



USAID
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PRODUCTIVE LANDSCAPES (PROLAND)

THE ROLE OF GOVERNMENTS IN MAKING CERTIFICATION
EFFECTIVE: A SYNTHESIS OF THE EVIDENCE AND A CASE
STUDY OF COCOA IN CÔTE D'IVOIRE



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As consumer demand for chocolate grows, the international cocoa industry is expanding production across the world's tropical regions. The smallholder cocoa plantations at the forefront of this expansion have caused significant tropic forest destruction, releasing carbon dioxide into the atmosphere and destroying habitat in the process. Private-sector associations and nongovernmental organizations (NGOs) have implemented certification schemes to reduce the deforestation caused by this expansion. Despite several empirically verified successes, systematic reviews find fundamental weaknesses in this approach, which does not consistently limit the conversion of forests to farms.

How can USAID collaborate with the private sector and governments to encourage and enable producers to cultivate cocoa exclusively on agricultural lands? Are there promising approaches based on the certification experience that can be used to prevent wholesale cocoa-driven forest loss, as occurred in Côte d'Ivoire? How can we prevent similar levels of deforestation in Liberia, the Democratic Republic of Congo, and other countries that have vast areas of at-risk forest? Using Côte d'Ivoire as an example, this case study summarizes recent research assessing certification, describes the major challenges of the approach, and identifies promising directions for curtailing cocoa-driven deforestation. It concludes by underscoring the essential role governments play in enabling certification to effectively mitigate deforestation.¹

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THE USE OF CERTIFICATION TO MITIGATE DEFORESTATION

Since the early 1990s, industry associations and NGOs have employed voluntary incentive programs to promote social and environmental objectives.² Such certification schemes take many forms, but all include offering benefits to producers and other value chain actors on the condition that they adhere to specific practices, or “standards.” Common incentives offered include price premiums, preferential market access, and agronomic training. Companies then market certified products as supporting principles associated with the standards, such as sustainable agriculture or fair-trading.

Certification Theory of Change

By offering value chain actors incentives to adopt specific behaviors, civil society and private sector partners can leverage transnational market forces to compensate for the weakness of local governmental regulation and achieve financial, social, and environmental objectives.

The approach has spread and is increasingly mainstreamed into agricultural commodity markets. By 2012, certified products that occupied niche markets prior to 2000 constituted reputable market segments. That year, the nine largest certified agricultural commodities had an average market share of 12 percent. Certification has grown even more rapidly in production. Crop area dedicated to certified agricultural commodities increased over 10 percent per year between 2000 and 2012 (Tayleur et al., 2017). Over the four years between 2008 and 2012 alone the area dedicated to standard-compliant

production more than tripled, rising from three to almost ten million hectares (Potts et al., 2014).³ By 2016, voluntary standards programs had certified the cocoa grown on approximately 23 percent of the

¹ The ProLand Sustainable Agriculture Case Studies illustrate strategies used to reduce deforestation caused by agricultural investments. Drawing on the most recent evidence-based research, the case studies capture insights and research-based findings relevant to USAID programming.

² Private sector actors also use certification to strengthen brands, improve consumer loyalty, reduce reputational risk, and increase sales and profits.

³ Based on of the eight commodities for which data are available: banana, cocoa, coffee, cotton, palm oil, soybeans, sugar, and tea.

world's cocoa crop area (Lernoud et al., 2018).⁴ Crop area dedicated to certified commodities has continued to expand, and for some crops dramatically.

Voluntary standards that support environmental principles, or “eco-certification,” typically include standards for some combination of organic or sustainable agriculture, natural resource conservation, and reduced deforestation. Standards designed to reduce deforestation usually focus on conserving primary forest and require that the commodity be produced on land converted to agriculture no more recently than a specified year (Stanley et al., 2015). Some eco-certification schemes also include standards that exclude incursion to other types of forest, in which case the standards vary widely among programs and are generally less constraining than those pertaining to primary forest. All 12 major agricultural crop certification programs require producers to meet legal obligations relating to protected areas, and most exclude incursions into primary forests. Only two (Rainforest Alliance and Proterra) prohibit all deforestation (Tayleur et al., 2017).

In 2015, more than 85 percent of programs used third parties to certify that standards were met.

