

Protecting forests

Environmental and social
management systems
for forest-friendly
supply chains



Executive Summary

Identifying and scaling agriculture and food production systems that keep tropical forests intact while improving social conditions within commodity supply chains, has the potential to provide solutions to the climate, nature and societal challenges associated with these value chains (IIASA, 2020 [🔗](#)).

This report shares practical examples from Partnerships for Forests' (P4F) portfolio, showing how supply chain actors can design and implement environmental and social management systems (ESMSs). It provides actors with an idea of the relative costs of doing so, alongside the benefits of protecting forests, improving their risk management, business practices and relationships with other supply chain actors, and helping to navigate the increasing demand for stronger traceability and transparency.

Companies that are dependent on forest products or that have set ambitious commitments to end deforestation or achieve net zero emissions associated with their value chains, need to systematically manage environmental and social impacts within their operating procedures or sourcing practices. P4F has funded business models that showcase the potential for the private sector to protect forests through robust ESMSs. Its support has helped businesses to introduce or improve systems in three key areas: processes for managing suppliers and smallholders to participate in sustainable practices; traceability systems; and monitoring mechanisms.

1. Smallholder and supplier inclusion

Companies are reliant on smallholder and producer practices to deliver their no deforestation or sustainable sourcing commitments. This report highlights examples where P4F has helped to design systems that support supply chain actors to engage their suppliers more effectively and support smallholder producers to transition their production to deforestation and conversion-free, and be socially inclusive, improve productivity, diversify their income streams and access finance. Common to all is delivery of capacity-building services to smallholders and farming communities, through technical assistance such as training them to

restore surrounding forests and soils, and providing inputs that support them to adopt good agricultural practice (such as UGACOF in Uganda and Form in Ghana), manage land or access finance.

In a cocoa hotspot in Côte D'Ivoire, P4F is supporting the set up of a joint action platform—the Taï Forest Platform. P4F helped the facilitator, IMPACTUM, to develop instruments including a stakeholder engagement strategy,—establishing and securing agreement among members on common principles and objectives— a landscape monitoring framework and the architecture for a payment for ecosystem services (PES) mechanism to incentivise forest conservation, restoration and agroforestry, significantly reducing sourcing risks linked to regional deforestation. This shows how, particularly for downstream commodity companies that do not have close operations in the producing area, investing in landscape initiatives beyond the supply chain can form part of their risk management approach to address deforestation drivers and integrate smallholders in a sourcing landscape.

2. Traceability systems

Companies that source agricultural and forest commodity products need traceability and supply chain mapping processes to guarantee the environmental and social conditions where the product was grown. Cases from P4F's portfolio show that traceability systems provide actors with a number of benefits and help businesses to meet growing pressure for sustainable products from the cattle and non-timber forest products commodity contexts. The Conecta Platform provides large agribusiness in the Brazilian cattle sector with the tools to start mapping their entire supply chain, using a range of existing public source databases and engaging ranchers to voluntarily upload information. P4F has also supported a market access player in Indonesia, Mahorahora, to design a forest protection model that centres on the traceability of its products and creates a story around the farmers that grow arenga sugar palm.

Companies can use both of these systems to provide transparency to external audiences,

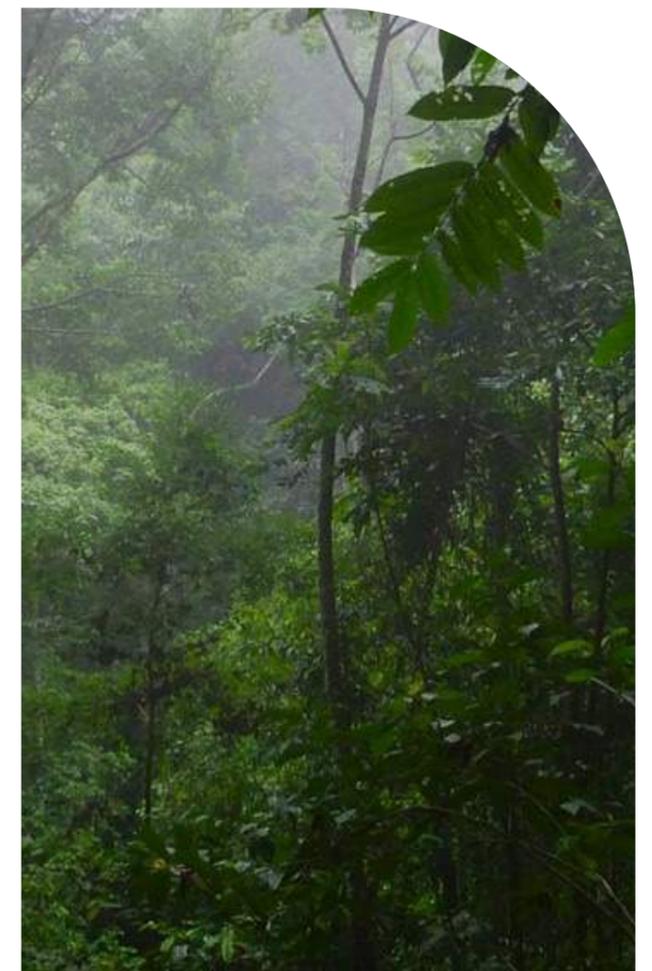
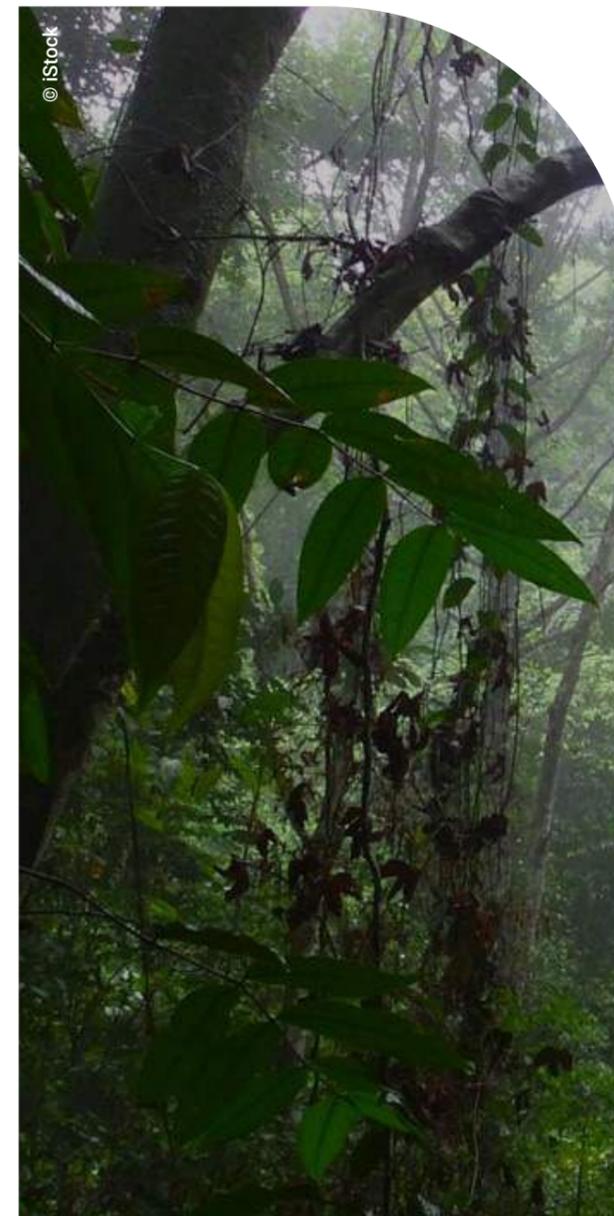
including consumers and investors, and to report on progress made against company production practices or sourcing commitments.

3. Monitoring and verification mechanisms

Monitoring systems are crucial tools for agricultural commodity companies with forest-risk exposure who want to measure and value their business's environmental and social impacts. P4F has helped partners to design and improve monitoring frameworks, activities and mechanisms that allow actors to detect deforestation and other material social risks in their supply chain, and to assess how they are performing against their goals. Examples that P4F has supported, such as the

Producing Right Platform in Brazil, show that there is a growing market for technology companies to design advanced monitoring solutions that suit multiple commodities and actors along the supply chain. Similarly, innovative technology and data analytics have been leveraged by land managers to deliver more time and cost-effective monitoring of deforestation and key biodiversity indicators in Indonesia's Meranti Harapan landscape.

Despite advances in remote technologies, monitoring typically requires some level of in-situ verification. In the Meranti Harapan landscape, land managers are joining forces to deliver joint patrols, with the help of aggregated data collection systems, to streamline information on incidences of encroachment and illegal logging, which helps prevention efforts to be more efficient and coordinated for all actors.





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Glossary

Agroforestry	Dynamic, ecologically based land-use management systems and technologies where agricultural land is integrated with planting crops in some form of spatial arrangement or temporal sequence to diversify and improve crop productivity, enhance water retention and soil fertility, among other social and economic benefits [FAO, 2015 ↗].
Downstream	Activities or actors that operate post-processing of raw agricultural or forest commodities, e.g., buyers, traders, manufacturers, brands, retailers.
Environmental and social management system (ESMS)	A systematic and ongoing approach to identifying, planning, managing, monitoring or reporting environmental and social risks and impacts of project activities, business operations etc.
Just transition	The principle of ensuring that justice, inclusion and equity play a central role in the transition to a more sustainable economy.
Regenerative agriculture	Agriculture that improves the soil content, enhances biodiversity and replenishes and restores the natural ecosystem.
Smallholder	Small-scale farmers, pastoralists, forest keepers, fishers who manage areas varying from less than one hectare to 10 hectares [FAO, 2013 ↗].
Supply chain	The network of individuals, organizations, resources, activities and technologies involved in the creation and sale of a product. A supply chain includes everything from the planting and growing of a product to the delivery of raw materials from the supplier to the producer through to its eventual delivery to the end user [Fern ↗].
Traceability	The ability to follow a product or its components through stages of the supply chain, e.g., production, processing, manufacturing, and distribution [Accountability Framework ↗].
Upstream	Activities or actors that that operate from production to processing of the raw agricultural commodity, e.g., farmers, producers, processors.



Introduction

Agricultural production is responsible for 90% of tropical deforestation [FAO, 2021] and is the primary driver of biodiversity loss [Chatham House and UNEP, 2021]. Sustainably managing land and tropical forest ecosystems could provide a cost-effective solution to the climate crisis, with the potential to provide up to 30% of the emissions reductions needed to stay within a 1.5°C trajectory [IPCC, 2022]. This means there is huge potential for businesses in the agriculture, forestry and land-use sectors to reduce the net loss of forests, so placing these businesses at the forefront of the transformations needed to achieve international climate and biodiversity goals.

Many companies have set targets to eliminate deforestation from their supply chains but have struggled to meet these ambitions. Despite the range of commitments in place, between 2015 and 2020 around ten million hectares of tropical forests were still being cleared and degraded each year [FAO, 2020].

Progress has been hampered by a number of factors. Firstly, there aren't enough companies taking action— only 40% of companies with the highest forest-risk exposure have a policy to reduce or eliminate deforestation from their supply chains [Global Canopy 500, 2023]. Secondly, for those that have made a commitment, implementation, monitoring and enforcement is often weak because of the voluntary nature of the commitments. Accountability mechanisms that cover voluntary commitments are also lacking. Finally, monitoring and verifying compliance is difficult due to the scale of most forest-commodity supply chains and the limitations of collecting these data from suppliers across the entire supply chain, which requires time, resources and specific expertise and tools.

The transformation needed by companies and governments should also be balanced with ensuring the people who rely on agriculture and forests for their livelihoods are not left behind. Approximately 2.5 billion people rely on agriculture and 1.6 billion rely on forests for their livelihoods [OECD; ISEAL Alliance, 2022]. Identifying and scaling changes to agriculture and food production systems that keep tropical forests intact, while improving the social conditions within commodity supply chains, has the

potential to provide solutions to the climate, nature and societal challenges associated with these value chains [IIASA 2020].

Setting forest-risk commodity supply chains up for long-term success

Forest-risk commodity supply chains are complex— commodities and forest products pass through producers, processors, traders, manufacturers and retailers before the final product reaches the consumer (see Figure 1). Actors at all levels need to adopt good environmental and social management practices that incentivise deforestation-free production systems, enable identification of where deforestation is occurring within supply chains and monitor the impacts of risk mitigation measures.

The risks and opportunities of introducing such systems are varied for actors at different levels of the supply chain. For example, producers and farmers would need to commit to not encroaching on forests or degraded land. In turn, companies that buy, trade, import, manufacture or sell commodities would need to adopt sourcing controls that ensure their supply is not linked to deforestation or social issues.

What are forest-risk commodities?

