarantee of up to 25% for the IFC and IDB. In addition, smallholders secured access to training on integrated pest and disease management, proper fertilizer application, and other farm management techniques.

Ecom Ghana promotes farm intercropping with bananas or other crops to lessen the impact of short-term loss of cocoa income in the initial years after replanting. Ecom SMS purchases initial seedlings and a smallholder development center manages the nursery. Select smallholders are trained in nursery management techniques for long-term community access to seedlings that are sold at a reduced price to cover the operating costs.

In the **Ghana Cocoa Rehabilitation and Intensification Program (CORIP), Solidaridad** facilitates access to hybrid cocoa varieties through a network of rural service centers. To double current yields, support is provided alongside good agricultural practices, training, and increased access to fertilizer and pesticides.

Enhanced access to agricultural inputs

Purpose: Smallholders should be able to improve soil fertility and carry out integrated pest and disease management.[100]

Delivery: Government extension services or commercial agents could deliver inputs. Value-chain companies could pair agricultural inputs with training and capacity-building services.

Financing Sources: Public agencies could support extension agents by providing input subsidies, partly or fully supported by donor grants or loans. Inputs are often delivered via private agents (**see Box 7**) for cash or credit.

Key Success Factors: To ensure correct application, the provision of inputs has to be combined with the provision of seedlings and training. Enhanced financial products or specialized financial services can improve smallholders' ability to purchase inputs when necessary.

Box 7: ***Case Study 3 – Accessing Agricultural Inputs***

In **Côte d'Ivoire, Cargill** works with input providers like Syngenta and Louis Dreyfus to sell subsidized input packages to smallholders undertaking R&R. Syngenta also provides training to Anader, the government extension service, and sells insecticides and pesticides to cooperatives. Louis Dreyfus sells fertilizer to cooperatives. Cargill sets aside a portion of cocoa sale proceeds to pay Syngenta and Louis Dreyfus in case a smallholder defaults in paying for these inputs.

In **Ecom Ghana**, smallholders make a down payment for access to crop protection packages and are enrolled in a repayment plan. In exchange for regular on-time payments, they receive in-kind subsidies, reduced prices for inputs, and seedlings.

Enhanced Market Access

Purpose: Secured offtake of cacao to favorable markets or access to higher-value markets motivates smallholders to implement CSC activities. Instruments that come with market access include:

- Formalized off-take agreements
- Streamlined certification support
- Increased prices or conditional premiums built into contracts

Delivery: CSOs and producer groups promote certification but cannot always guarantee access to new or better markets. Value-chain companies have the ability to offer contracts that ensure preferential market access. **Box 8** provides an example of how a CSO helped smallholders strengthen their market position, as well as an example of a private company that connected smallholders with cocoa buyers.

Financing sources: Offtake agreements are supported by company balance sheets; public agencies can provide premiums or certification support.

Key success factors: Strong producer organizations with bargaining powers and abilities, predictable benefits for smallholders, and the willingness of supply-chain companies to commit to future prices and governments to tolerate such agreements.

Box 8: ***Case Study 4 – Accessing Higher Value Markets***

Technoserve Peru, a civil society organization, directly motivates smallholders to access higher-value export markets by working with smallholder organizations to form "commercial blocks." This enables smallholder organizations to sell larger volumes and more directly access export markets. Technoserve also connects the strengthened producer organizations with social lenders that provide direct export financing to their product.

Mars Inc. has developed a service delivery program in Luwu, Indonesia. Through an integrated supply-chain "hub and spoke" model, Mars uses cocoa development centers and cocoa village centers to support smallholders connecting to buyers and accessing farm-input packages, trainings, and R&R. The company also purchases cocoa through this structure and plans to train certification agents to manage an internal control system.

Expanded Access to Financial Services

Purpose: Financial inclusion enables smallholders to access a wider variety of financial products. Innovative technologies and partnerships with local finance institutions are an avenue through which specialized financial products can be offered and financial planning can be enhanced.

Delivery: Financial services are often delivered through cooperatives and local finance organizations. Training on how to access loans and grants can be provided by CSOs.

Financing sources: Specialized financial institutions, including microfinance, social entrepreneurs, or FinTech companies may partner with CSOs (**see Box 9**). Supply-chain companies can combine financial services with off-take agreements.

Key success factors: The combination of access to financial products and support for financial planning is essential. Technology can accelerate the inclusion of smallholders into financial markets.

Box 9: ***Case Study 5 – Using Technology to Provide Access to Finance***

Advans – Branchless Banking. With support from Consultative Group to Assist the Poor, Advans piloted a branchless banking solution with cocoa smallholders in Côte d'Ivoire. Working with a local mobile network operator, the program allows smallholders to receive payments for their cocoa in a digital savings account.

Digital Cocoa Farm Development Plan: Mars, UTZ, and the Grameen Foundation. Pilots in Ghana and Indonesia are testing a digital app that creates tailored farm development plans based on onsite conditions. It provides up to seven years of data directly to smallholders, including monthly investments, activities, and cash flows.

5. Mobilizing and Delivering Finance for Smallholders

5.1. Financial Needs

We estimate that the approximate first-year renovation and rehabilitation costs per hectare of cocoa plantation to be $1,000 in Côte d'Ivoire and $500 in Ghana. The costs are highly dependent on conditions at the farm-level, and further research is needed to better understand the financing requirements and to design financial mechanisms that respond to the needs. Our estimates are conservative approximations of costs based on the range of cost estimates for R&R described in **Table 2**.[101] With an understanding that it is difficult to project long-term costs given the data constraints and economic uncertainties, we estimate annual maintenance costs for rehabilitation at $200 per hectare and for renovation at $500 per hectare. The deployment of R&R is gradual, and costs are difficult to estimate. The short-term establishment costs may be in the range of $2 billion, with the long-term accumulated costs of establishment and implementation around $20 billion.[102] Additional finance will be needed to anchor R&R in broader CSC practices and support governance reform, land titling, and law enforcement.

TABLE 2: Estimated R&R Costs

There is little standardization in approach to R&R techniques or valuation of potential costs. This is indicative of the need for research on the farm-level costs and benefits and R&R's impact on smallholder income.