– Lambin et al., 2018

⁴ Growth rates vary greatly by crop. While standards programs certify more and more coffee and cocoa, by 2016 the certified crop area for sugar cane and palm oil had begun to contract (Lernoud et al., 2018).

DOES AGRICULTURAL COMMODITY CERTIFICATION PREVENT DEFORESTATION?

Globally, between 2000 and 2012, certified cocoa palm oil and soy growing areas had greater tree cover loss than areas of uncertified production. This may indicate either the expansion of certification into recently deforested areas, or certification's inability to prevent deforestation (Tayleur et al., 2018).

Rigorous research has demonstrated that a small number of agricultural commodity schemes have been successful in attaining eco-certification objectives. A very small sub-set of these have effectively limited deforestation. A study of 2,600 coffee farms in Costa Rica found that certification resulted in farmer adoption of beneficial organic practices (Blackman & Naranjo, 2012). Equally rigorous research found Rainforest Alliance coffee certification to have reduced forest degradation in Ethiopia (Takahashi & Todo, 2017). Similarly, eco-certification in

Certification programs are “too sparsely used, weakly worded, and poorly enforced to reverse broader patterns of deforestation that plague agricultural commodity-driven economies”

– Van der Ven, Rothacker, & Cashore, 2018

Colombia's coffee landscapes enhanced tree cover and forest connectivity (Rueda, Thomas, & Lambin, 2015). However, meta-analysis of case studies of the relationship between certification and deforestation suggests these individual examples are outliers. Results vary by location and program, but the approach as currently implemented does not consistently prevent agricultural commodity value chains from driving deforestation (Kroeger, Bakhtary, Haupt, & Streck, 2017; Ruf & Varlet, 2017; Van der Ven, Rothacker, & Cashore, 2018; Lambin et al., 2018; Komives et al., 2018; Blackman, Goff, & Planter, 2018).⁵

The use of certification to address deforestation presents challenges common to all voluntary standards programs. Among the challenges, geographic coverage is fundamental. Programs do not directly influence the behavior of producers outside of their zone of influence, even in areas where programs are active. In addition, because participation is voluntary, it opens the door to selection bias. Programs attract producers who already meet standards, or who can meet them by making minimal changes in their practices, or who are most able to meet them because they are wealthy or have other advantages. In programs with deforestation standards, this choice skews participation toward farmers who already cultivate land cleared before the cut-off date. Their neighbors who farm recently cleared land simply do not participate, and because they are outside of the program's influence, they may continue to clear forest. As a result, the overall impact of the program on deforestation may be minimal.

The challenges of working in remote areas—common to commodity certification generally—may reinforce this gap in coverage. Weakness in “traceability” appears to be the most critical. Buyers are often unable to determine the exact origin of produce, creating a loophole for nonparticipating farmers to sell through certified neighbors. This local “leakage” not only undermines the incentive to participate but the higher price received by nonparticipating farmers may motivate them to produce more, and to

Findings from the USAID Lowering Emissions in Asia's Forests (LEAF) Program

Common design weaknesses of eco-certification programs:

- No definition of “forest”
- No geographic delineations
- No public reporting
- Weak chain of custody standards

See recommendations to address these in Stanley et al., 2015.

⁵ Recent research also calls into question the effectiveness of the approach in achieving socioeconomic objectives. Because limited demand for certified products often caps price premiums and the costs of inefficient relationships with buyers often dwarf program benefits, certification contributes little to household livelihoods (Oya et al., 2017; DeFries et al., 2017).

clear more forest to do so.⁶ In remote areas, programs also have trouble auditing and enforcing standards.

Nor have certification programs been able to leverage market forces as planned. Certified production has outpaced demand. By 2012, less than half—an average of 44 percent—of commodities produced as certified were sold as certified. Some commodity value chains have fallen even more out of balance. In

The Loss of Leverage

As the production of certified cocoa has outpaced demand, industry has offered producers fewer benefits and smaller price premiums. This has reduced rates of participation by new producers. Oversupply has diminished certification's power to leverage international markets (Van der Ven et al., 2018).

2012, 22 percent of cocoa produced was certified, while only 7 percent sold was labeled certified. Such a large percentage of produce enters the market as “conventional” in part due to the logistical challenges of coordinating production and purchases at the local level, but market strategy also plays a role.