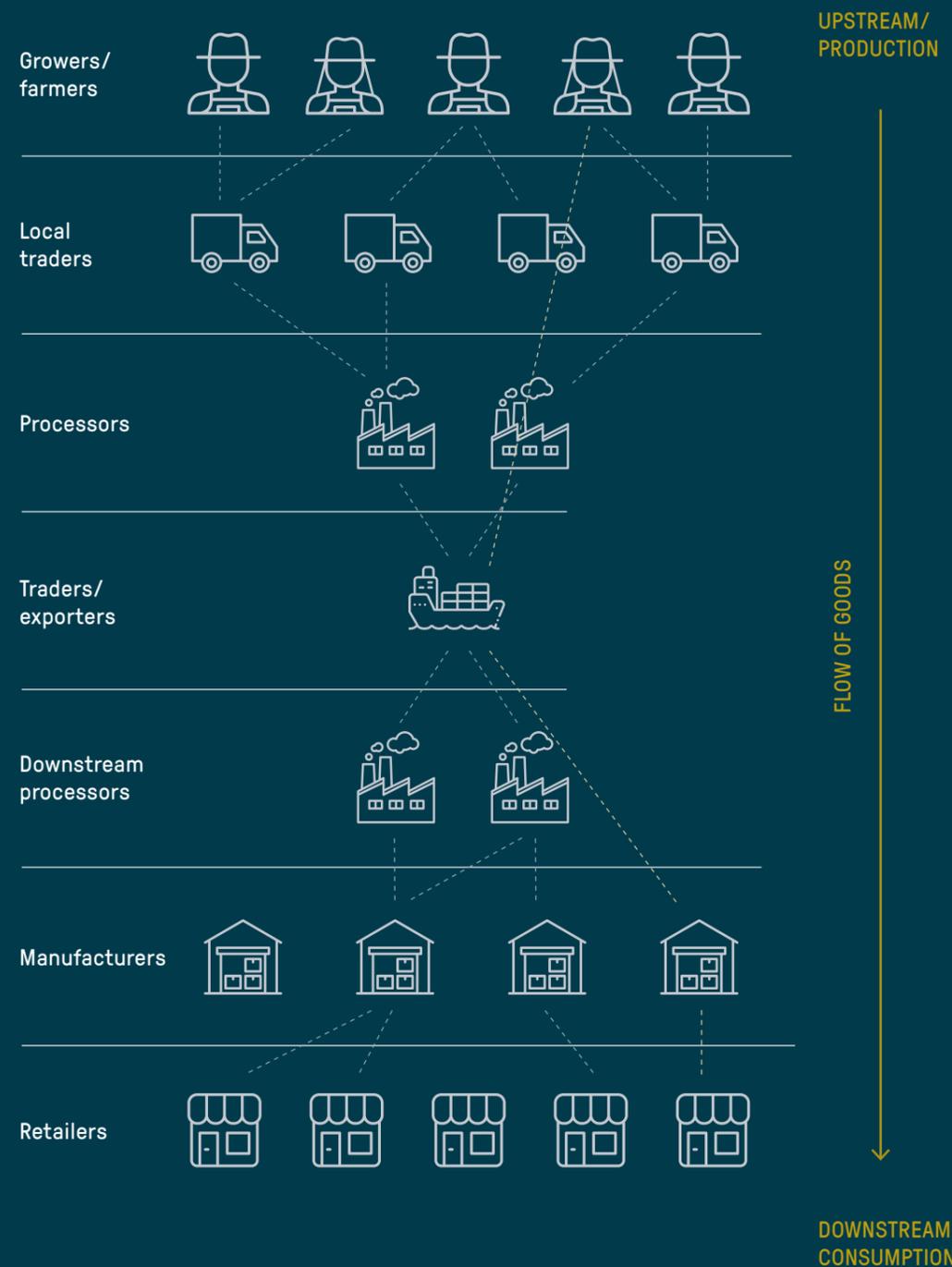
The agriculture and food systems sector is a major contributor to land use change, as tropical forest ecosystems are cleared to make way for agricultural crop production. The crops that are grown across the tropical forest belt on deforested or converted land are considered forest-risk commodities.

The commodities that have the highest risk of deforestation linked to their production are cocoa, coffee, cattle, palm oil, soy, timber and rubber [Global Forest Watch, 2021].



FIGURE 1 | Structure of commodity supply chains

SUPPLY CHAIN ACTORS



RISK MATRIX

Upstream:

- High risk of deforestation
- High costs of transitioning to sustainable practices
- Physical climate risks impact yield and quality
- Market exclusion risk from shifting public policies

Mid and downstream:

- Regulatory risk of non-compliant supply
- Market access risk from shifting public policies
- Increased costs of managing supply chain
- Physical climate risks impact supply
- Reputational risk for consumer/brand-facing actors

CONCENTRATION OF ACTORS



Transforming agriculture and forest commodity sectors is not only a key solution to deforestation, it also makes good business sense. There is increasing pressure on companies, from consumers, investors and regulators, to move towards greater transparency over environmental and social conditions within supply chains. Companies with operations or supply linked to deforestation and other nature risks are exposed to rising reputational risk.

Across key consumer markets in the EU and the UK, legislation that will force companies to undertake more rigorous due diligence in their supply chain and prevent them from accessing climate-conscious markets unless their products are free from deforestation is increasing [UK Environment Act, 2021 [↗](#); EU Regulation on deforestation-free supply chains, 2023 [↗](#); US FOREST Act, 2021 [↗](#)].

If no action is taken on how we produce food and cultivate forest products, it will also lead to higher production costs. The IPCC reports that global agricultural productivity has decreased due to changes in the climate over the past 50 years [IPCC, 2022 [↗](#)]: increased droughts affect crop and livestock farming; flooding and storms damage crops, infrastructure and equipment; and the cumulative effects of climate-related disasters will disrupt food production and supply, threatening food security and livelihoods. On one count, it is estimated that businesses in the agricultural sector are vulnerable to USD 332 billion [↗](#) in losses of economic output by 2050.

Environmental and social management systems for forest-friendly supply chains

Company commitments need to be backed up by methodological approaches and processes to ensure they have positive impacts on forests and people. While governments need to set legislation to monitor and police protected areas, companies need to put effective controls in place to address environmental and social risks and impacts within their operations and supply chains.

One tool that can help companies track risks and impacts is through environmental and social management systems (ESMSs). An ESMS helps to integrate environmental and social objectives into business operations through clearly defined, consistent and regular processes, frameworks, systems or tools [IFC, 2015 [↗](#)]. ESMSs are commonly seen in land-use



financing projects, used by fund managers to establish a framework to assess and manage the risks associated with funding specific activities.

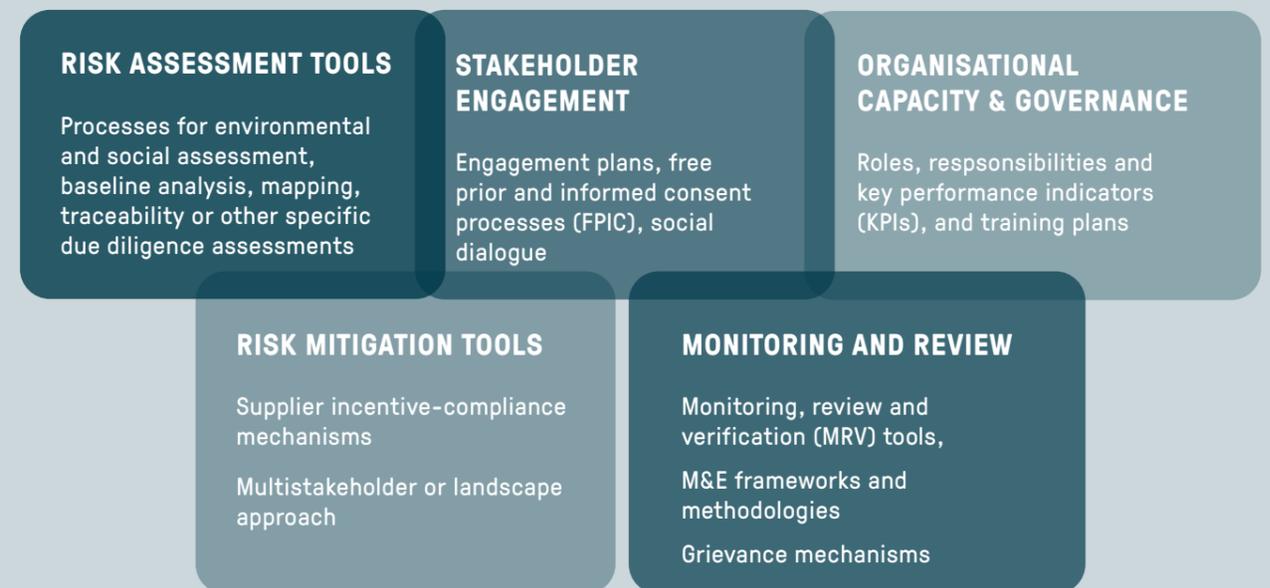
Not all companies in the agriculture and forestry sector have an ESMS, though companies typically have robust management processes in place for issues such as health and safety and quality control. However, the elements that make up ESMSs are useful tools for companies with sustainability commitments, as these systems can be used as a framework to identify, mitigate and monitor environmental and social risks that are typically present in forestry and agricultural commodity value chains.

Adopting an ESMS helps businesses carry on their production or business activities while protecting the forest and improving the social conditions for producers, workers or nearby communities at the forest frontier. In the context of transforming supply chains to become more environmentally and socially positive, there are key areas that actors should focus on to manage sustainability commitments in practice: processes for managing suppliers and smallholders to participate in sustainable practices; traceability systems; and monitoring mechanisms.

Since 2016, Partnerships for Forests (P4F) has supported business partnerships that reduce pressure on forests to demonstrate commercial viability and investment potential in the forests and sustainable land-use sector. To date, the program's investment has brought 2.8M hectares of land under sustainable management and catalysed £1 billion in investments across the portfolio of over 100 projects.

Throughout this time, our partnerships have been at the forefront of the transition to sustainable, forest-positive value chains. P4F has supported partners to ensure that projects incorporate key environmental and social risk mitigation measures into project design, be that as part of the core business model or as a supporting framework to de-risk the business model of each project. Specifically, we have built the capacity of businesses' controls to identify risks, built the management capacity of partners to stimulate positive environmental and social performance, and design frameworks that enable businesses to improve location and farm data collection and establish robust monitoring procedures.

FIGURE 2 | What is an ESMS?





Who this report is for

By sharing practical examples that are mapped against best practice, this report aims to inspire other actors that depend on forests to take action within their operations or supply chains, so that these systems become a standard part of doing business responsibly.

This report is aimed at companies that produce, source or are otherwise dependent on forests, or that operate in forest-risk value chains, including beef, palm oil, soy, cocoa, coffee, tea, timber and other forest products. This includes actors at all stages of the supply chain that want to understand how implementing robust ESMSs can mitigate risks and stimulate positive impacts. This could include producers, land managers, processors, traders, manufacturers and retailers.

Finally, investors, banks and regulators may also find this report useful for understanding non-financial disclosures and reassurances of businesses' ability to adapt to climate change and nature risks, as well as their progress against their public commitments.

Methodology

A literature review of environmental and social management within agriculture supply chains found two frameworks that help companies in this sector work towards sustainability commitments.

The Accountability Framework initiative's (AFi) Core Principles are a set of guidelines for companies and other actors that produce or source agricultural

commodities, that outline best practice principles for eliminating deforestation, ethical issues and other adverse impacts of commodity production from supply chains. The principles were developed through consultation with stakeholders across relevant commodities and sectors.

CDP is a disclosure framework that companies can use to demonstrate their progress against sector best practice to investors and customers. CDP has aligned its key performance indicators (KPIs) to complement the best practice found in the AFi and supports companies to measure and manage their risks and opportunities on climate change and deforestation through a specific forest disclosure questionnaire.

How to read this report

This report presents three areas of best practice that have the potential to transform forest-risk supply chains and achieve zero deforestation: smallholder and forest community inclusion; traceability systems; and monitoring and verification mechanisms. Both AFi's and CDP's frameworks advocate for companies to take greater action in these specific areas. These areas have been selected from the respective frameworks as the focus point for this report as they relate specifically to introducing effective management systems to achieve sustainable commodity supply chains. Improving management systems in these three areas can be adopted by a range of actors along the supply chain.

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The relevance of each area of best practice will depend on the actor's position in the value chain, their risk exposure, and how they interact with other key supply chain actors. Most of P4F's case studies exhibit more than one area of best practice and so, in reality, the ESMS introduced is made up of overlapping elements.

Icons indicate which areas of best practice the case exhibits:



Smallholder and forest community inclusion



Traceability systems



Monitoring and verification

And which type of actor the case study focuses on:

Upstream actors



Producer / farmer



Land owner



Processors



Trader

Downstream actors



Roasters



Retailers



Manufacturers

Each chapter provides a summary of the benefits and challenges of introducing the best practice. Companies at different stages of the supply chain will have different abilities and approaches to addressing deforestation. Each chapter includes lessons for actors introducing or implementing an ESMS to achieve deforestation-free supply chains. Readers can focus on the area they wish to prioritise within their operations or supply chain.

Each case study has a summary table for companies that might consider following a similar approach, with key details about the ESMS including: location; duration; commodity; scale; suggested ability for replication; and key costs needed to develop the ESMS.