Cost per hectare (annual after Y1)	Assumptions (time frame, intervention, etc.)
$3,000 - $5,000[103]	R&R; 1-year; incl. labor, inputs, seedlings, tools.
$2,500 ($500)[104]	Renovate; 1-year upfront costs; gradual approach to replanting.
$1,500 ($200)[105]	Rehab; 1-year upfront costs.
$333 – $1,333[106]	R&R, 70/30 split renovate/rehab; total over phased 2-5-year replanting schedule; incl. labor, inputs, plant materials, GAPs training, and certification costs.
$870 – $968[107]	Renovate; 100% in 1-year; fixed labor costs; no additional GAPs included.
$635[108]	R&R; assumed 50/50 split renovate/rehab; constant 4-year cost; applied to certified farms.

Notes:
a. Grundmann & Saccucci, 2016.
b. Sustainable Trade Initiative & Dalberg, 2015.
c. Ibid.
d. Buckles & Roy, 2013.
e. Aidenvironment, NewForesight and Initernational Institute for Environment and Development, 2015,a&b
f. Rainforest Alliance, AlterFin, & ResponsAbility "R&R Finance Pilot Project, Côte d'Ivoire, 2016-ongoing," 2016. https://www.rainforest-alliance.org/business/sites/default/files/site-documents/news/documents/rr-finance-pilotproject-email-web.html

Implementing R&R on 200,000 hectares across both countries would require an initial investment of roughly $150 million. This hectare target, assuming a 50/50 split between renovation and rehabilitation, is slightly below stated government targets for R&R.[109] Over the next decade, R&R on all cocoa areas identified as needing it could follow. Such a gradual roll out of R&R programs would allow for building capacities and reliance on early models and successes that showcase the benefits of intensification. The gradual approach is also more conducive to farm-level conditions, where partial replanting over several years can minimize the initial loss of smallholder income after undergoing renovation.

Public funds in Côte d'Ivoire and Ghana are insufficient to provide the financing required. International support and private investment is essential to supporting R&R implementation. However, considering the risks involved in financing smallholder R&R, private capital is unlikely to be deployed without tools that reduce risks.

5.2. Provision of Finance

Access to finance for CSC depends on the successful mobilization of public and private capital; the management and coordination of finance; and the establishment of effective deployment mechanisms.

Mobilizing Public and Private Capital

Public and private capital needs to be mobilized from a range of stakeholders, including development finance institutions and donor countries, producer-country governments, donor/philanthropic sources, international and domestic financial institutions, cocoa value-chain companies, and cooperatives. The types and magnitude of funds will depend on the expected benefits and risk tolerance of each institution. The types of financing available include reinvested cocoa revenue, grants, and investment capital.

- **Reinvested cocoa revenue**: Producer-country governments and cocoa companies generate revenue from cocoa production. Governments invest a portion of this back into farm support and extension operations. Cocoa companies can also expand or strengthen their smallholder support services.
- **Grants*:*** Development finance institutions and donor countries may be willing to provide grants to support interventions to secure CSC production. This type of capital can be channeled into technical assistance facilities to offer training and capacity building, building pipelines for R&R financing, and the creation of co-benefits like reduced smallholder poverty.
- **Investment capital*:*** Several types of stakeholders can provide investment capital in the form of commercial or concessional finance. Public and private finance can be blended to meet different risk and return expectations and increase the amount of capital available for R&R. Most private investors consider R&R a risky investment proposition. Their participation is likely to be contingent on strong risk-mitigation instruments provided by public finance institutions and reliable technical assistance mechanisms.

The successful implementation of integrated support depends on the delivery of a suite of services, alignment of interests, and full support of all relevant public and private stakeholders. It is essential that smallholders and cooperatives receive coordinated support from supply-chain companies and governments. CSOs and donor agencies can help to facilitate such coordination. Private investors can help to spur this process and accelerate and scale action. The different actors, types of finance they may provide, and targeted support activities are summarized in **Table 3**.

Coordination with government extension services is key. Government extension services can provide valuable resources. They need to be strengthened to leverage provision of agricultural inputs and seedlings, as well as to ensure coordinated and long-term smallholder support. If government resources are insufficient to provide adequate seedlings, companies and cooperatives may seek authorization to develop own nurseries and partner with agricultural input providers for rapid R&R implementation.

TABLE 3: Sources of Finance for Cocoa R&R

Source of Finance	Type of Finance	Investment / Support
Development finance institutions & donor agencies	Grants	• Training and capacity building • R&R-pipeline building • Payment for Ecosystem Services and CSC results
Stumping/coppicing	Investment	De-risk and leverage private capital through: • Guarantees • First-loss capital
Producer-country governments	Reinvested cocoa revenues, channeled finance	• Cocoa-suitability mapping and prioritization • Training and capacity building (extension) • Enhanced access to seedlings, fertilizer, and other agricultural inputs • Payment for ecosystem services and CSC Results
	National budget	Enabling environment (improved tenure, monitoring, enforcement, education)
Donor/philanthropic/ NGOs	Grants	• Training and capacity building (extension) • R&R assessment and pipeline building
	Concessional loans, guarantees, and insurance products	• Patient capital to leverage commercial finance
International financial institutions	Investment into R&R funds	• Farmer credit for R&R investments via domestic financial institutions, NGOs, or cooperatives • Training to local financial institutions
Domestic financial institutions	Rural credit, channeled finance (grants, credit products, insurance and guarantees)	• Farmer credit for R&R investments • Financial literacy training to farmers • Management of credit for Companies/cooperatives
Cocoa value chain companies	Balance-sheet investments, reinvested revenues	• Company extension services • Enhanced access to seedlings • Enhanced access to fertilizer • Farmer credit for R&R investments • Offtake commitment
Cooperatives	Cooperative own resources or channeled finance	• Enhanced access to seedlings • Enhanced access to fertilizer • Farmer credit • Offtake commitment

Management of Funds

Funds must be pooled to ensure that the full suite of CSC support packages is financed. R&R requires significant investments by smallholders who are currently not able to mobilize the required capital and endure the loss of income associated with R&R activities. Funding for these activities requires that smallholders have credit, transition support that covers loss of income, and insurance or guarantee products. Additional funds are required to support improvements in capacity and governance that fall outside the immediate focus of R&R financing partnerships or an R&R fund but would be crucial in underpinning the desired outcomes**.** Dedicated R&R programs could help coordinate the various activities and sources of finance at the program level.