Certification organizations have acted on the understanding that a proven supply must be demonstrated before putting a product on the market. Despite its potential strategic value, this oversupply has

lowered the price of certified products and reduced the price premiums and other benefits certification schemes offer producers to participate (Potts et al., 2014; Van der Ven et al., 2018).

⁶ In theory, certification programs may drive larger-scale leakage by constraining production through the enforcement of standards, thus displacing the production, and deforestation, to other regions of a country, or some cases to other countries (Lambin et al., 2018). We found no studies demonstrating that agricultural commodity certification causes this larger-scale leakage.

WHY CERTIFICATION HAS NOT STOPPED DEFORESTATION IN CÔTE D'IVOIRE

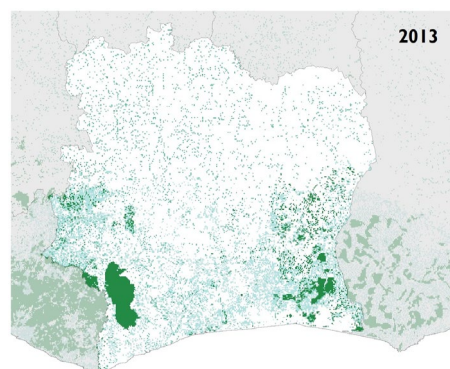
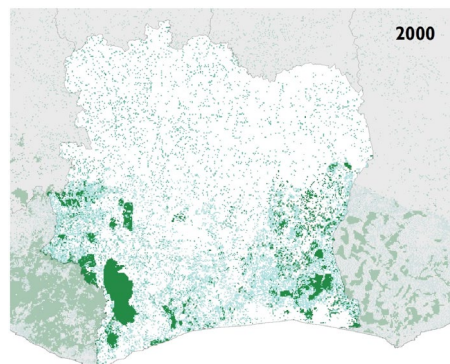
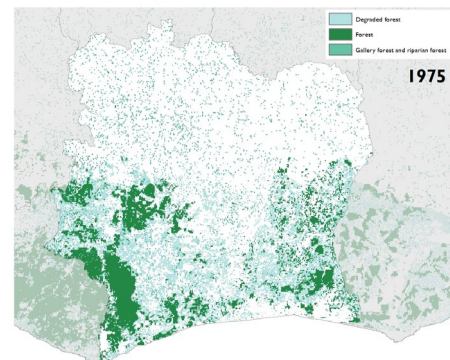
On the way to becoming the world's largest producer of cocoa, Côte d'Ivoire's smallholders converted its intact forest to a mix of degraded fallows and cocoa farms (Somarriba et al., 2012; Ruf & Varlet, 2017). Between 1990 and 2015, forest cover in the country dropped from 7.85 million hectares to 3.4 million hectares. Almost one million hectares of forest in protected areas disappeared during this period (UNDP, 2017). Cocoa cultivation expansion drove much of this deforestation. One analysis estimates that between 1990 and 2011, cocoa farms expanded from 1.6 million hectares to 2.5 million hectares, an average growth of 69,093 hectares per year, with 60 percent of this expansion resulting in the conversion of forest to agriculture (Kroeger et al., 2017).

The certification schemes deployed in Côte d'Ivoire were unable to prevent the cocoa industry from causing widescale deforestation. Even more troubling, recent research suggests that, rather than slowing forest loss, certification may have augmented it. Between 2000 and 2012 tree cover decreased more rapidly in areas where cocoa production was certified, than in areas where it was not certified (Tayleur, et al., 2018). Either certification schemes targeted the areas that were losing forest most rapidly, or they caused an increase in production and did not prevent deforestation correspondingly. Evidence provides four plausible reasons why certification failed to prevent deforestation in Côte d'Ivoire: 1) certification arrived after deforestation occurred; 2) some certification standards allowed for deforestation; 3) programs were poorly implemented; and 4) certification schemes contained gaps in coverage.