The case studies are structured around the following questions:

- Why is managing environmental and social risk critical to the business?
- How does the ESMS work?
- How are the environmental and social impacts monitored?
- What are the early signs of success?
- What are the plans for continued development of the ESMS?



AFi Core Principles

CDP KPIs

P4F best practice in action



Smallholder and forest community inclusion systems

Core Principle 6 Companies should manage their supply chain to fulfil commitments. Companies that maintain long-term or recurring buying relationships with producers or primary processors should support these suppliers to be able to fulfil commitments.

Core Principle 10 Companies that currently operate in, or source from, contexts characterized by moderate to high social or environmental risk or poor governance remain engaged in these settings, with a focus on using their influence to address risks

KPI #12 Direct suppliers: companies should support and improve supplier capacity to comply with forest-related policies, commitments and other requirements through financial or technical assistance.

KPI #11 Companies should work with smallholders to support good agricultural practice and reduce deforestation or conversion of natural ecosystems

Case study 1: UGACOF's regenerative Arabica value chain model, Western Uganda [↗](#)

Case study 2: Form's Integrated Sustainable Landscape Management project, Tain II [↗](#)

Case study 3: The Tai Forest collective action platform for conservation and restoration [↗](#)



Traceability systems

Core Principle 5 Companies should know, or control to a sufficient extent, that the production and processing units of origin comply with commitments

KPI #6-8 Companies should set targets to progressively trace up to 100% of their supply or production to at least municipality

Case study 4: Conecta Platform— Eliminating deforestation with a supply chain monitoring tool for slaughterhouses and retailers in Brazil's beef industry [↗](#)

Case study 5: Building Mahorahora's Traceable arenga Sugar Model in the heart of Java [↗](#)



Monitoring and verification

Core Principle 11 Companies should establish good practices for monitoring and verifying the fulfilment of company supply chain commitments

KPI #9 Companies should establish systems to control, monitor and verify compliance with no deforestation commitments

Case study 6: Produzindo Certo: transforming the agribusiness value chain through a combination of agri-tech and strong on-site interventions [↗](#)

Case study 7: Introducing a landscape management model to protect forests and wildlife in the Meranti Harapan Landscape [↗](#)



Forest landscape |

01

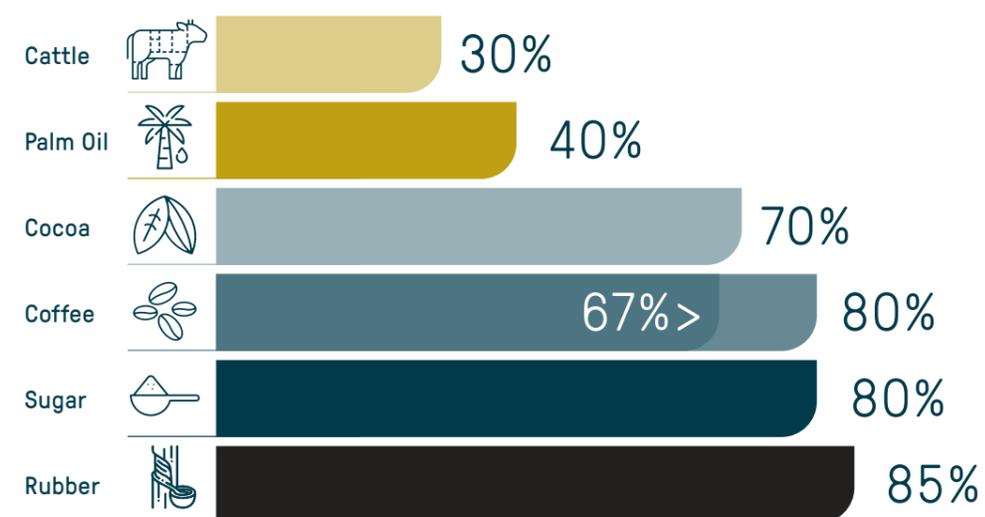
Designing systems that improve smallholder and forest community inclusion in sustainable supply chains

Although producers, including smallholders and forest communities, will have the greatest direct impact on avoiding deforestation, they are often overlooked in international forums on deforestation-free supply and trade. As more forest-risk supply chain companies introduce no-deforestation commitments, it is important to ensure that the costs do not get passed upstream to those without the financial capacity or know-how to meet higher requirements [Grabs et al, 2021 [↗](#)].

Smallholder farmers are significant actors in transforming agricultural production to protect forests, with the estimated 500 million households and over two billion smallholder farmers [IFAD and UNEP, 2013 [↗](#); IIED, 2022 [↗](#)] making up the overwhelming majority of agricultural commodity production globally (see Figure 3).

Introducing management systems provides actors with a framework to deliver various types of support to producers. This support helps companies to build closer, lasting relationships with smallholder suppliers and local communities, while incentivising forest protection, building smallholder capacity to adopt sustainable production practices, and reducing company deforestation risk. This can be done directly for companies with direct sourcing models, or through multistakeholder initiatives for companies further downstream, with significantly larger supply chains.

FIGURE 3 Proportion of agricultural commodities produced by smallholders



Source: Niras (2021)



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UGACOF's regenerative Arabica value chain model, Western Uganda

Figure 4: Coffee cherries



Location: Uganda, East Africa	Duration: 2 years	Commodity: 	Scale: Supply base	Who can replicate: 
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Key costs (GBP)

External consultants	~40,000	Consultant to undertake baseline assessments and feasibility mapping studies
HR	>100,000	Salaries for field officers, a dedicated sustainability coordination team, and project managers involved in design of the landscape governance committee (match funded by UGACOF)
Trainings	~80,000	Training for approx. 2.5k farmers: venue hire, lodging, meals, and transport. Includes external trainers, training materials and safety equipment
Traceability software	12,000	Annual traceability system license and user accounts for farmers (match funded by UGACOF)
Farmer credit system	40,000	Design of a credit scoring system to support farmers selection for payment of ecological services and digital integration into farm data platform



Why managing environmental and social risk is critical to UGACOF's business

UGACOF is a leading coffee processor and exporter, working mainly in Western Uganda, near the Rwenzori Mountains. UGACOF buys red cherries, parchment and dry coffee directly from farmers. Demand for environmentally and socially sustainable coffee is on the rise, especially from the European market, which poses a challenge for smallholder coffee farmers that lack access to the quality inputs and infrastructure needed to sustainably produce coffee of high quality.

Environmental and social risk within UGACOF's supply chain

UGACOF set up two coffee-washing stations in the Rubirizi and Bushenyi districts, in Southwestern Uganda. The stations are located on the edges of the Queen Elizabeth National Park, which has been subject to deforestation and land degradation. Between 2001 and 2021, Uganda saw a 12% decrease in forest cover, the equivalent of 440Mt of CO2 emissions [Global Forest Watch]. Deforestation pressures in the Queen Elizabeth National Park

come from subsistence farming, logging for wood products and expanding urbanization. The area is threatened by further land degradation from forest encroachment, the effects of climate change such as increasing weather variability with prolonged periods of no rain, and soil erosion caused by poor on- and off-farm landscape management practices. There are also a range of social challenges at household and farm level, including unequal opportunities for women, living-income gaps, and limited access to finance for farmers.

In its sustainability strategy, UGACOF has set commitments that tackle the environmental and social risks in its supply chain by: preventing deforestation, investing in farmers and supporting the communities they work with. The aim is to build a traceable, resilient and diversified supply chain that creates value for all stakeholders. To deliver on these commitments, UGACOF engaged P4F support to develop and implement an ESMS in the form of a service delivery model at these new washing stations. This will help to transition UGACOF's coffee value chain toward regenerative agricultural practices while supporting farmers to produce quality coffee and receive premium prices, through training, certification and credit access.



How the ESMS works

UGACOF identified the key environmental and social risks and impacts within the project area through a series of baseline studies, including deforestation and carbon mapping studies to understand the on- and off-farm causes of deforestation, a gender analysis, and a living income study.

UGACOF is applying tailored recommendations from these studies in the design of its service delivery model in the region, targeting **2,500 households**, which includes **10,000 household members**, and **500 women** at the two coffee-washing stations.

Supporting farmers to adopt regenerative agriculture systems

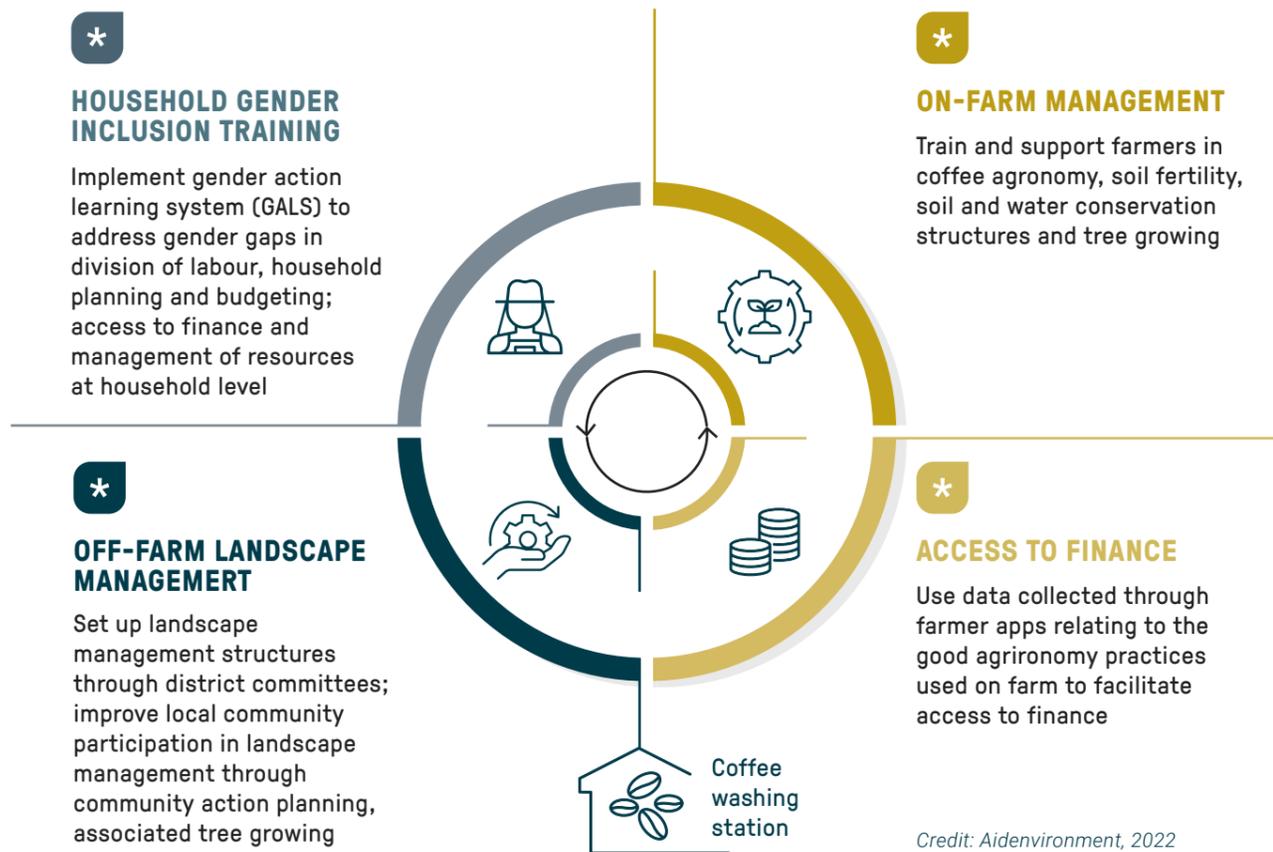
UGACOF provides access to inputs, finance and training to encourage coffee producers in forest buffer zones to start using regenerative practices on their

farms. It also guarantees purchase to incentivize farmers through increased and stable incomes. This engaging of farmers in agroforestry and regenerative agriculture improves soil fertility, carbon sequestration and, ultimately, the yield for farmers.

The agroforestry trainings are run on a quarterly basis, before the harvest season. UGACOF first trains their own sustainability staff, to build their internal capacity to deliver training direct to the farmers. Farmers learn the benefits of planting trees alongside coffee and how to identify those tree species that can be intercropped with coffee. This improves farmer's yields through improved soil fertility, nitrogen fixing and reduced production costs.

Lead farmers in the Queen Elizabeth National Park buffer zone are selected based on their success of uptake and productivity. They are then recognized as 'stewards of the environment,' responsible for

FIGURE 5 | How UGACOF is managing environmental and social risk in their supply chain



Credit: Aidenvironment, 2022

Figure 6: Agronomist Robert explains the stumping impact on yield compared to un-stumped mature trees to farmers



sharing knowledge and further embedding the sustainable farming practices in surrounding farmer communities. Transfer of best practice through this stewardship approach widens the range of farmers in the area that implement regenerative practices and ensures that knowledge is retained at community level, which increases the continuity and sustainability of the ESMS. UGACOF has trained over 2,120 farmers through the first rounds farmer group training.