Preparatory CSC activities, including climate-suitability assessments, crop diversification, or tenure reform, among others, could be financed by sectoral support loans to governments and grants from CSOs or donor agencies. Producer countries may support programs to aggregate smallholders and deliver training and support. Governments, development financial institutions, and donors may provide financial resources for climate modeling technology, decision-making tools, and other types of support for landscape planning along climate suitability measures. Development financial institutions and donor governments could provide results-based climate finance to ensure sustainability of programs in the medium term. Private financing from company balance-sheets could finance certification, subsidiary company technologies, or traceability and monitoring systems and technologies.

Funding for R&R implementation could be mobilized via individual partnerships for CSC implementation or financing from a dedicated R&R fund. Since it is unlikely that a single option will cover the entire financing gap, it is probable that in the near-term, both options will be pursued in parallel:

- **Financial institutions or impact investors may directly invest in cocoa projects and programs that are managed by local companies, cooperatives, or financial institutions (see Figure 6).**

  This model follows existing partnerships between companies and one or more financial institutions. However, in order to scale financing, investments have to be de-risked by direct public subsidies, insurance, or guarantee products. Co-investment and technical assistance facilities may further attract finance. This would rely on governments and development finance institutions to scale up existing and develop new risk-mitigation instruments to attract investors with traditionally lower risk tolerances.

  Additionally, grants may have to be made available to help develop a pipeline of investment-ready programs. This approach has the advantage that successful investment models in the cocoa and other sectors can be leveraged (e.g., supply-chain companies in partnerships with patient capital investors, backed by strong risk-mitigation instruments from donors and explicit support from local governments). The disadvantage is that this approach will likely suffer from the same shortcomings experienced to date, namely a lack of coordination at the national level and of coherence among various programs, challenges reaching scale, and the absence of an investment-ready pipeline.
- **A dedicated R&R fund could act as a new funding facility (see Figure 7).**

  A dedicated R&R fund could blend public and private capital, which would channel investment through local partners to smallholders. Such a fund would have the advantages of aligning public and private interests behind a common set of goals and investment criteria and providing a go-to funding window for companies, cooperatives, and local financial institutions. This could be more efficient than building individual financing partnerships

  An R&R fund could also serve as a focal point for stakeholders to demonstrate their ongoing commitment and foster the long-term coordination required for R&R and CSC implementation. Partners may contribute financially to the fund or commit to supporting complementary CSC activities. Examples include governments pledging to support extension services or nurseries and supply-chain companies pledging to preferentially source cocoa from CSC farms. Challenges include the potentially complex process and transaction costs of aligning actors behind a new funding vehicle and have them pledge their contributions and support.

The two approaches could be pursued in stages: To achieve quick wins in the short-term, development finance institutions and donors could support the development of strategic R&R partnerships between companies and financial institutions, making available strong risk-mitigation instruments to accelerate action. The success in these initial programs would demonstrate a justification for crowding-in further investors and would potentially increase interest in the dedicated R&R fund.