Research on the country's two largest certification programs, UTZ and Rainforest Alliance, illustrates each of these causes.⁷

LATE ARRIVAL

Rainforest Alliance first certified cocoa in the country in 2005; UTZ in 2008 (Ingram et al., 2017; Van der Ven et al., 2018). These were years of rapid expansion in cocoa production. In the years leading up to 2008 cocoa production increased to approximately twice the 1990–2005 average (Van der Ven et al., 2018). Tree cover loss also accelerated just before 2008, hitting 0.86 percent in that year, up from 0.32



⁷ UTZ merged with Rainforest Alliance in January 2018, and in 2019 paused certification in Côte d'Ivoire for one year as they revise the program. Available research predates this merger. For information on the merger, see: <https://www.rainforest-alliance.org/faqs/rainforest-utz-merger>; <https://utz.org/merger>; and <https://www.rainforest-alliance.org/articles/rainforest-alliance-launches-cocoa-assurance-plan-in-west-africa>.

percent in 2004 (Global Forest Watch).⁸ By the time these programs began operations, Côte d'Ivoire had already lost much of its forest. In 2000, 46 percent of the country was under tree cover, by 2010, only 35 percent (Global Forest Watch). Certified producers did clear forest for their farms, but they did so prior to the cut-off date. For example, over half of UTZ-certified producers cleared primary forest for their cocoa farms sometime before 2008 (UTZ, 2016; Ingram et al., 2017). Perversely, news of the arrival of these programs may have spurred some of this forest clearing; producers claim to have accelerated deforestation in anticipation of the UTZ certification program (Van der Ven et al., 2018).

LAX STANDARDS

The liberal UTZ land-use standards have probably done little to impede deforestation in Côte d'Ivoire. The program's conservation criteria apply to "High Conservation Value" areas and constrain the clearing exclusively of primary forest (UTZ, 2016).⁹ This limits the reach of the standard to a small portion of the country's forest. In recent decades, as much as 90 percent of Côte d'Ivoire's forests have been secondary natural regrowth. Almost all the country's forest falls outside of UTZ's High Conservation Value standard. While decidedly different from primary forest, the forest left uncovered by the standards—which producers cleared without losing certification—nevertheless provided important biodiverse habitat and stocked substantial amounts of carbon (Kroeger et al., 2017).

In contrast, the more stringent standards that Rainforest Alliance implements may be more effective. They stipulate that farmers not 1) degrade protected areas; 2) cultivate land that was of "High Conservation Value" after 2005; and 3) cultivate land that was forest in the five years prior to their certification. Rainforest Alliance standards define forests as native plants that have been growing for at least ten years and which generally resemble those of natural forest in the same area. They also require that (shade) tree canopy cover 30 percent of farms (Rainforest Alliance, 2017).

WEAK IMPLEMENTATION

Implementation challenges such as those that affect all certification programs may have also limited the protection certification schemes have provided Côte d'Ivoire's forests. While the standards are clear on paper, producers find them difficult to interpret and apply. For example, one study found evidence that

"The global challenge facing the cocoa sector today is how to increase cocoa production to meet growing demand, without expanding the area under cocoa."

– Vaast and Somarriba, 2014

producers do not understand how many shade trees they need to associate with their cocoa to meet the Rainforest Alliance 30 percent tree cover requirement; auditors infrequently check to confirm that the standard has been met; and authorities rarely apply sanctions when it is not. Weak monitoring also aggravates a system of poorly enforced traceability; value chain actors mix certified and uncertified produce at the storage, purchase, and transport

stages. This "local leakage" likely provides incentives to increase forest clearing, contributing to the loss of tree cover in certified cocoa production areas (Lemeilleur, N'Dao, & Ruf, 2015; Dumont et al., 2014; Kroeger et al., 2017; Tayleur et al., 2018; Ruf et al., nd).¹⁰

⁸ Tree cover in this case and all other Global Forest Watch citations, unless otherwise stated, is defined as all vegetation taller than five meters, with greater than 30 percent coverage. It may consist of natural forests, regrown forest, or plantations.

⁹ The third certification program that addresses biodiversity and deforestation in Cote d'Ivoire, Fair Trade, also takes this approach.

¹⁰ Reviewing the research on the implementation of UTZ programs in Côte d'Ivoire, Van der Ven et al., (2018) found little evidence of weak implementation; absence of evidence does not allow us to exclude the possibility.