A gender analysis of the target farmers highlighted that women perform most on-farm activities (such as weeding and mulching) while men take the roles of marketing and selling. To address this gender inequity, UGACOF is adopting a Gender Action Learning System to address gender gaps by providing training to improve the division of revenue, division of household planning e.g. decisions regarding how to use income, gender inclusiveness within the community discussions, and access to finance.

Improving smallholder farmers' access to finance

UGACOF is using financial incentives to complement technical assistance to farmers. It recognizes the need to channel access to credit so that farmers can invest and adopt good agricultural practice to improve productivity so they can transition to long-term regenerative agriculture methods.

P4F funding will help integrate a credit scoring system into UGACOF's farmer traceability platform, CropIn, and aims to pilot this with at least 50 farmers. UGACOF has partnered with LendXS and Musoni Systems to develop this tool. This will facilitate subsidized and conditional loans to smallholders based on performance against ecological and sustainability criteria that is recorded in the farmer app.

The intervention aims to restore approximately 2,500 hectares of degraded land. It is expected to improve farmers' livelihood by up to 70% and narrow the living-income gap by increasing the yield from coffee and facilitating access to finance.

“The new partnership enables UGACOF to provide its smallholder farmers in Uganda with access to the affordable and efficient financing they need to procure the required pesticides and fertilizers, to harvest, and to implement best practices and make the required investments in their farms. By providing the right digital tools and expertise, LendXS and Musoni will help UGACOF to strengthen its relationships with farmers, helping them to thrive and to improve their economic livelihoods in the long run.”

Sucafina (UGACOF's parent company)



How does UGACOF monitor impacts?

UGACOF already map 100% their suppliers on CropIn software. Through this app, UGACOF collects farm level data— such as yield, productivity, certification standards—combined with deforestation risk and land-use change data from TradelnSpace satellite and remote sensing tools. All farmers under the P4F-funded intervention are registered on the platform.

UGACOF’s deforestation monitoring tool, TradelnSpace, does not identify the reason and type of deforestation in the area, making it challenging to tailor corrective actions. P4F funded a ground-based deforestation verification protocol. This system shows a polygon of the deforested area from satellite imagery, the GPS location, with the location of the field officer so they can confirm the accurate location when visiting the site. Consultants developed a rapid ground assessment tool which UGACOF can use to remotely identify deforestation sites, alongside a deforestation survey to review the type and reason for deforestation. Using this tool, staff can verify the satellite deforestation data. Based on the survey outcomes, UGACOF staff can then decide on appropriate further action, such as a reforestation plan or to ultimately stop purchasing from the farmer. UGACOF field staff and lead farmers act as enumerators who collect and input data into the traceability tool and monitor specific progress indicators, including:

- Increased quantity of coffee sourced;
- Increased number of certified farmers (including certification standards such as RFA, 4C, Fairtrade, CAFE practice (for Starbucks), AAA (for Nespresso));
- Increased income for coffee received by farmers; and
- Increased land reforested (number of trees planted).

Memoranda of Understanding (MoUs) signed between UGACOF and the local District Governance Committees include provisions to monitor the performance of the agroforestry practices. This includes a joint annual review and reporting requirement on the project’s sustainability indicators.



What are the early signs of success?

Since this ESMS was introduced, there have been good signs of farmer engagement as training logs show consistently high attendance in the first harvest season. UGACOF is already seeing higher demand for registration from farmers around the washing stations.

Since applying the ESMS at the new coffee washing stations, farmers incomes have increased by at least 20% compared to when farmers sold naturally processed Dry Ugandan Arabica (DRUGAR). The average farmer registered with UGACOF will secure an additional UGX 851.52 per kg, or just over UGX 3 million annually, based on average yield.

Business benefits

For UGACOF, introducing the management systems helps meet regulatory compliance while demonstrating progress towards meeting their environmental and social commitments. According to UGACOF’s Sustainability Project Manager, the ESMSs ‘directly feed into [their] supply chain: increasing the coffee volume, improving the quality of coffee and encouraging farmers to put more land under coffee [agroforestry]’. The ESMSs contribute to UGACOF’s sustainability strategy by improving the sustainability of their supply and reducing UGACOF’s carbon footprint in the supply chain.



What’s next?

Beyond this supply chain management system, UGACOF is working with a Landscape Governance Committee to improve off-farm activities such as landscape restoration and management of watersheds and slopes, which should protect against floods or droughts. Combining supply chain support with landscape management ensures that the environmental and social improvements from the planned farmer service delivery are not undone by a lack of regional coordination. The landscape governance commitment is implemented through MoU signed with existing District Committees. These off-farm measures reduce the risk of crop failure and secure UGACOF’s supply.



UGACOF’s parent company, Sucafina, is implementing similar socially inclusive models in other markets. You can find out more about UGACOF and Sucafina’s approach here: <https://group.sucafina.com/supply-chain/>

“Deforestation mapping and afforestation, reforestation, landscape assessment, carbon mapping, all reduce the carbon footprint, farmer training on tree planting— all these have helped us to improve our carbon footprint in the supply chain. We have increased shade tree planting, increased the number of coffee trees in the farmer gardens through farmer engagements and training on importance of reduced land degradation, wetland encroachments and others.”

Aisha Kimuli Naseem, Sustainability Project Manager at UGACOF

Figure 7 (top): UGACOF’s team demonstrates how to apply regenerative agricultural practices to nourish the soil

Figure 8 (bottom): UGACOF’s field team tour a demonstration garden as part of their agroforestry training programme





Form's Integrated Sustainable Landscape Management project, Tain II

Figure 9: The Tain II Forest Reserve in southern Ghana



Location: Ghana, West Africa	Duration: 2 years	Commodity: 	Scale: Supply area / landscape	Who can replicate:
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Key costs (GBP)

HR	>300,000	Allocating sufficient resources to set up and coordinate the fire management activities, manage stakeholder relations with the communities, and pay wages to community fire officers, fire scouts and rapid response teams
Infrastructure /assets	~ 110,000	PPE, fire tools, physical infrastructure to create fire belts, seeds and agro-inputs for agroforestry plots
Workshops	<50,000	Community training, promoting awareness of the ESMS within the project communities, producing training and instruction materials



Why managing environmental and social risk is critical to Form's business

Form Ghana (Form) is a forest plantation management company located in the Bono Region of southern Ghana, and the largest teak plantation company in Africa. Form is Forest Stewardship Council (FSC) certified and recognizes environmental and social management as an integral part of its corporate strategy.

In 2017, Ghana's Forestry Commission leased 14,500 hectares of the degraded Tain II Forest Reserve to Form, for the development of a landscape restoration program. Prior to this, most of the Reserve and the surrounding landscape was deforested - making the area unproductive and unable to supply timber and other forest products. Continued threat of deforestation and degradation also put approximately 117,000 hectares of this landscape at major risk from wildfires each year during the dry season. Regular wildfires posed a range of risks to Form Ghana's nucleus plantations and to the livelihoods of surrounding communities.

The Integrated Sustainable Forest Plantation Management Project is implemented by Form through a public-private partnership with the Forestry Commission, in collaboration with landowners and local communities through a Benefit Sharing Agreement. Form, with support from P4F, developed and piloted an ESMS that helps secure the company's investments in the landscape. The core parts of the management system include formalising community fire management plans, establishing an agroforestry system and restoring degraded land with indigenous tree species. These components have enabled Form to improve their management of the environmental, social and governance impacts, creating a business that is socially and environmentally responsible.



How the ESMS works?

The ESMS was planned through open stakeholder engagement, to fully understand the challenges of the governmental, social, environmental and organizational baseline situation. It created Landscape Governance Board and agriculture, nature conservation and fire working groups, made up of farmer representatives, the district office of the Ministry of Agriculture and the Ghana Fire Service. These drove inclusion, democracy and accountability to stakeholders, which gave the project legitimacy, increased ownership and endorsement by local authorities.

Working group consultations identified wildfire outbreaks as the main risk in the landscape. To address this, the fire working group members introduced a community fire management project, which has been the basis for the success of the different farm interventions, the protection of Form's forest plantations and the development of restoration areas.

Reducing forest degradation risk through community fire management

The community fire management model aims to make fire management efforts more effective, resulting in a reduced number of wildfire incidences, by organizing and training community members. Agreed through meetings with traditional authorities, community leaders, Ghana Fire Service and community fire volunteers, Form revived the inactive fire volunteer squad structure in six communities. Form's field team and the fire squad leaders established Community Fire Management Plans for their villages and surrounding farm areas. Form provided the squads with protective equipment and trained them to suppress small- to medium-size wildfires with hand tools, such as beaters and rake-hoes.



Figure 10: Trainer Ben helps the squad to plan for the next live fire simulation

Fire squads also created green fire belts to stop or slow the spread of wildfires. The belts consist of closed-canopy forest strips with low-flammability vegetation as undergrowth, grown at strategic locations in the landscape, which also provide biodiversity pockets. Fire volunteer squads are responsible for establishing the belts while farmers work together with the squads on maintenance. For quality assurance, Form audits the community fire plans, based on criteria such as access, capacity, communication structures, establishment of fire break systems, infrastructure and vegetation management.

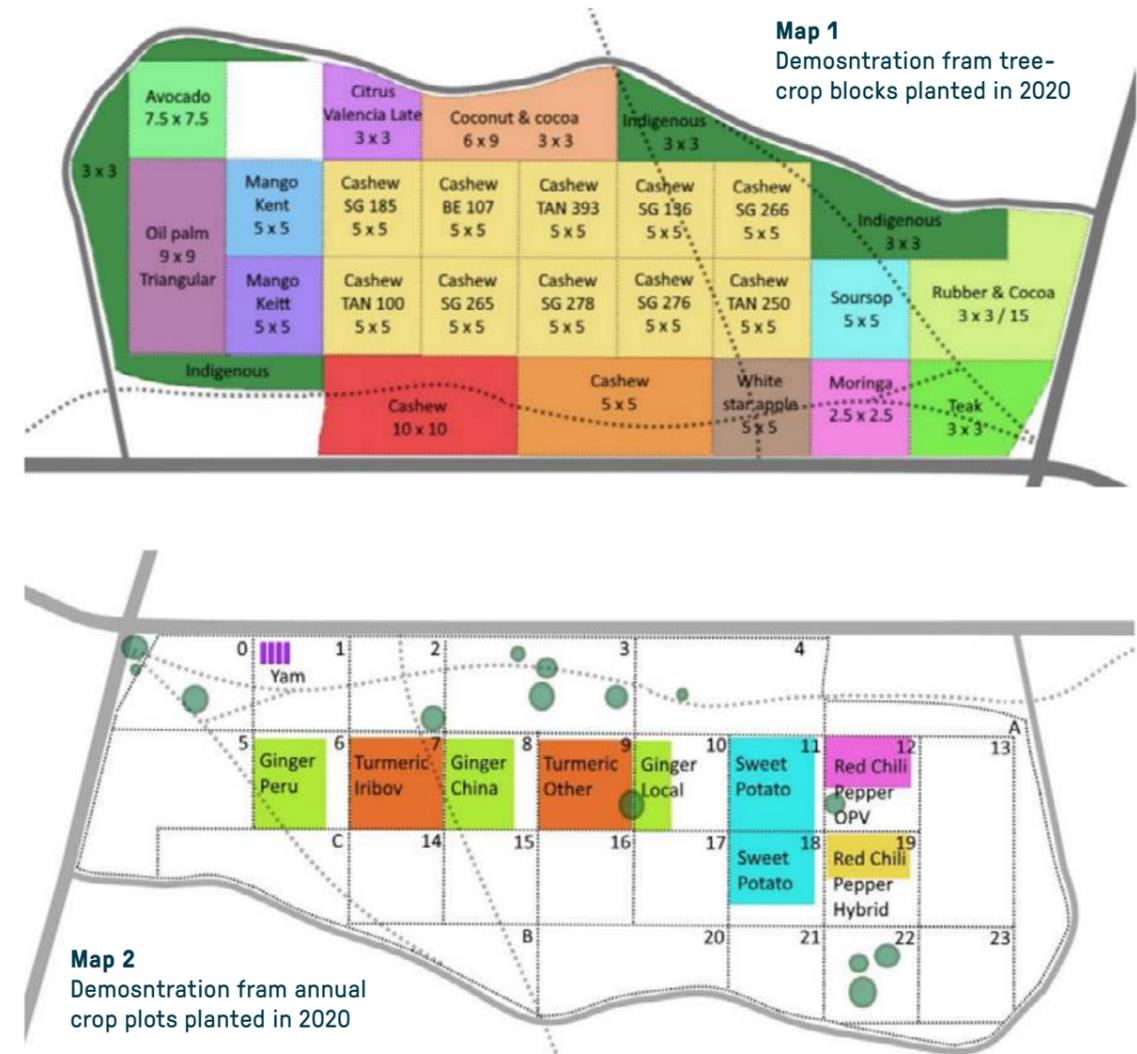
Improving community livelihoods through agroforestry and intercropping systems

To restore the landscape and create a buffer zone around the reserve, Form has introduced

an agroforestry model which creates a mosaic of tree-based farms around the Tain II Forest Reserve. Form offers smallholders extension services such as training on good agricultural practice, sustainable agroforestry management and conservation of native trees.