FIGURE 6: Example Financial Structures for R&R

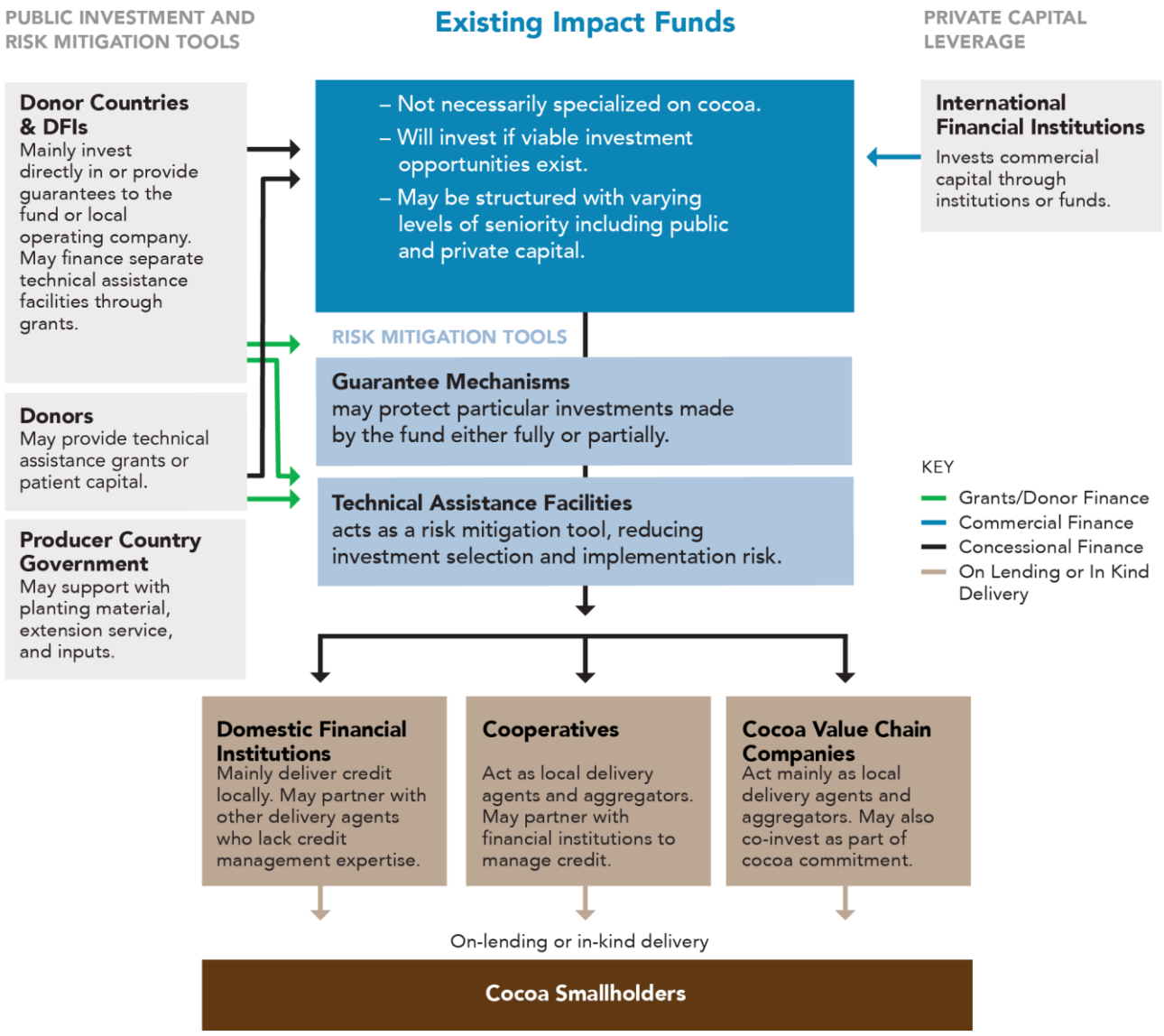
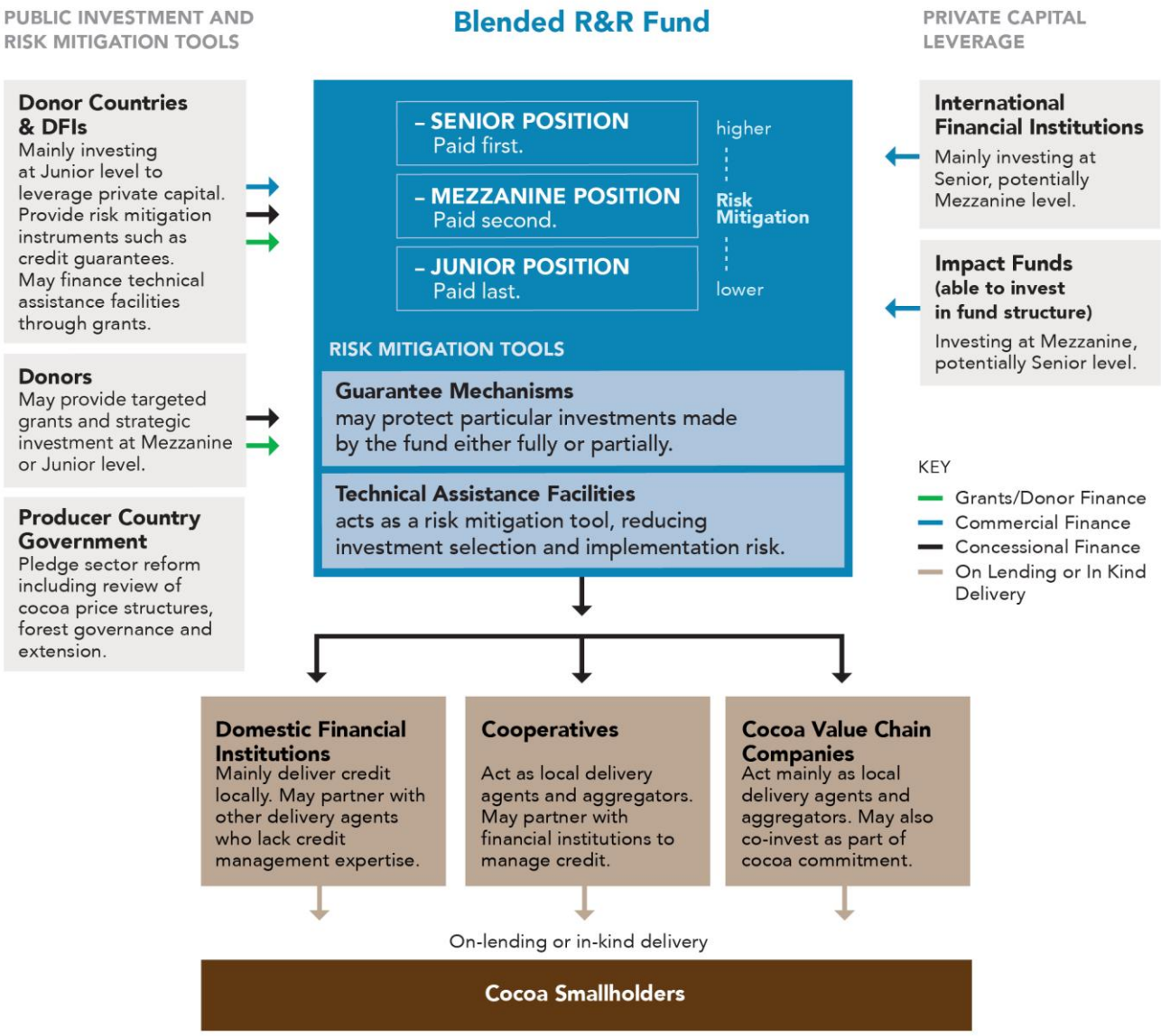


FIGURE 7: **Example for a New Blended Finance Fund**



Effective Deployment

The deployment of resources to smallholders requires strong delivery agents. Qualified agents include companies with an interest in improving productivity and sustainability among their supplier base, cocoa cooperatives, and local financial institutions. Given existing producer networks, companies and cooperatives are crucial to quickly deliver financial and other resources. Financial institutions can be valuable partners in the management of credit for companies and cooperatives and help enhance smallholders' financial literacy. Such partnerships may pave the way for financial inclusion and open the door to the delivery of more credit directly from banks to smallholders in the future.

Resources can be deployed either in cash or in kind. Provision of credit that is, in turn, used to procure inputs and services would have to be carefully managed. Credit would form part of the integrated support that links finance to the provision of fertilizer, seedlings, and extension services. A portion of the support may be delivered in kind and cooperatives may have to provide hands-on assistance in resource application to ensure its proper management and results. Repayment of credits could be linked to the successful implementation of R&R activities and cocoa income.

Effective deployment of finance to smallholders would have to take into account the special vulnerability and constraints of smallholders. The financing offered would have to match the agronomic realities and investment horizon of smallholders. Products that de-risk credit for smallholders would integrate the following tools to make them attractive for smallholders:

- **Adjusted interest rates**, **extended repayment periods, and grace periods** to account for the initial phase of R&R in which little or no income is generated.
- **Alternative collateralization** based on past sales data and off-take agreements, or via peer-to-peer lending approaches.
- **Noncash repayment options** negotiated in offtake agreements or built into contracts with supply chain partners (such as input companies).
- **Timing of disbursements** of loans to provide built-in financial management safeguards and help ensure increases capital flows to farm inputs.
- **Crop insurance products** that reduce risk for lenders and for smallholders who are vulnerable to variable weather patterns.

Finance may rely on a combination of concessional financing with risk-mitigation instruments like first-loss capital and credit guarantees primarily funded by multilateral development or donor funds. **Box 10** provides an example for a smallholder credit facility in Indonesia.

Box 10: ***Case Study 6 – Expanding Access to Finance***

Using state financing, the Indonesian **PTPNXII program** created a smallholder credit facility. Smallholders received an initial interest rate of 7 percent for the first 3.5 years of planting, which rose to 12.5 percent after they began to earn revenue. Loans could be repaid by charging 30 percent of smallholder revenue. As part of the loan package, pre-financing was offered for the cost of labor and PTPNXIII signed an offtake agreement for the palm oil fruit to smallholders.