LIMITED COVERAGE

Certification does not constrain deforestation by people who do not reside in the scheme's zone of influence. Nor does it apply to people within the zone of influence who choose not to participate. Rainforest Alliance and UTZ grew dramatically after their arrival. In 2016, UTZ certified over 40 percent of the crop area cultivated in cocoa, and Rainforest Alliance certified about 17 percent. Together, these two schemes created a level of coverage well above the world average for cocoa certification (Lernoud et al., 2018). This broad program reach nevertheless left a substantial portion of producers uncovered and still free to clear forest (Van der Ven et al., 2018). The small Rainforest Alliance presence was understandably incapable of preventing the doubling of national deforestation rates in the years just after its arrival. Even in zones of broad program influence, selection bias and leakage undercut program impact. Many smallholders simply choose to not seek certification and continue to clear forest. Nonparticipating farmers, as noted earlier, may have benefited from program price premiums by selling produce through neighbors (Carodenuto, 2019; Tayleur et al., 2018; Lemeilleur et al., 2015; Mol & Oosterveer, 2015; Ruf et al., nd).

WHAT IS THE FUTURE OF CERTIFICATION?

The approach needs to evolve. Studies have identified ways to improve the mechanics of certification schemes, as well as their design and implementation. Research also suggests that certification schemes often require support beyond the certification process itself. To adopt standards (of any type), value chain actors often need substantial assistance in business development, production techniques, finance, and marketing. Increasingly, certified producers receive such support from certification programs, government extension agents, producer groups, and other NGOs (Loconto et al., 2014; Ingram et al., 2017; Oya et al., 2017).

However, support to participants does not resolve the fundamental weakness in voluntary programs that allows nonparticipants to continue practices that do not follow standards. Research suggests that addressing this loophole requires implementation over a larger area than the individual producer's field or the producer group and that compliance must be enforced throughout the population of producers across a larger landscape (Tscharrntke et al., 2015; Ingram et al., 2017; Van der Ven et al., 2018).

What is a “Jurisdictional Approach”?

A form of integrated development at landscape scale, jurisdictional initiatives engage governments, typically at the sub-national level, and work within their administrative boundaries. They span sectors, integrate multiple objectives, and engage the participation and negotiate the needs of a broad range of stakeholders. Components typically include policy reform, land use planning, support to sustainable agricultural production, and market incentives.

Jurisdictional programs engage governments to achieve environmental, social, and economic objectives at the level of provinces, districts, or other landscapes defined by governmental boundaries. The approach can be combined with standards, such as those required for the certification of products. In this case, the standards apply at the level of the whole jurisdiction rather than at the level of a producer group or individual farmer. For example, all producers within a district would be eligible for certification, provided the district as a whole were to remain deforestation-free or expand conservation areas. Pilot programs have applied a jurisdictional approach to palm oil certification. These include Roundtable on Sustainable Palm Oil (RSPO) certification efforts in Sabah State, Malaysia, and Central Kalimantan, Indonesia (Earth Innovation Institute, 2016; Fishman, Oliveira, & Gamble 2017; Buchanan, et al., 2019).

Implementing standards in the context of jurisdictional programs has the potential to mitigate deforestation from agriculture but is a relatively new approach. The few such pilots in existence have not demonstrated effective designs and modes of implementation. The strength of the jurisdictional approach—that it recognizes the complex tradeoffs involved in increasing production while conserving natural resources—creates significant challenges in implementation. Still more of a framework than an implementation plan, the jurisdictional approach sets laudatory objectives, but so far has not presented solutions to the underlying challenges of effective policy reform, stakeholder engagement, certification impact, and preventing the incursion of agricultural intensification on forestland (Kroeger et al., 2017; Sembres et al., 2017; Meyer & Lujan, 2017).

More on the Jurisdictional Approach

[Jurisdictional Sustainability: A Primer for Practitioners](#)

[Tackling Deforestation Through A Jurisdictional Approach: Lessons From The Field](#)

[Exploring the Reality of the Jurisdictional Approach as a Tool to Achieve Sustainability Commitments in Palm Oil And Soy Supply Chains](#)

[The Commodities/Jurisdiction Approach](#)

Jurisdictional programs require rigorous monitoring and assessment to clarify how to design and implement this approach effectively.