The project introduced a Modified Taungya System (MTS) that gives, at no cost, parcels on Form's Teak plantation to farmers for agricultural development and intercropping of maize and cashew. Form's newly established tree plantations benefit from the farmers' intercropping and weeding activities and the farmers benefit from the land. The arrangement also reduced the gender disparity in land tenure by creating an opportunity for landless and migrant farmers and women to access to arable land and increase their household revenues through the sales of harvests.

FIGURE 11 | Agroforestry blocs on Form's Reserve



747
farmers—29% of which were women—were trained in agroforestry farm management



224
farmers—of which 35% were women and 64% were landless—participated in the MTS intercropping system



1,075
hectares of forest were restored with indigenous species



861.6
hectares of agroforestry farms were established



How does Form monitor changes?

Form has early detection and warning signals for deforestation in the area, via cameras installed in the plantation and patrols by their team. Their operational framework for environmental and social management includes periodic monitoring and reporting [↗](#), in line with FSC Principles. This captures data such as the area of land forested and under conservation. Form also monitors and reports on the biodiversity impacts of its management systems every five years, including species found in the conservation area.

The working groups established under a Landscape Management Board were responsible for mobilizing community participation in the project and evaluating project progress and performance.



What are the early signs of success?

P4F verified that **25,000 hectares** were under sustainable management through the landscape governance board and fire management systems with the community. The buffer area protected under

Figure 12: Farmers are trained on agroforestry practices that can diversify their income stream



© DOB Ecology

community fire management is 6,150 hectares. An independent evaluation commissioned by Form found that the number of uncontrolled wildfires in the community area was 78% lower than the baseline year of 2018.

Form's fire management system helped Form to build strong community relations. Community members, when interviewed, felt that this system gave them back control to become part of the solution in fighting wildfires. Farmers expressed enthusiasm about the agroforestry support component of the project, mentioning that, with the support they get for farm development, they have more funds available to invest in labour on their farm, to expand their farm size and to invest in alternative businesses. As a result of the agroforestry model, training and management practices, smallholder farmers' incomes are projected to increase by over 3% per month.



“...From the Form project, I received maize and chilli pepper seeds and training on how to best cultivate these. My harvests were very good in 2019 and 2020 and I was able to sell for a good price. I used the income to buy a large oven and I now sell bread in Kotaa and in Berekum. This gives me a stable daily income. I am now less dependent on my husband as I do not have to ask him for money anymore when I need to buy something. Our relationship is much better now.”

Akua Effah, Farmer

Business benefits

The outcomes of the integrated forest management systems have opened up private and impact investment for Form, securing substantial funding to scale up their activities.



What's next?

P4F support ended in 2020. Due to the success in community uptake, the ESMS has continued. Form also plans to scale the model to an additional 10,000 hectares across the Tain II Forest, which is estimated will preserve approximately 117,000 hectares of forest.

It is expected that the reduced fire risk and the continuation of the community fire project by Form will mean that farmers continue developing tree-based farms.

To find out more on the landscape-level governance activities delivered by Form, see: *Landscape Approaches: Lessons from P4F's portfolio on designing sustainable, integrated, and responsible practices* [↗](#).

“The landscape restoration program and model jointly designed by Form and P4F helped strengthen Form's business case to investors. The landscape restoration program has been critical in creating the right enabling environment for Form's engagement with communities—safeguarding their plantation, reducing risks of fires / threats and giving investors confidence to invest funds into the plantation and into the landscape.”

Form Project and Operations Manager (2020)



© World Cocoa Foundation

The Taï Forest collective action platform for conservation and restoration

Figure 13: The Taï National Park, a biodiversity hotspot



Location: Taï Landscape, Côte D'Ivoire	Duration: 2 years	Commodity: 	Scale: Landscape	Who can replicate:
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Key costs (GBP)

HR	136,247	Landscape governance experts, project management, monitoring and evaluation capacity to coordinate all collective activities, facilitate the platform building, community sensitization and developing monitoring framework for the landscape
CAPEX	200,000	1m tree seedlings for forests restoration activities, funded by Mondelēz
Workshops	<53,000	Joint workshops to validate shared principles; training community on forest protection; training on agroforestry; training targeted for nursery women
GIS specialist	42,000	Forest protection monitoring funded by Mondelēz
Operational	~60,000	Travel, subsistence, office supplies, etc.



Why managing environmental and social risk is critical for actors in the landscape

Côte d'Ivoire's forest cover has considerably reduced from around 16 million hectares in the 1960s to a residual forest area 2.97 million hectares in 2021 (IFN, 2021). The Taï National Park (TNP) is Côte d'Ivoire's largest remaining area of intact primary forest, spanning 330,000 hectares. The park forms part of a wildlife corridor with neighbouring Liberia's Grebo and Sapo Forests, and is home to rich natural flora and critically endangered species, such as the pygmy hippopotamus, and rare birds including the African crowned eagle.

The landscape is under threat from increased production of cocoa, oil palm and rubber. This is worsened by insufficient incentives for local actors to protect forests, as a complex tenure system gives farmers few or no rights over their land and the trees planted on their land. As a result, community farmers and forest fringe communities often trespass into the protected forests, leading to conflict with the forestry administration. These challenges create a difficult business environment for cocoa, oil palm and rubber sector private companies who are keen to implement sustainability commitments by working with smallholder farmers to restore and conserve biodiversity and forests. Deforestation also poses and exacerbates ecological and social risks to farmers, such as the decrease in rainfall which reduces productivity and so affects the income for producers.

Consumers and markets are increasingly demanding deforestation-free cocoa. The agribusinesses that operate in the TNP landscape have mostly already made commitments to produce and source cocoa responsibly, in addition to corporate sustainability targets for reducing greenhouse gas emissions. Though companies are aware of the environmental and social impacts of their demand and supply, there is a need to strengthen collective action around these existing social and environmental ambitions.

Figure 14: Clearing at the forest edge, near Gnato village



@IMPACTUM



The solution – the Tai Landscape Collective Action Platform

P4F is supporting the multinational cocoa processing company, Mondelez, and an NGO engaged in climate and forest protection, IMPACTUM, to set up and implement the Tai landscape platform (TLP) for collective action. The platform creates an enabling environment for the conservation and restoration of agricultural hotspot areas within the San Pedro Region around the Tai Forest landscape. TLP members have agreed to a set of common principles to guide their efforts.

To achieve this, Mondelez and IMPACTUM have scaled up the implementation of existing regenerative agricultural activities and introduced ESMSs across the landscape. These include operationalising a payment for ecosystem services (PES) model with agricultural communities in the TNP buffer zone, capacity building women farmers, and establishing systems to govern land-use planning and stakeholder engagement across the landscape. Introducing these management systems enables private sector companies to invest in their sustainability commitments and to source forest-friendly commodities in the landscape, while improving the incomes for smallholders and the incentives to protect the surrounding forest.

BOX 1 | Guiding principles of the Tai Landscape Platform

- To take appropriate measures to protect and preserve the forest relics of the Tai Landscape;
- To contribute to the restoration and sustainable management of the forests of the permanent state domain as well as those of the rural domain
- To promote zero deforestation agricultural production in cocoa, oil palm, rubber, timber and mining sectors supply chains
- To improve the living conditions of rural communities, with a particular focus on green employment, especially for young people and women, women's empowerment and financial inclusion.

Figure 15: Cocoa pods



How the ESMS works

In October 2021, the TLP was launched in San Pedro, bringing together participants from the government, the private sector, civil society and communities. A taskforce was set up to lead engagements with stakeholders (see Table X).

TABLE 1 | TLP stakeholder engagement methodology

Map stakeholders – Collect and analyse qualitative data to identify who is likely to be interested in, whose interests are affected by the project – build an inventory of stakeholders;

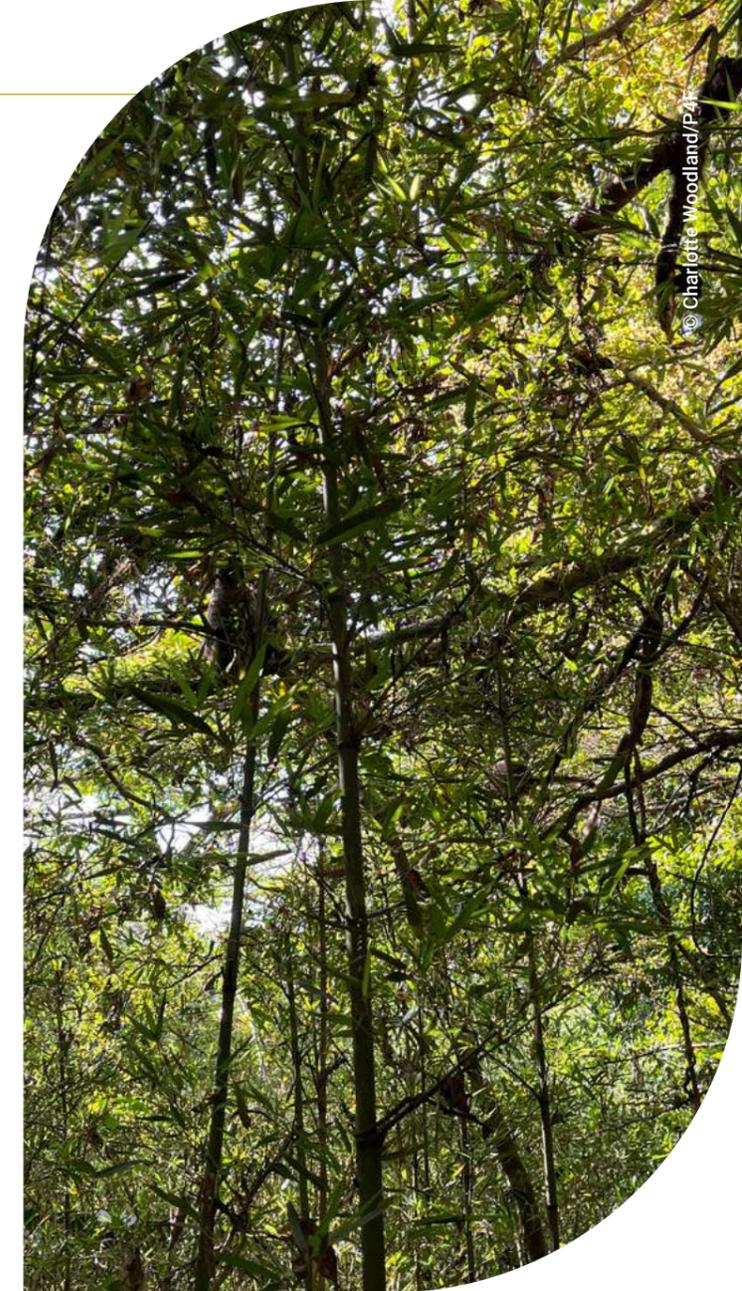
Stakeholder analysis – categorise stakeholders; determine role, responsibilities, level of commitment and expectations regarding forest protection, restoration, sustainable production and land-use management;

Consultation process – inclusive dialogue with stakeholders and impacted communities; use this data to take views into account and conduct appropriate dialogue; adapt methods according to target audience;

Monitor engagement – important to ensure effective management of views. The Taskforce maintains a log to record all engagements made and planned. Information shared annually.

Results of the analysis and consultation are used by project coordination team to feed into the design of the collective action platform and ensure it functions to achieve environmental and social objectives for the range of affected stakeholders.

Designing and validating the stakeholder engagement strategy took approx. one month. The stakeholder consultation schedule is an lengthy process, which was spread out over nine months, engaging with over 22 different stakeholders.