SwissContact offered financial literacy training (called "Good Financial Practices") to smallholders and staff in domestic financial institutions on how to structure financial products for cocoa smallholders. This arrangement succeeded with strategic guidance from the government that allowed smallholders to secure loans directly from financial institutions.

Root Capital's Coffee Farmer Resilience Initiative strengthened the microfinance-lending capabilities of producer organizations to on-lend to smallholders. This included assistance to design/manage internal credit funds for loan disbursement and uptake of mobile technology. Loans had seven-year tenures and two-year grace periods on repayment.

Through payments for ecosystem services (PES), investments in CSC can be made more attractive.[110] These payments can provide direct financial incentives for CSC interventions (e.g., an increase in tree cover in cocoa systems) or reward continued protection (carbon storage, pollination, water regulation, erosion control). Systems that reward ecosystem services can provide direct payment or deliver in-kind products (e.g., trees) and services (e.g., technical assistance) through government-led programs. Registered or non-registered carbon projects as well as corporate compensation programs aimed at increasing tree cover, some of which are CSO-implemented, provide examples of PES systems.

Finance could come from multilateral carbon payments, voluntary carbon market projects, CDM program activities, or new carbon finance programs under Article 6 of the Paris Agreement that provide international payments for ecosystem services. National environmental compensation or tax rebate schemes could also include PES components. Systems depend on a fair and transparent way to quantify environmental impact of an intervention as basis for payment of in-kind delivery. PES should also seek to ensure the longevity of results and avoid overly complex measurement or reporting requirements and delivery mechanisms. The demand for ecosystems services is often created through regulation (**see Box 11**).

Box 11: ***Case Study 7 – Costa Rica's Payment for Ecosystem Services***

In **Costa Rica's pioneering payments for ecosystem services (PES) scheme**, the national government compensates smallholders for their lands' ecosystem services. Payments are made from revenues from fuel and water taxes, and a few private transactions are available for companies (primarily hydroelectric plants) that wish to purchase certificates for ecosystem services with the funds used to pay the service provider.

Affordable credit has helped ensure the participation of small- and medium-sized enterprises. Several initiatives offer affordable credit and PES for various forest services. Agroforestry is one subcategory of payments. In 2012, annual payments were $0.43–$0.65 per tree, with 350–5,000 trees per hectare. This results in an annual value of $150–$3,250. The program is estimated to have led to the incorporation of 4.4 million trees into agroforestry systems.

6. Going Forward: An Action Agenda for Climate-Smart Cocoa

Climate-smart cocoa offers an opportunity – with R&R in many cases being a necessity – to reset a struggling sector toward sustainable growth.

To overcome capacity and financial barriers, stakeholders should rally behind a shared set of action items that guides their approaches towards increasing smallholder productivity and sustainability. Based on those action items, stakeholders could engage in defining integrated support packages. Such packages would have to respond to smallholder needs and be enabled via funding sources and vehicles geared toward smallholders.

To rapidly advance CSC intervention at scale, we propose that cocoa stakeholders focus on the following eight priority actions (**see Figure 8**). The actions build on each other and promote the alignment of interests, construction and delivery of integrated support packages, and mobilization and disbursement of finance.

PRIORITY ACTION 1:

Operationalize cocoa sector action plans

The next step to the agreed Frameworks for Action for Côte d'Ivoire and Ghana is to operationalize them through practical action plans. The Frameworks formulate a series of core commitments and comprehensive follow-up actions. The Cocoa and Forests Initiative has rallied broad multi-stakeholder support behind Frameworks for Action for both countries, which formed around three themes:

- Forest protection and restoration
- Sustainable production and smallholder livelihoods
- Community engagement and social inclusion

Governments and private companies are developing their own action plans and partnerships in line with the frameworks' goals. To meet the threefold objective of protecting forests, increasing productivity, and improving smallholders' livelihoods, CSC activities will be a critical part of the action plans. Action plans could refer to integrated technical and financial support packages for smallholders. These actor-specific action plans will provide the basis for coordinated efforts, dialogue, and the definition of support packages and joint implementation efforts through a landscape approach. The contributions of various actors are shown in **Table 4**.

TABLE 4: **Cocoa-Sector Actors' Contributions to Action Plans**

Actor	Potential contribution
Producer country governments and supply-chain companies	Convert Frameworks for Action into individual action plans
Donors/development finance institutions	Pledge support by defining financial/non-financial instruments to be utilized by partners from 2018 onwards; work w/ governments to identify financing activities and opportunities as defined by action plans

Civil Society Organizations	Support development of action plans; hold stakeholders accountable for environmental and social integrity

PRIORITY ACTION 2:

Agree on common operational principles and definitions

As a first step to align interests and interventions, a common set of operational definitions and guidelines is needed. A shared understanding of key concepts can form the base for focused discussion, prioritized action, and a more effective collaboration between partners. The non-governmental Accountability Framework[111] initiative seeks to provide definitions across all supply chains; it could be a useful starting point for an agreement on how the various concepts apply to the cocoa sector. Additional efforts could be undertaken for the cocoa sector to ensure that emerging action plans are developed to pursue coherent, complementary, and transparent objectives and coordinated activities, especially in regards to CSC. For example, stakeholders could to work toward a common understanding of the concepts of "deforestation-free" and "climate-smart" cocoa including agroforestry and reforestation.

Once definitions and guidelines are established, operational principles may include an allocation of roles and responsibilities among private and public partners. Operational principles capture the agreement among partners on how to implement the elements of the plans developed in the context of the Frameworks for Action. They refer to the agreed definitions and elaborate the concepts that form part of CSC, including the ultimate goals of increased productivity and zero-deforestation in the cocoa sector. The operational principles would include an agreement on a timeline to achieve the goals. Allocating roles to public and private partners would help to accelerate simultaneous and complementary action. The contributions of various actors are shown in **Table 5**.