GROWING GOVERNMENTAL ENGAGEMENT IN CERTIFICATION

While the jurisdictional approach scales up interventions and strengthens collaboration with governments, governments are increasingly developing and enforcing their own standards. One of the reasons nonprofits and private sector entities initially designed certification systems was to create standards of production that governments did not require (or sometimes did not effectively enforce) but that consumers cared about. However, research increasingly highlights the essential roles of national and local government in making certification programs effective. Certification, although fueled by private-sector incentives, is a form of “de facto co-governance” among the private sector, civil society, and government agents who bring “crucial resources, expertise, and legitimacy to the process” (Giessen, Burns, Sahide, & Wibowo, 2016).

Governments create, with varying degrees of success, the economic environment for the market systems in which certification works. They establish and maintain transportation networks and markets, and export infrastructure on which certification programs rely. They may also facilitate the collection and dissemination of market and weather information and monitor environmental impacts. Some governments support certification schemes directly through extension services that enable producer compliance. One study found that 70 percent of certified producers in forestry and marine sectors benefited from government support (Lambin & Thorlakson, 2018). In Côte d’Ivoire, government agencies, sometimes in collaboration with donor projects, have provided complementary support for certification through extension services and, through this support, have helped producers achieve socioeconomic and environmental standards (Ingram

“Certification organizations, and grinders/processors, traders, and manufacturers providing services, could engage with the government and CSOs to ensure...holistic, complementary, and aligned sector, value chain, and landscape scale interventions.”

– Ingram, van Rijn, Waarts, & Gilhuis, 2018

et al., 2017). In other cases, governments have supported certification schemes by creating fines to inhibit free-riding and, less frequently, offering tax benefits to producers who adopt standards (Giessen et al., 2016; Lambin & Thorlakson, 2018).

Governments also support the effectiveness of certification programs by structuring the institutional landscapes in which they take place. Certification programs require compliance with local laws and regulations as a basic standard. Research suggests that government regulatory quality supports certification schemes effectiveness; certification schemes tend to be more effective in contexts with more effective governmental regulation (Lambin et al., 2018). Regulation by governments differs from the incentive approach of non-state programs in its contrasting, and potentially complementary, command-and-control approach. The threat of government sanctions encourages industry self-regulation: governments both endorse and reinforce standards through the threat of stronger public regulation. In some cases, governments have become more deeply involved in

Trade Policy can Support Standards

EU procurement of certified timber has increased the market for such timber, contributed to the legitimacy of the programs supported, and fostered improvements in their governance (Gulbrandsen, 2014). In the cocoa sector, in 2010 the Netherlands made a commitment to source 100 percent sustainable cocoa by 2025 (Kroeger et al., 2017; Lernoud et al., 2018).

et al., 2017). In other cases, governments have supported certification schemes by creating fines to inhibit free-riding and, less frequently, offering tax benefits to producers who adopt standards (Giessen et al., 2016; Lambin & Thorlakson, 2018).

Potential Roles for Governments in Certification Programs

Private sector and civil society actors need government collaboration on:

- *Legality*: improving governance and law enforcement in the supply chain.
- *Transparency*: monitoring deforestation and evaluating the impact of incentives.
- *Integrated planning*: coordinating strategies regarding long-term trends in production, markets, and climate.
- *Scale*: implementing effective incentives and regulation and limiting leakage (Kroeger et al., 2017).

certification; Indonesia's government has played a role in initiating, running, and reshaping non-state certification schemes (Heilmayr & Lambin, 2016; Lambin et al., 2018; Lambin & Thorlakson, 2018; Giessen et al., 2016).

The most decisive role a government might take in supporting standards is to enforce them nationally, using regulatory power to produce a mandatory national state system. While some governments have collaborated with and supported non-state standards programs, they have also seen them as a competing regulatory system and a threat to sovereignty and have, in response, established their own legally mandated standards. Certification programs like the Forest Stewardship Council and RSPO face growing competition from state schemes. The governments of Argentina, Indonesia, and Malaysia have established palm oil certification programs, while Argentina, Indonesia, and Mexico now have mandatory timber standards (Giessen et al., 2016.; Lambin et al., 2018; Lambin & Thorlakson, 2018).