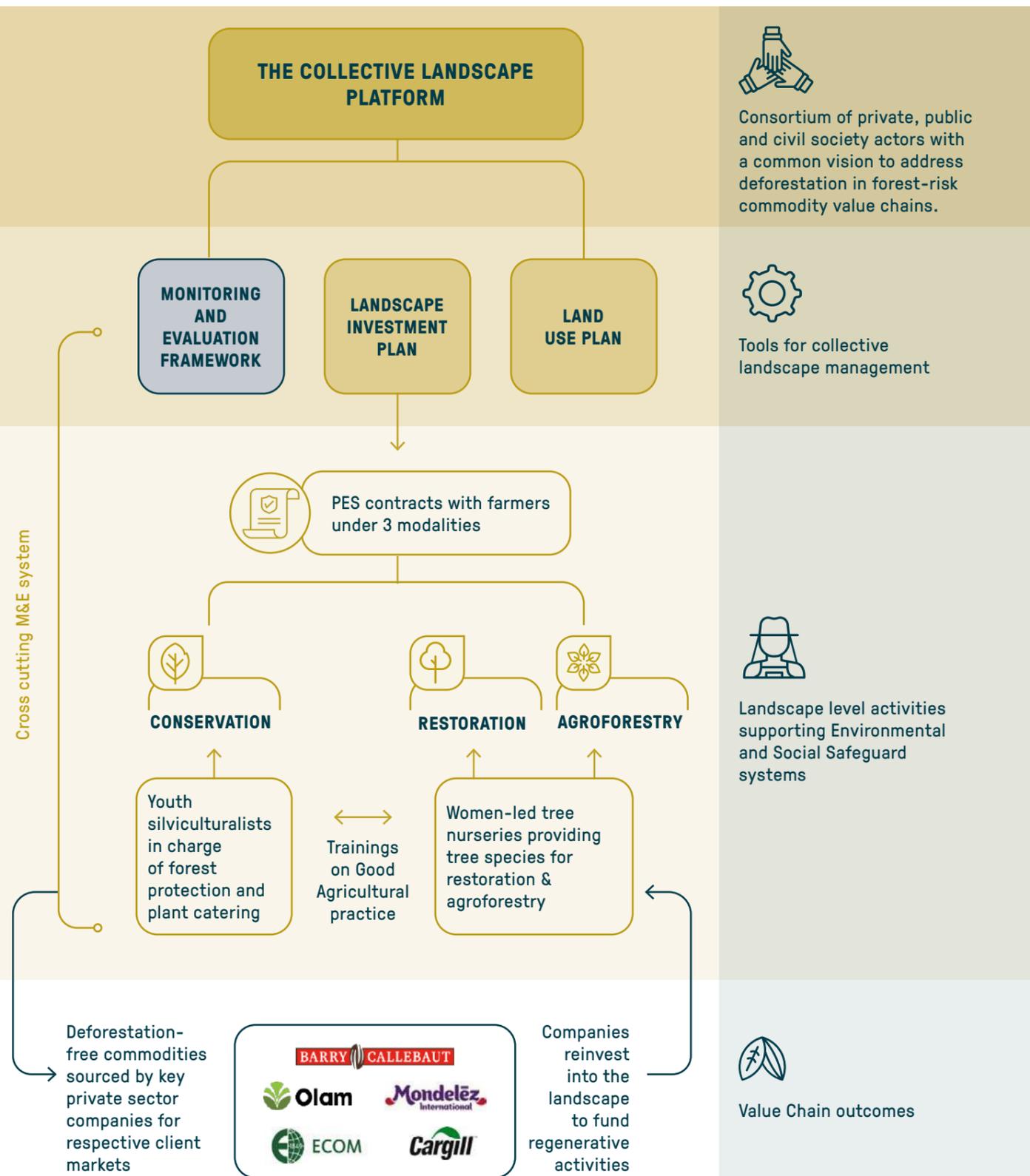


Communities were engaged and trained on the Forest Code and the National Forest Strategy, to facilitate up-take of the planned ESMSs. Smallholder farmers' capacity building assessments and activities on agroforestry, tree ownership and GAP were also carried out by IMPACTUM. Over 3,500 participants have been trained to date and over 525 young people have been trained in silviculture management and forest monitoring practices, leading to the creation of green jobs.

The TLP has created an enabling environment for the implementation of key environmental and social safeguards that put company commitments into action, and through that facilitating forest restoration, conservation and introduction of sustainable farming systems. The ESMSs introduced include:



FIGURE 16 | Key components of the Tai landscape project



Development of a sustainable land-use plan (SLUP) for the San Pedro Region

The TLP stakeholders developed a comprehensive SLUP, which includes a land-use map and several baseline studies to indicate the status of biodiversity, livelihoods, and High Conservation Value (HCV)¹ and High Carbon Stock (HCS)² areas across the landscape. Land-use plans are territorial planning tools that establish long-term priorities and activities for the sustainable development of a region, ensuring local participation in the sustainable management of natural resources. The TLP has supported the development of a comprehensive land-use plan which includes a land use map and several baseline studies on biodiversity, livelihoods, High Conservation Value and High Carbon Stock. These studies have been validated by all landscape stakeholders and are being adopted by the regional council of San Pedro.

Operationalising a PES mechanism to promote smallholder adoption of agroforestry, conservation and restoration systems

IMPACTUM and Mondelez set up a pilot PES mechanism, which was introduced under the TLP as a mechanism to incentivize community protection, restoration and conservation of forest areas around the TNP. The PES are voluntary contracts signed with farmers, cooperatives or communities, and provide payments, subject to farmers' compliance with contractual requirements to restore, conserve or implement agroforestry practices on their land or on proximate forest areas.

This allows smallholder farmers or communities to invest in sustainable agricultural systems, which strengthens their resilience to climate change and provides financial incentives. Farmers involved benefit once they have achieved positive tree survival rates, and are able to cover additional labour investments needed to manage agroforestry systems.

Three specific PES projects have been used: agroforestry, reforestation and conservation. IMPACTUM oversees the operation of the system and monitors conditions for making payment. The contracts differ for each project:

1. HCV is a conservation planning approach to identify areas of significant biological, ecological, social or cultural value
2. HCS is a methodology to identify forests with high carbon stock, used for land planning and designating land areas for protection or development

Agroforestry Restoration Conservation

	Agroforestry	Restoration	Conservation
Type of contract	Individual with cocoa farmers	Individual and collective	Individual and collective
Term	3 years	3 years	3 years
Payment amount	650 FCFA (0.85 GBP) per native tree and 500 FCFA per exotic tree	200,000 FCFA (262 GBP) per hectare	150,000 to 300,000 FCFA (197 to 393 GBP) per hectare

Mondelez provides the PES fund and IMPACTUM partnered with a digital money partner to deliver direct payments to farmers.

Figure 17: Tai Landscape Project nurseries





Addressing gender equality barriers through women-led tree nursery businesses

The TLP has trained and supported over 20 women to set up tree nursery enterprises that produce and sell shade tree seedlings such as mahogany and acacia to the restoration and agroforestry sites. These associations now maintain and manage three nursery sites with a production capacity exceeding 100,000 seedlings. These plants are sold to Mondelēz for distribution to the farmers. They help rehabilitate the cocoa area whilst providing an additional source of income to the women and the farmer cooperative groups.

Women have also formed Village Savings and Loans Associations (VSLAs). Members make regular contributions to a shared pool, which can be used to take out low-interest loans up to three times their contribution after three months. This supports on- and off-farm diversification, allowing farming households to become more resilient to the impacts of climate change and building capacity to manage household and economic decisions.

Figure 19: Women in the community plant tree seedlings and are trained on agroforestry and restoration



“Thanks to the tree nurseries, we earned about 2,000 GBP. I was able to buy loincloth and shoes for my children’s party. If we do it again next year, I will start a small business.”

TLP participant



Figure 18: Women from nursery groups in Watté, Taboke and Krémoué



Figure 20: The team collect field data to validate the land-use map of the San Pedro region



How do actors monitor the impacts?

Platform members developed and validated a monitoring and evaluation framework. It sets out specific indicators, targets, monitoring methods, verification sources or tools, and frequency for collecting data. Most of the indicators relate to the project’s intended social outcomes.

IMPACTUM conducted a mapping study to identify the forest boundary so that forest cover could be monitored. When signing a PES agreement, a 1:2500 resolution map, showing the perimeter of the project location, is prepared. IMPACTUM carries out regular monitoring and verification of the implementation of the PES, with support from other platform actors such as the regional council, NGOs and the TLP Taskforce. Mondelēz use Global Forest Watch to identify areas of deforestation or land-cover change and will conduct a mid- and endline GIS and monitoring assessment.

As part of the TLP’s landscape conservation plan, IMPACTUM, in collaboration with the Ministry of Water and Forests, trained 100 community members as community forest protection squads. This gave young people the skills for forest surveillance, and they then sign a letter of intent committing to protect and monitor forests against encroachment into local forest blocs.



What are the early signs of success?

439,000 tree seedlings have been distributed to farmers and planted. Over 100 hectares of degraded land and more than **3,000 hectares** of farmland have been restored and brought under agroforestry practices.

IMPACTUM has trained approximately **6,000** people (30% of whom are women) in forest fringe communities on the New Forest Code and supported cooperatives with technical assistance to adopt the three PES models. This has led to forest management and agricultural practice behavioural change in the target rural communities. For example, three communities around the Gnato Forest have formed an Association for Forest Conservation and established a youth task force for forest monitoring. Over 1,500 hectares of the Gnato forest have also been restored with economically viable tree species. At maturity, income generated from the trees will be allocated to the Association for funding community projects

Eighty agroforestry PES contracts and 24 restoration PES contracts have been signed. Farmers are starting to see the benefits of implementing sustainable agroforestry systems. IMPACTUM reports participant enthusiasm during the training. The PES contracts are an additional income channel



with annual payments of between 200 and 260 GBP. This incentivises community participation in the model. In December 2022, the first 18 PES payments were made.

“...at first, I was not very keen about the PES restoration business, but I learnt how to do the job and understood that I could make up to 260 GBP per hectare, I realised that It was a good source of income. Moreover, If we have the nurseries, we can reforest our villages.”

Young Cocoa Farmer

Business benefits

In addition to the early social and environmental outcomes, the landscape-level ESMSs de-risk and improve business operations for private companies. They are a key way to demonstrate compliance with regulations that mandate deforestation-free commodities and to meet companies’ sustainability commitments, such as under the Cocoa and Forests Initiative or the Africa Palm Oil Initiative. Mondelēz reports publicly on the value of these systems – the PES models, technical assistance and support to VSLAs all contribute to its Cocoa Life programme, which is central to improving the sustainability of its operations and supply chain. In Mondelēz’ most recent CFI progress report, they note that scaling these ESMSs helps the company to secure supply of more sustainable cocoa and to an integrated approach to tackling the causes of systemic issues in cocoa.

Private sector and government stakeholders were interviewed to understand the benefits to sustainability efforts that the ESMSs have had to date:

“...the collective action platform is for us a framework for exchange that allows us to have accurate information in real time thanks to the workshops and studies conducted. This allows us to review our workplans and to organize meetings with stakeholders to anticipate conflicts between the administration and communities or between commercial companies and communities.”

Sector Ministry testimony

“Following the mapping and related studies, priority areas of intervention allow us to focus our efforts in terms of investment in CSR regarding reforestation projects. For companies, the platform is a framework for pooling efforts for efficient [sustainability] interventions. Also, in relations with communities, the platform allows for improved grievance management mechanisms.”

Private sector testimony

Although the systems introduced so far show clear signs of positive impacts on restoration and the sustainability of private sector sourcing, it is equally clear that implementing a multi-stakeholder governance arrangement—especially across different value chains—can be very challenging and there have been delays in the implementation of activities. So, although all activities have been implemented properly, key outcomes, such as the mobilisation of external investments, are yet to be achieved.



Figure 21: IMPACTUM and partners planting trees to reforest the Gnato village area



What’s next?

P4F support will end in 2023. To sustain the intended environmental and social impacts, the land-use plan is being integrated into the government’s regional land-use plan. The monitoring and evaluation framework will also serve to track progress and generate lessons for adaptive improvement.

At the beneficiary level, the different income-generating opportunities incentivise communities to remain committed to sustainable production and the provision of environmental services. Between 2022 and 2025, the project plans to sign more than 2,000 restoration and agroforestry PES contracts, of at least two years, with farmers.

At an institutional level, the Regional Council of San Pedro has taken ownership of the TLP, signing a decree establishing the creation, attribution, composition and functioning of the platform’s secretariat.

In the long term, the ESMSs are expected to provide the basis for a pre-competitive financing mechanism. It is hoped that the model will incentivize more collective action from the ten Cocoa and Forests Initiative companies sourcing from this landscape, including Cargill, Mars and Barry Callebaut. The mechanism will help pool funds for the continuation of the platform’s ESMSs. Mondelēz currently provide the financial investment to support the PES model in this initiative. At the end of 2022, they announced plans to invest an additional \$600 million in its Cocoa Life programme by 2030.

“What I really liked is that we were told that thanks to this work, the forest will come back. So, we want to continue.”

Participant farmer



What can others learn from the P4F examples?

Targeted approaches are the most effective way to support suppliers and smallholders to transition to more environmentally friendly agriculture. All cases planned the interventions by collecting data from baseline studies and developing processes for stakeholder engagement. Baseline studies involve thorough analysis of the drivers, risks and challenges, and offer recommendations that can be fed into the design of an ESMS. Conducting a baseline study is a useful starting point for companies to effectively assess progress towards deforestation-free supply chains by providing pre- and post-intervention data and ensures the design will properly incentivize changes based on pressures and risks specific to the supply area. Companies that do not have this expertise can procure sustainability experts that are familiar with the local context, as in the case of UGACOF. This is particularly useful for designing services that are tailored to specific segments of farmer-producers within supply chains, especially more vulnerable or invisible smallholders such as women. Stakeholder engagement processes ensure there is inclusive input from all relevant stakeholders, driving democracy and accountability towards stakeholders, helpful in both the Form and Taï Landscape projects. This lends legitimacy to the ESMS introduced, while contributing to increased ownership and endorsement by stakeholders, including smallholders and local authorities.