TABLE 5: **Actors' Contributions to Establishing Common Definitions and Operational Principles**

Actor	Potential contribution
Producer country governments	Participate in the process of defining common principles/definitions and adopt operational principles
Supply-chain companies	World Cocoa Foundation can serve as platform for engagement/dialogue on developing principles and definitions; participate in the process and adopt operational principles
Civil Society Organizations	Share lessons from existing certification standards and frameworks

PRIORITY ACTION 3:

Establish multi-stakeholder engagement and action platforms

Institutional partnerships are necessary to coordinate smallholder support. To help operationalize the themes of smallholder productivity and community engagement in the Frameworks for Action, coordination platforms can facilitate dialogue among stakeholders and ensure coordination of the various sectors. The proposed platforms could build on experiences with public-private partnerships (PPPs) in Côte d'Ivoire and Ghana (**see Box 12**) but go beyond existing efforts by:

- Incorporating agreed upon definitions and operational principles (**Priority Action 2**)
- Defining a time-bound and location-specific, and prioritized CSC agenda, including R&R actions

The engagement and action platforms could be established as independent multi-stakeholder initiatives. Neutral management is recommended to promote a level playing field among actors and facilitate discussion about critical issues facing smallholders, including access to plant materials and input delivery systems, pricing and premiums, productivity goals, and land titles. The platforms could secure funding for CSC activities from donors or development banks. As with current PPPs, the managing institution could create a coordination unit that supports operations and facilitation of discussions and decision-making.

Action platforms could inform action at different governance levels. Dedicated cocoa support centers at the village or cooperative level may act as efficient delivery mechanisms of support (and potentially finance). The platforms could also help to coordinate activities between Cote d'Ivoire and Ghana and allow for an exchange of knowledge between the two countries.

The contributions of various actors are shown in **Table 6**.

Box 12: Public-Private Partnership Platforms in Côte d'Ivoire and Ghana

In Côte d'Ivoire and Ghana, several national-level public-private partnership (PPP) convening platforms operate to centralize policy dialogue, identify shared priorities, and leverage collective resources and investments. However, the current platforms lack full participation of stakeholder groups. Companies are commonly concerned that the PPPs are inefficiently managed, unresponsive, and too ingrained in the political/bureaucratic structure in the national governments.

In Ghana, the PPP comprises a national steering committee that institutionalizes research findings and facilitates programs, a plenary that coordinates the delivery of technical outputs to participants, and multiple subcommittees addressing sectoral technical issues. The Ghana PPP has effective feedback loops for technical information that could inform strategic operational changes for participants to adopt. However, the current PPPs do not function at their optimal capacity.

TABLE 6: Actors' Contributions in Establishing Engagement and Action Platforms

Actor	Potential contribution
Producer country governments	Commit to participate in platforms under a neutral management system/governance structure with stakeholder representatives
Donors/ development finance institutions	Commit to participate in platforms and make grants available along research and development needs as defined by platform strategy
Supply-chain companies	Commit to participate in platforms as the mechanism to coordinate implementation of action plans and to engage in pre-competitive cooperation with other companies in the sector
Civil Society Organizations	Support the process through facilitation and technical expertise

PRIORITY ACTION 4:

Develop integrated smallholder support packages

The engagement and action platforms could facilitate the programming of smallholder support packages. The defined support packages would assign clear roles and responsibilities among actors on how to deliver the agreed services. They would also include clear timelines and be transparent and public to enable CSOs to both assist and hold actors accountable toward their commitments. The actors in each region would then be responsible for building integrated support packages across the five support areas identified in Chapter 5.

The support packages would be location- and actor-specific and based on activities within the five support areas identified in Figure 1 (see Chapter 5). Priority regions could be identified through a climate-suitability assessment combined with a prioritization of areas that are CSSVD-infected and have a prevalence of moribund trees. Regional CSC and R&R programs would include an initial climate-suitability assessment, identification of climate-smart interventions at the farm level, determination of suitable rehabilitation and renovation techniques, selection of pest and disease control measures, and help in accessing and managing finance.

Support packages could be integrated in regional management plans. These could be based on pooled data on farm quality and maps and the current nursery capacity servicing the region. The actors most familiar with local farm conditions would take the lead on extension services, including R&R, CSC, pests and diseases, financial management, and the establishment of community tree nurseries in partnership with government extension officers. The contributions of various actors are shown in **Table 7**.

TABLE 7: **Actors' Contributions to Developing Support Packages**

Actor	Potential contribution
Producer country governments	Conduct regional climate suitability assessments to prioritize CSC and R&R interventions; assess and strengthen extension services; support technical assistance, research and development; evaluate where companies or NGOs may act as effective financing and/or delivery partners
Donors/development finance institutions	Provide additional grants for research/strategy development, i.e., climate suitability models, diversification, and transition strategies; engage in financial planning including by making funds available (grants or investments) to finance specific components and/or activities of the smallholder support package
Financial institutions	Indicate conditions necessary to provide further financial resources or to develop partnerships; use expertise to design engagement or programs to advance professionalization and financial literacy
Supply-chain companies	Assess supply-chain farms for CSC and R&R needs; analyze which package components can be provided from existing resources; provide clarity on circumstances in which companies can be a conduit for delivery
Civil Society Organizations	Support efforts through farmer training and technical expertise

PRIORITY ACTION 5:

Develop a financing strategy

A financing strategy is needed to define the right funding vehicle (individual partnerships or a dedicated R&R fund as illustrated in Figure 7 in Chapter 5) and secure commitments from funders. Such a strategy should take into account existing structures, institutional capacities, and the ability to mobilize and leverage finance. The operationalization of the Frameworks of Action can facilitate the discussions on such a fund. To achieve agreement on a strategy, the following actions are recommended:

- Assess and prioritize cocoa value-chain companies, cooperatives, and domestic financial institutions, according to their current smallholder reach, technical capacity, interest, and ability to receive and manage loans.
- Develop an initial pipeline of investment-ready projects and programs with interested and qualified intermediaries.
- Ensure the participation of development finance partners and donors to assess the scale of risk-mitigation capital that could be made available, and work to integrate any conditions that may be required within the fund's design.
- Identify and coordinate with potential investors to gauge financing commitments in opening and subsequent rounds.
- Hold ongoing dialogues with smallholder representatives and producer-country governments to develop complementary support programs and begin the process for any required policy reform.

In the context of designing a R&R fund, it is crucial to decide on a capital structure and a governance structure; including the selection of a fund manager; investment criteria (geographic prioritization, project selection); and exit strategies for the chosen vehicle.