HOW CAN USAID SUPPORT THE APPLICATION OF STANDARDS?

The decades ahead may reveal that non-state certification has been a transitional step towards forest protection by governments themselves. In the meantime, the effectiveness of standards programs will depend on their relationship with governments, and on the effective collaboration of the many parties involved. Donors can work to strengthen the role of governments in providing an enabling environment; they can also support coordination between state and non-state systems. Non-state voluntary standards will strengthen public conservation policies by interacting with, rather than operating outside of, governmental efforts. International engagement will also be important to support effective standards and avoid a potential “race to the bottom” as state actors in countries less sensitive to conservation and equity concerns develop competing sets of standards more friendly to industry in order to capture markets (Cashore & Stone, 2012; Gulbrandsen, 2014; Lambin et al., 2018; Lambin & Thorlakson, 2018; Van der Ven et al., 2018; Byerlee & Rueda, 2015).

HOW WILL THE GOVERNMENT SUPPORT DEFORESTATION STANDARDS IN CÔTE D'IVOIRE?

The government of Côte d'Ivoire did not initially endorse non-state voluntary standards (Lemeilleur et al., 2015), but appears to have turned a corner in recent years; the government has increased collaboration with the international community and the world's leading cocoa associations and

Potential Policy Areas for Engagement to Support Certification

- Support legal reforms and enforcement.
- Reform land tenure without triggering more deforestation.
- Target marginal forest users.
- Broaden the (geographic) scope of interventions.
- Incentivize producers to participate in supply chain initiatives.
- Improve traceability and transparency.
- Step up demand-side measures (Lambin et al., 2018).

companies working to end deforestation in the cocoa supply chain. In 2012, it committed to zero deforestation from cocoa. In 2014, it passed the Forest Code, which targets reforestation (UNDP, 2017). It has since entered into the Cocoa and Forests Initiative in collaboration with the government of Ghana and 34 cocoa and chocolate companies. In 2019, the partners released action plans that detail specific actions to end cocoa-related deforestation using a jurisdictional approach (World Cocoa Foundation).

The government and its partners must now adhere to these commitments. They must invest in, and effectively enforce these policies to reverse, as much as possible, the fate of the country's forests (Carodenuto, 2019). To date, the government's role in the disappearance of the country's forests to the cocoa industry includes both action and inaction. Direct measures such as farmgate and input price subsidies spurred the expansion of the cocoa sector (Wessel & Quist-Wessel, 2015), while inaction has allowed large-scale unmanaged migration; continuation of traditional tenure practices that provided incentives to deforestation; and extension of unregulated formal and informal logging roads, as well as various practices in violation of the 2014 Forest Code (Ruf & Varlet, 2017).

In the end, no matter what the government does, certification has been "too little, too late" to conserve much of the forests of Côte d'Ivoire. As early as 2013, intact forest covered less than 3 percent of the country (Global Forest Watch).¹¹ Stemming deforestation in the country's remaining protected areas and allowing for forest regeneration elsewhere will require intensive government engagement, with resources well beyond those of current certification programs.¹²

In the coming decades, Côte d'Ivoire must focus on maintaining production as tree stocks age, soils degrade, and rising temperatures reduce suitability across the northern fringe of the cocoa belt. While Côte d'Ivoire's government and partners work to sustainably intensify production on existing farms, the country's forested neighbors must draw lessons and a warning from its experience. World demand for cocoa will increase, and new roads, political stability, and climate change will expose new areas of forest to profitable cocoa production. Perhaps the most important lesson Liberia, the Democratic Republic of Congo, and other countries with at-risk forests can draw is that governments play a critical role in creating the larger landscape, in which standards effectively preserve West Africa's tropical forests.

¹¹ Global Forest Watch. "Intact forest in Cote d'Ivoire." Accessed on 12/3/2018 from www.globalforestwatch.org. In this case, Global Forest Watch defines intact forest as "the overlap of tree cover [in 2010] with Intact Forest Landscapes [in 2013]." Tree cover is defined as all vegetation taller than 5 meters. Intact Forest Landscapes are "unbroken expanses of natural ecosystems."

¹² This would need to include support for a less harsh process to replace the reportedly arbitrary and coercive one employed by the government to date (Human Rights Watch, 2016).

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