Incentives that create tangible value for smallholders to take up forest friendly practices need to be in place. When companies are designing an ESMS that aims to manage the suppliers for forest protection, the processes need to create value for both parties. P4F's experience shows that when working with rural farmers, it is important to address issues of livelihoods and underlying poverty to incentivize participation in sustainability activities. If interventions do not help address people's needs, the proposed activities are poorly attended or abandoned. Both projects demonstrate that training and support to farmers, through inputs, financial access and access to land, have played a major role in sustaining farmers' commitment and interest in more sustainable production. For example, Form won farmers' trust and commitment by offering access to land on-reserve and supporting them with agricultural extension services. For UGACOF, the use of premium prices and access to finance was key to getting farmers' buy-in. Beyond direct

financial support, technical support goes a long way to increasing farm yields and reducing post-harvest losses which are key challenges for rural farmers. However, there remains a need to find long-term incentives that will sustain farmers' engagement and continuously improve their livelihoods.

Companies that are already taking steps to engage their smallholder base should consider complementing supply chain efforts with collaborative landscape-level approaches to increase the impact of smallholder engagement.

In P4F's experience, supporting producers to implement restoration and agroforestry methods can be challenging, as activities depend on factors beyond the control of supply chain actors (or 'off-farm' factors), including weather, pests, weeds and landscape management. It is, therefore, imperative that actors also work to create an enabling environment that facilitates success for forest-friendly production practices. In all projects, the smallholder and community incentive structures were complemented by landscape-level governance models to coordinate 'off-farm' activities, such as Form's community wildfire work, and land-use plans in the case of the Taï Landscape Project. This is an additional consideration supporting the success of the ESMS.

Useful resources



- [Accountability Framework Smallholder inclusion in ethical supply chains](#)
- [Accountability Framework Achieving Commitments through collaboration](#)
- [See P4F's Landscape Approaches report for an in depth analysis of landscape approaches and a directory of P4F projects that have adopted landscape approaches](#)
- [International Union for Conservation of Nature and Natural Resources A guide to investing in landscape restoration to sustain agrifood supply chains](#)
- [For more lessons from P4F's portfolio on effective stakeholder and community engagement, see our studies on: BOPP's Community Smallholder scheme and the Rainforest Alliance and Olam's stakeholder engagement for effective landscape governance in combatting deforestation](#)



02

Developing supply-chain traceability systems

Markets across the world are setting new norms on traceability, demanding that companies know where their products come from and the deforestation and social impacts linked to production. The EU, UK and US are set to make it a legal requirement for importing companies to guarantee that their products are deforestation free, including a requirement to collect geolocation data to identify where the product was produced. Companies that source forest-risk commodities and are not yet tracking their supply chain will be under increasing pressure to invest in this capability.

Traceability and farm mapping are data collection exercises that can feed into company risk assessments. As the global call for transparent products increases, unsustainable products will lose market access. So, traceability systems are an essential management tool for all companies that process, buy and sell agricultural and forest commodities, if they are to identify whether their operations or supply chain are deforestation free. Technologies exist that companies can use to obtain better data, allowing them to verify who they are sourcing from and providing assurance that the supply chain is deforestation free.





Conecta Platform: Eliminating deforestation with a supply chain monitoring tool for slaughterhouses and retailers in Brazil's beef industry

Figure 22: A farmer herds cattle



Location: Para and Mato Grosso, Brazil	Duration: 4 years	Commodity: 	Scale: Brazil – regional	Who can replicate:
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Key costs (GBP)

HR	217,041	IT developers, Safe Trace staff
IT system development	~60,000	Investment made for software development, data integration to deliver the streamlined platform and app; in the technological improvement to monitoring functionality
Geospatial monitoring tool	4,000	Subscription to analyse the data collected from ranchers in Conecta database



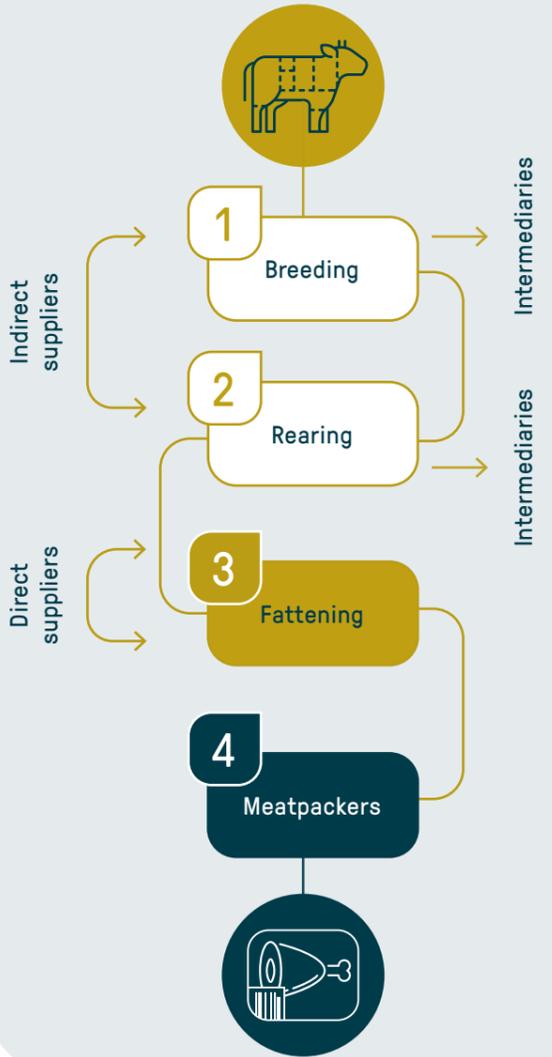
Why managing environmental and social risk is critical to the beef value chain in Brazil

Historically, cattle ranching in Brazil has been a way to expand territory over unclaimed land. Based on this traditional process, extensive cattle ranching became the first and major land occupancy driver after deforestation in the Amazon biome. Cattle ranching now generates more than double the hectares of forest conversion than soy, palm oil and timber products combined (WRI [↗](#)).

The cattle supply chain is characterised by many indirect suppliers (see Figure 25) – cattle moves between several farms for breeding, rearing and fattening before it is supplied to slaughterhouses. In 2009, a commitment (the Adjustment Conduct Term or TAC) was signed by Brazilian cattle slaughterhouses, agreeing to stop purchasing beef from producers engaged in deforestation from that year onwards. TAC signatories agreed to monitor their supply chain and track deforestation in it.

Despite these efforts, the commitment resulted in a situation whereby meatpackers only monitor their direct suppliers, meaning blacklisted producers continue deforesting and selling production through intermediaries. This has made it difficult to track blacklisted producers who can still sell cattle freely as indirect suppliers in the production chain. The beef industry hasn't had efficient traceability systems to control the production chain and verify the environmental conditions of beef production beyond direct suppliers.

FIGURE 23 | A typical beef supply chain





The solution: Conecta traceability platform

Since 2018, P4F has supported Safe Trace to deliver a cattle traceability system—Conecta—that helps ranchers and other major stakeholders, including meatpackers and retailers, to comply with their commitments under the TAC and identify deforestation within the supply chain.

Conecta combines any sustainability protocol with a traceability tool to offer a streamlined, comprehensive solution for achieving transparency across the value chain of the Brazilian beef industry. Developed by Safe Trace, a Brazilian traceability company, and implemented with support from The Nature Conservancy and Amigos da Terra, Conecta provides a management tool for verifying the presence of illegal deforestation and other social and environmental risks in the beef production chain.

This system provides the infrastructure to address the lack of tracing of indirect suppliers.

P4F helped to establish the mobile traceability app and engage industry players and ranchers in testing the platform. Currently, support is focused on enabling the platform’s blockchain technology to receive a larger volume of data and developing guides for beef suppliers using the platform.



How does the ESMS work?

The Conecta platform combines blockchain technology with public satellite monitoring databases to provide an innovative and secure system for exchanging information related to deforestation across the beef supply chain.

Conecta generates a digital identity for the herd and allows producers to voluntarily exchange information about their cattle by uploading their purchases and indicating their suppliers and their Environmental Rural Registry (CAR) number, which is the national rural property identifier and contains information on vegetation in the geolocation. The platform cross-references these voluntary data with public animal transit data received from the sanitary agency in Para State. This integration of rancher and location data provides an assessment of the property, with deforestation analysis and checks adequacy against the Forest Code and Modern Slave Labour list.

Information such as animal movements and sanitary data can be shared, with permission, with slaughterhouses and retailers to demonstrate compliance with companies’ sourcing standards, creating a transparent and secure business environment. With the information provided by the rancher, the platform runs socio-environmental analyses making use of multiple national databases—including PRODES (deforestation), the Brazilian Government’s Modern Slavery list—and state systems, such as Selo Verde in Pará State. The supplier can address any buyer-specific social and environmental requirements.

P4F support has enhanced the blockchain intelligence and technology of the multi-protocol platform and integrated a number of meatpackers’ databases into the platform, including suppliers from both JBS and Marfrig.

“Today we have mature technologies in the country that can assist in the process of tracing the beef chain. Brazil has systems, such as satellite monitoring of deforestation, animal transit control and the Rural Environmental Registry, but these tools are disconnected from one another. The project’s proposal is to unify the database so that, based on this set of information, we can create indicators that bring security to those who are purchasing cattle, whether between farms and with the slaughterhouses, so that everyone can be sure that they are not contributing to illegal deforestation ”

Vasco Picchi, Safe Trace

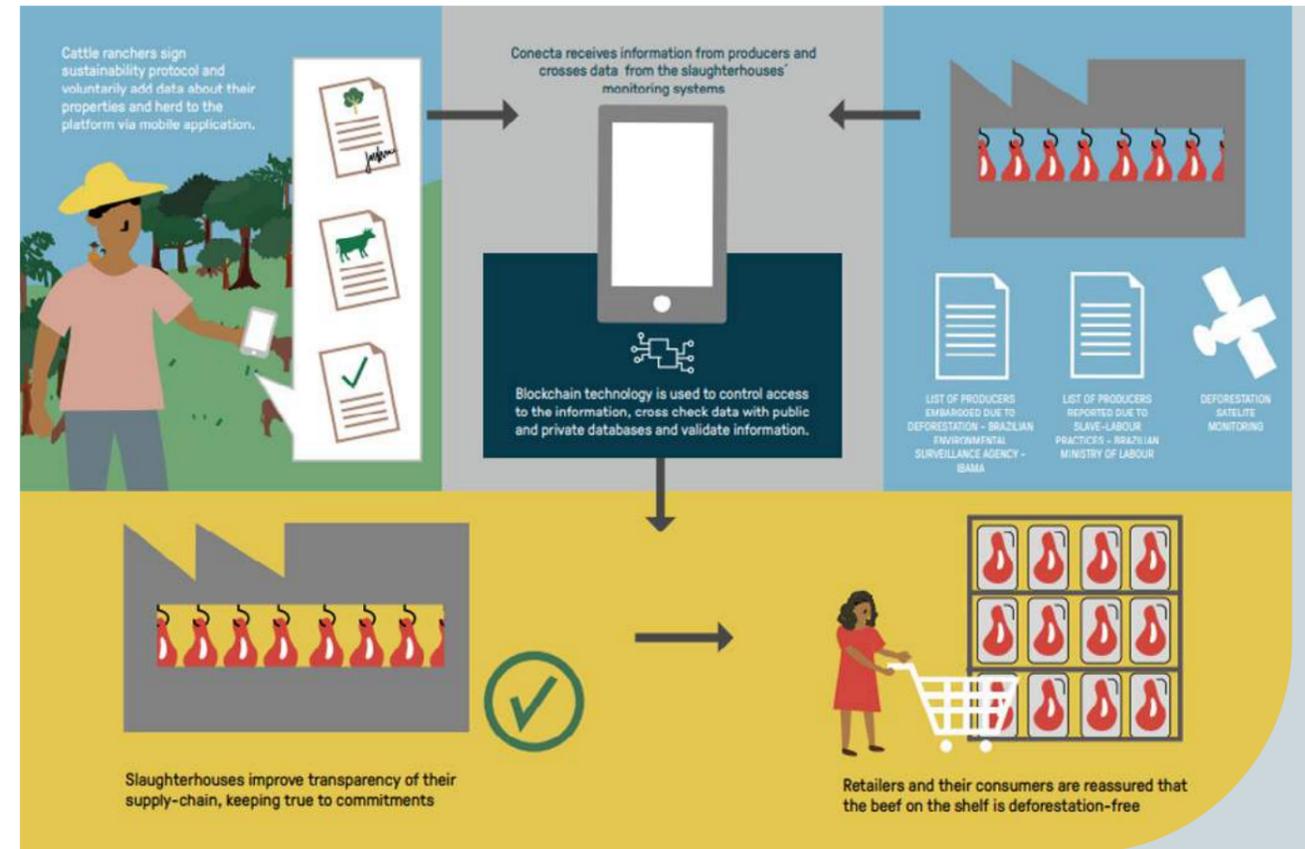


Figure 24: How the Conecta traceability platform works

Conecta’s traceability tool can benefit different actors across the supply chain, from ranchers to meatpackers, retailers and banks, who can use the analysis in their own risk assessments in order to provide credit, for example. For the rancher, the key benefit is having knowledge about their suppliers and the status of their properties, enhancing transparency and responsibility for deforestation in the supply chain and enabling ranchers to choose deforestation-free suppliers. For the meatpackers, it is crucial in meeting their commitment to monitoring the entire supply chain.