The strategy could include a short-term approach that relies on existing structures and the mid-term development of a dedicated R&R fund. In the short-term, partnerships between individual companies, cooperatives, and investors, backed by risk-mitigation instruments, would allow for the deployment of funds without significant delay. Existing programs could be revised to both reflect common priorities and correspond to the integrated support packages. These efforts could also inform the ongoing dialogue on a dedicated R&R fund. The contributions of various actors are shown in **Table 8**.

TABLE 8: **Actors' Contributions to Developing a Financing Strategy**

Actor	Potential contribution
Producer country governments	Announce commitments made to CSC and R&R, including conditional and non-conditional financial commitments, such as reinvestment of cocoa revenue and priority areas for policy reform in the enabling environment
Donors/development finance institutions	Pledge to provide/leverage finance for CSC ad R&R through grants/investment; for partnership approach, devise de-risking instruments, advertise scaled-up finance; and work towards dedicated R&R fund or other instruments
Financial institutions	Pursue partnerships with companies and development finance institutions to develop investment structures for CSC and R&R; indicate conditions necessary to invest in these structures, local finance institutions could indicate necessary conditions to act as primary financial delivery agent

Supply-chain companies	Indicate additional resources (cash or in-kind) required for delivering proposed smallholder support packages directly or to cooperatives; evaluate options to as primary financial delivery agent

PRIORITY ACTION 6:

Deliver finance and support to smallholders

Companies and cooperatives with strong links with smallholders are well positioned to initiate early R&R programs. Such programs and their implementation would benefit from close coordination with governments and with the objectives and actions formulated in the Frameworks of Action. After smallholder training is initiated, early programs could rely on in-kind support to smallholders and management of the seedling supply and inputs via cooperatives.

Programs need to move toward implementation without further delay. Based on the action programs developed in the Frameworks for Action, coordination via the action and engagement platforms, formulation of support in integrated packages and an agreed-upon funding strategy, CSC activities could be implemented. Pilot programs could pioneer action while longer-term structures are put in place. Such programs can help to achieve alignment of interests among different stakeholders, essential for scaled-up programs.

Rural credit institutions would need support to develop financial services and systems to support smallholders in their efforts to transition to CSC. In the medium- and long-term, local financial institutions are best placed to offer smallholders credit and financial services. This includes the use of technology, such as mobile money, value-transfer services, mobile banking, and financial-literacy training. The latter would enable smallholders to directly apply for credit and manage farm finances independently. The contributions of various actors are shown in **Table 9**.

TABLE 9: **Actors' Contributions to Delivering Finance and Support**

Actor	Potential contribution
Producer country governments	Support components identified in priority action 4; explore feasibility of policy or regulatory change to improve enabling environment for investment; reallocate cocoa revenue to prioritized interventions
Donors/development finance institutions	Provide additional finance for technical assistance facilities; and make re-risking tools available
Financial institutions and investment funds	Provide finance and support finance delivery agents (cooperatives and companies) in financial management and risk mitigation strategies
Supply-chain companies	Put in place operational/management structures for scaling up support; with cooperatives, act as primary conduit for delivering finance to smallholders in short-term; identify strategic partnerships with financial institutions for long-term coordination
Civil Society Organizations	Provide training and technical assistance

PRIORITY ACTION 7:

Monitor impact and link to zero-deforestation agenda

Monitoring and evaluation systems are important tools to help programs grow stronger over time and to eliminate inefficiencies. Any of the proposed actions, as well as the programs' eventual success, depends on both the alignment of interests and ongoing cooperation between actors. Cooperative structures and institutions should be supported over time and the collaborative approaches proposed in this report should be institutionalized. It will be important to monitor progress on government-led enforcement of the commitments and actions on forest protection and restoration agreed upon in Cote d'Ivoire's and Ghana's Frameworks for Action, such as no further conversion of any forest land for cocoa production and the elimination of all cocoa production and sourcing in national parks and reserves. Furthermore, the collection and analysis of data on smallholder income, CSC and R&R costs, and ecosystem protection is valuable for monitoring production. A joint monitoring approach could enable the sharing of data among all relevant stakeholders.

Linking cocoa programs to zero-deforestation commitments and emission reduction programs would allow the programs to contribute to supply-chain commitments and government climate plans. Deforestation alerts could be linked to maps of cocoa farms to allow for a rapid response to deforestation. Companies could support full traceability of cocoa supply and community members could be recruited for on-the-ground monitoring of deforestation and other legal infractions. Partnerships with communities could be built through long-term commitments by governments, companies, and CSOs to improving productivity and livelihoods. The contributions of various actors are shown in **Table 10**.

TABLE 10: **Actors' Contributions to Monitoring Impact and Link to Zero-Deforestation**

Actor	Potential contribution
Producer country governments	Signal commitment and support of expanding mapping efforts and land use zoning; seek out partnerships with implementation partners such as NGOs for operationalizing monitoring tools and platforms
Donors/development finance institutions	Make additional funding available to develop monitoring systems; align reporting requirements with newly developed systems; assist in design and development of new systems
Financial institutions	Utilize expertise in monitoring and compliance to support implementation efforts; commit to full transparency on CSC and R&R financing; pledge to apply ESG (Environmental, Social, and Governance) criteria across portfolios
Supply-chain companies	Commit to full transparency, including data sharing, sourcing activities, and support provisions along a pre-competitive basis
Civil Society Organizations	Collect and share data; promote transparency through internet platforms

PRIORITY ACTION 8:

Strengthen governance

Efforts to reduce deforestation in cocoa supply chains benefit from strengthening forest governance. Strengthened policy, robust legal frameworks, and effective law enforcement are essential to achieve long-term CSC. Governments could benefit from designating and classifying cocoa production and protection areas for land use planning and by increasing institutional capacities and law enforcement. Clarifying land tenure and land titles is essential to motivate farm investments. While these measures are ultimately the responsibility of governments, companies can help by committing to ensure legal compliance in their supply chains.

Governments can be strengthened by support from international finance organizations and donor agencies, including through international climate finance and support for REDD+[112] implementation. Strengthening forest governance and land tenure is essential for long-term sustainable cocoa landscapes, but this is likely to require a longer-term effort and ongoing partnerships with donors that support governments' ongoing efforts. The contributions of various actors are shown in **Table 11**.

TABLE 11: **Actors' Contributions to Strengthening Governance**

Actor	Potential contribution
Producer country governments	Lead reform efforts in strengthening legal frameworks, enforcement, and policies in forest governance and legal tenure/land titles; designate and classify cocoa production and protection areas
Donors/development finance institutions	Explore potential for linking CSC and R&R activities to receive international climate finance or REDD+ payments; make grants available for capacity building
Financial institutions	Commit to forest protection commitments along previously determined CSC goals
Supply-chain companies	Lead reform efforts in strengthening legal frameworks, enforcement, and policies in forest governance and legal tenure/land titles; designate and classify cocoa production and protection areas
Civil Society Organizations	Explore potential for linking CSC and R&R activities to receive international climate finance or REDD+ payments; make grants available for capacity building

FIGURE 8: An action agenda for the cocoa sector

Driving Alignment

PRIORITY ACTION 1:
Operationalize Cocoa Sector Action Plans

- ☐ **Cover three-fold objectives** of forest protection, increasing production, and improving smallholders livelihoods through CSC and R&R
- ☐ **Engage in partnerships and ongoing dialogue** to identify support packages for joint implementation

PRIORITY ACTION 2:
Agree on Common Operational Principles / Definitions

- ☐ **Develop common definitions and principles** to enable understanding and collaboration, esp. on key terms
- ☐ **Utilize proven frameworks** but apply to cocoa
- ☐ **Allocate operational roles** across stakeholders

PRIORITY ACTION 3:
Establish Multi-Stakeholder Engagement / Action Platforms

- ☐ **Agree on and appoint third-party management**
- ☐ **Facilitate dialogue** among actors tocoordinate in the design of a platform
- ☐ **Determine time-bound and place-specific CSC agenda**

Integrating Smallholder Support

PRIORITY ACTION 4:
Develop Integrated Smallholder Support Packages

- ☐ **Develop integrated support** that is customizable to regional CSC and R&R priority program areas
- ☐ **Design support packages** that fully consider smallholder short- and long-term economic needs, food and nutritional security, and region's climatic constraints
- ☐ **Indicate the conditions** necessary for different actors to provide further technical or financial resources in delivery
- ☐ **Define clear roles and responsibilities**,set implementation timelines, and achieve operational transparency
- ☐ **Share data and maps**, and collaborate to increase nursery capacity to meet region's need

Mobilizing Finance

PRIORITY ACTION 5:
Develop a Financing Strategy

- ☐ **Choose a funding vehicle—** individual partnerships, dedicated R&R fund, or both
- ☐ **Design and define** capital and governance structure, investment criteria, and operational criteria

PRIORITY ACTION 6:
Deliver Finance and Support to Smallholders

- ☐ **Select or establish** institutions and mechanisms to channel finance to smallholders
- ☐ **Identify intermediaries** like cooperatives and traders for on-lending
- ☐ **Identify further needs for scaling results**
- ☐ **Offer risk mitigation tools** with DFIs or local financial providers
- ☐ **Offer / utilize technical assistance facility**
- ☐ **Train smallholders** in financial management to increase their financial stability

Enhancing the Enabling Environment

PRIORITY ACTION 7:
Monitor Impact and Link to Zero-Deforestation Commitments

- ☐ **Develop strong monitoring and evaluation frameworks** to improve partner coordination, identify and eliminate inefficiencies, and improve outcomes
- ☐ **Link cocoa programs to zero-deforestation commitments** to support company supply-chain commitments and national climate change plans

PRIORITY ACTION 8:
Strengthen Governance

- ☐ **Identify policy priorities** for addressing land and tree tenure
- ☐ **Strengthen forest protection**
- ☐ **Explore climate finance and REDD+ opportunities**
- ☐ **Strengthen law enforcement and legal frameworks**
- ☐ **Identify other cocoa market inefficiencies**

Annex

TABLE 12: Cocoa Rehabilitation Activities

Rehabilitation	Description	Why to choose a rehabilitation technique
Grafting	A horticultural technique to join parts from two or more plants to grow as a single plant. For example, the upper part of one plant can grow on the rootstock of another plant.	There are available healthy trees with healthy pods and healthy-looking seeds to use as rootstock. There is zero presence of CSSVD.
Stumping/coppicing	The complete removal of the majority of the main stem of a cocoa tree to encourage the regeneration of the canopy by chupon[113] growth.	A farmer chooses stumping in order to avoid the complete loss of an individual tree by selecting for chupons with rapid regrowth and the return to production of trees.[114]
Pruning	The thinning of branches and removal of old or dead stems to allow sunlight to reach the main branches and trunk of the cocoa tree, stimulating flowering and facilitating harvesting.[115]	The trees are still relatively young and productive There are diseased tree branches To promote efficient nutrient uptake and facilitate good structural formation in younger trees.

TABLE 13: Cocoa Renovation Activities

Renovation	Description	Why to choose a renovation method
Under-planting	The removal of some cocoa trees and the planting of new trees under the shade of old cocoa trees on an existing farm.	• Trees are older than 30 years • There is no presence of CSSVD • There is insufficient labor and finance for partial replanting • About half of the cocoa trees are unproductive
Partial replanting	Sections of old trees removed and replaced by new trees, and once a productive age, additional old trees removed and replaced.	• CSSVD is not a problem • There are no alternative sources of income for 3 years until new cocoa trees become productive
Complete replanting	The removal of all trees and replanting of the entire farm with new cocoa trees.	• CSSVD is present • Most trees are unproductive and too old for rehabilitation • Alternative sources of income available for multiple (2-4) years • The majority of trees are old and soil fertility is low

Endnotes

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[34] Asare, Rebecca, 2013.

[35] Bisseleua et al., 2013.

[36] These figures for area estimates and may not capture cases where renovation and rehabilitation overlap. A more detailed assessment is required to determine the extent of national R&R needs. There is also a lack of data on the total cocoa cultivation area in both countries, adding further uncertainty to the analysis.

[37] Ibid.

[38] Sustainable Trade Initiative & Dalberg, 2015.

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[47] Laderach et al.,2013.

[48] Personal communication with cocoa farmers in Ghana during the Cocoa and Forests Initiative 2nd Roundtable meeting (Kuapa Kokoo cooperative), July 25, 2017.

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[50] Schroth et al., 2016.

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government, private sector, and industry groups, that sets the annual farm-gate price. See Oomes & Tieben et al., 2016.

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[112] Reducing emissions from deforestation, forest degradation, sustainable forest management, the role of conservation, and the enhancement of forest carbon stocks, are activities forming part of an international incentive mechanism to reduce greenhouse gas emissions from forests.

[113] Chupons, or 'suckers,' are branches that grow at the base of trees.

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