“An important differential is that [Conecta] can also be used by direct suppliers, so they can monitor their own respective supply chains, thus integrating our efforts and theirs in combating eventual irregularities practiced by indirect suppliers. In addition, ranchers can access socioenvironmental analyses of their own operations and those of their suppliers.”

Marfrig, Sustainability Report 2021 [↗](#)



What are the early signs of success?

The platform is a fully functional traceability tool that can reach indirect suppliers. The platform was presented to the sanitary agency of Mato Grosso state, and was well received. With the development of the Conecta mobile app and Conecta Web, ranchers can rapidly access and download their information and map out their indirect suppliers, whenever the rancher gives permission in the app, building a fully traceable supply chain.

Conecta has evolved to trace back the origin of products in beef and soy supply chains. The traceability system can now hold a large database: currently, over 5,300 Marfrig suppliers' information is registered on the platform with 6,707 farms. Also, more than 20,000 farms are registered, which results in 20 million kilograms of beef and an area of more than 2.6 million hectares monitored. The team is working to receive data from Walmart and Carrefour suppliers.

Business benefits

P4F's support in enhancing the platform's traceability capacity enabled Conecta to increase its portfolio as there is clear value added for actors in the supply chain. Since P4F's support, they have also expanded their business beyond beef and signed commercial contracts with Bayer to trace soy seeds. They also secured contracts with major retailers, Carrefour and Walmart, who are now using Conecta for their Brazilian beef supply. At the end of 2022, Carrefour announced that Conecta will be used as an ESMS for tracing and monitoring their suppliers. Conecta's

team is training suppliers on how to use the system and to track their upstream suppliers. This is key to engaging the suppliers further upstream in order to make the use of Conecta routine and a key step to purchasing from others with knowledge of their production status.

Safe Trace also has an MoU and intends to establish commercial relationships with two meatpackers: Marfrig operates in Mato Grosso and Rondônia states and Frigol operates across Pará state. Within the cattle supply chain, Marfrig and Frigol are currently using Conecta and are in the final stage of engaging their suppliers to use the app through workshops.



What's next?

Conecta continues to scale the platform, aiming to reach 270 meatpackers, one million ranchers and monitor 15m hectares by 2027. In order to achieve this ambitious target, the Conecta team need to bridge the gap and fully engage indirect suppliers in using the platform and voluntarily sharing their data. There is increasing pressure to achieve this coming from the meatpackers, who have targets to trace their entire supply chains under the TAC protocol.

Safe Trace will expand its operations to Europe to address UK and EU regulation on traceability of imported products, aiming for Conecta to be used in companies' due diligence to meet the regulations in these markets.



Figure 25: Closeup of soybean poured from a warehouse into a truck ready for export from Brazil. Soybean production is one of the biggest causes of deforestation of the Amazon rainforest.



© Mokhamad Edliadi/CIFOR

Building Mahorahora’s traceable arenga sugar model in the heart of Java

Figure 26: The Gunung Halimun-Salak National Park



Location: Gunung Halimun-Salak National Park, Java, Indonesia	Duration: 1.5 years	Commodity: 	Scale: Forest village / supply area	Who can replicate:
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Key costs (GBP)

HR	~20,000	Project management time and match funded staff time to conduct capacity building for farmer groups
Forest protection experts	40,000	Consultants to deliver baseline socio-economic study and develop a forest protection model working for approx. 40 days
Traceability consultant	<4,000	Develop and trial a traceability mechanism for arenga sugar
Enumerator	6,600	Consultant to conduct arenga Trees mapping
Certification	<7,000	The cost to get certification for arenga sugar produced by Mahorahora



Why managing environmental and social risk is crucial to Mahorahora’s business

Mahorahora is a market access player for arenga sugar, a healthier and more sustainable sweetener derived from the arenga pinnata tree. The company has commitments to creating value from the standing forest and increasing the livelihoods of smallholder farmers by providing them with access to the premium market. They partner with smallholder farmers in Gunung Halimun-Salak National Park (TNGHS), an 88,000 hectare secondary forest conservation area in the heart of Java. TNGHS is the largest lowland rainforest in western Java.

Deforestation arising from economic activities such as illegal mining, illegal logging, and land conversion into agriculture in TNGHS has reduced the landscape to only 58,000 hectares of secondary forest. Deforestation accelerates problems such as floods and landslides that often occur during the rainy season. Furthermore, several community enclaves lived there before the area was designated as a conservation area, creating a challenge to securing livelihoods while protecting the remaining forest.

The solution – arenga-based forest protection and forest regrowth model

Arenga trees grow best in tropical mixed forests, but cannot grow well in monoculture plantations. Arenga palm provide a way to reforest the landscape because they can grow on otherwise unused, nutrient-poor soils and steep slopes, where other common trees cannot. The trees have deep roots, which do not deplete nutrients from the soil and

help to prevent erosion and enable easy access to water. Arenga sugar production does not involve cutting down forests or the tree itself, which creates an incentive to protect standing forests and plant secondary tropical forest in areas where the rainforest has been cleared. The arenga tree is a native species in this landscape, making it highly suitable for forest regrowth in the GHSNP landscape.

Mahorahora aims to expand the arenga sugar market by increasing demand for this sustainable option, especially from the Indonesian market. P4F is supporting Mahorahora to strengthen the environmental, social and forest protection element of its business. One aspects of the business plan is designing a supply chain traceability mechanism to track and monitor sustainable use of the arenga tree and the implementation of the arenga-based forest protection and regrowth model in the landscape. This will eventually improve local communities’ income and reduce pressure on the standing forest in the landscape.

Figure 27: Marga Laksana Village, the site of the Mahorahora Forest Regrowth Program



© Slamet Sudjiono



How does the ESMS work?

Mahorahora engaged a specialist developer, Koltiva, to build a digital traceability system to monitor arenga sugar supply chain in TNGHS landscape via their KoltiTrace platform. The system lets Mahorahora map the arenga sugar supply chain end-to-end, from the farm and farmer group polygons, through Mahorahora's processing facilities, and to the end consumers.

This system allows Mahorahora to oversee local farmers' arenga sugar production from arenga trees grown in the landscape. Mahorahora can see which trees are tapped to make arenga sugar and whether farmers are clearing forest areas in the process. This traceability provides three advantages for Mahorahora: 1) increased transparency in the sustainable arenga sugar supply chain, 2) increased understanding of the performance of arenga sugar farmers, such as productivity, especially as demand increases, and 3) the increased value of sustainable arenga sugar through stories generated from this system (i.e., farm to fork).

The implementation of the traceability system starts with farmers that input information such as name, address, plot of land, number of trees in the plot, and estimated production capacity of their plot. Farmer groups add information about the organization, such as how many farmers supply to the group and estimated average production. Mahorahora's sustainability-sourcing team verifies the information

provided by providing a barcode that identifies the arenga sugar produced by each farmer. During the production season, farmers enter the amount of arenga sugar they produce into the traceability app on the smartphone. They are expected to update their data every time they tap and produce arenga sugar. The data must match the volume received by the farmers group, who continue the production process.

The data from this activity will be used for: Mahorahora products' commodity traceability, to know the coordinates and the number of arenga trees in the source area of Mahorahora products, and to understand the existence of open areas for further forest protection and regrowth.

After developing the traceability system, Mahorahora trained their suppliers on the value of using this system to ensure good uptake from the farmers. Mahorahora and Koltiva taught local farmers on how to use the application on their smartphones. The sessions are part of Mahorahora's wider program in building arenga sugar farmers' professional capacity.

In 2022, Mahorahora also organized training, in collaboration with GHSNP management, to improve the farmers' capacity to take part in forest protection while producing palm sugar. In the training, Mahorahora distributed palm sugar production equipment, including safety equipment for tapping palm sap and cauldrons. Mahorahora intends that the sessions increase productivity, transparency and effectiveness among Mahorahora's farmers.

Figure 28: Mahorahora's traceability system shows the location of arenga trees in the sourcing area

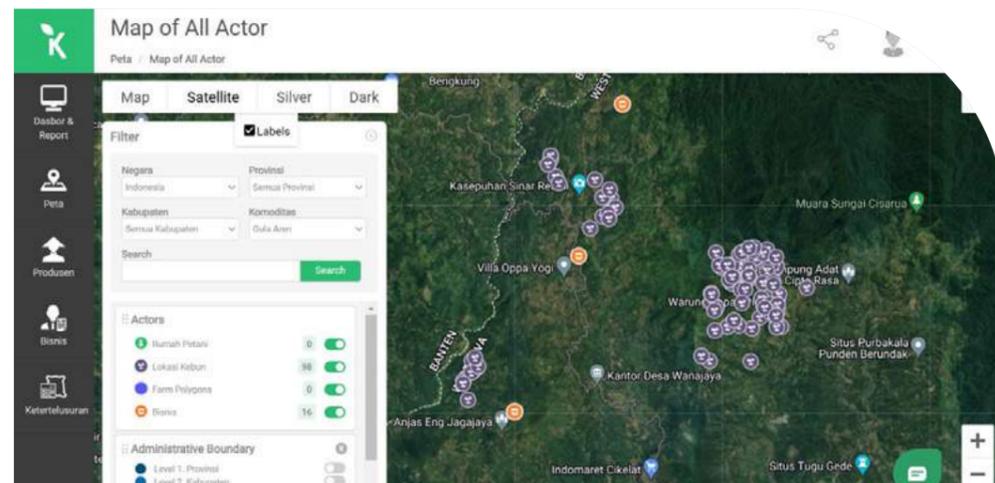


Figure 29: Field visits to ensure that the entire supply chain process is carried out consistently with principles of organic and sustainable farming



How does Mahorahora monitor impacts?

Data from the traceability system feeds into Mahorahora's monitoring of deforestation and other land use changes. P4F also funded a baseline study on the socio-environmental conditions of the sourcing area, to ensure that impacts from the traceability systems can be monitored against baseline data.

The area planted with native species is marked and input to the traceability system, allowing Mahorahora to monitor the progress of the forest regrowth area and the risk of deforestation in the landscape. This arenga-based forest regrowth model will increase Mahorahora's environmental and social impacts by increasing the forest area planted with native species. Also, the forest regrowth area will become Mahorahora's future sourcing area.

Mahorahora's sustainability-sourcing team will periodically verify the information by visiting farmers and farmers' groups. This ensures that 1) farmers produce arenga sugar only from their land, without forest encroachment, 2) farmers produce arenga sugar from organic certified areas, and 3) farmers and farmers' groups get a fair and appropriate income. This process will also help Mahorahora to ensure the sustainability of arenga sugar supply chain. Lastly, Mahorahora could create a QR code to be included on their packaging to showcase farmers' story from a sustainable arenga sugar supply chain.

The GHSNP authority see their support as a way to improve the condition and monitoring of the landscape. This system also provides GHSNP with information on deforestation or land cover changes in the landscape. Mahorahora will coordinate with

the GHSNP authority where violations are identified, such as clearing forest for arenga trees or other agriculture crops, or implementing processes that are not organic.



What are the early signs of success?

Mahorahora plans to include around 150 farmers from four villages into its traceability system. Mahorahora has provided training on the traceability system to approximately 30 farmers and will expand this. Since receiving training, business recording at the farmer level is standardized. It is too early to make a final assessment on the social impacts of the traceability system, but projections show that through this model farmers will receive four times more income than if they sold via middlemen. Though not solely due to the new traceability system, the socio-economic study shows 60% of farmers felt that selling their arenga produce was easier over the past two years. Over the past two years, farmers that supply to the Mahorahora cooperative have received a 17% higher income than a group assessed who are not supplying Mahorahora. Other factors that contribute to these differences are the number of trees and frequency of tapping across the different cooperatives and farmers, and variation in sugar prices over the past two years.

Based on interviews with 97 sugar palm farmers in the three villages, several reports found that there was a change in the community's commitment to protect the sugar palm habitat in the GHSNP following the business relationship with Mahorahora. Communities realized that protecting the forest will have a positive impact on their long-term business, as their sugar palm trees grow within and around of the GHSNP area. Though this positive impact could



Figure 30: Mahorahora provides occupational health and safety training to farmers

be the result of several factors, the training provided by Mahorahora is certainly a contributing factor. The socio-economic study also showed community respondents have switched from illegal logging to the sugar palm business as a result of the increasing value of palm sugar products since Mahorahora's forest protection model has been working in the area.

Business benefits

For Mahorahora, this system increases the sustainability of their supply chain and business proposition. By guaranteeing that the company's raw materials and product supply chains are fully traceable through an integrated upstream to downstream system, the products can target consumers who want to know the traceability of the products they buy. The application of traceability system means that 100% of Mahorahora's products are traceable. Moreover, robust upstream traceability systems give Mahorahora better control over product quality and consistency, a key factor to access markets.

“The traceability system enable[s] Mahorahora to maintain product quality consistency by identifying sub-standard products produced by farmers and to make more accurate cost of goods sold (COGS) calculations.”

Slamet Sudijono, co-founder and CEO, Mahorahora



What's next?

Mahorahora will use information from the traceability system to include in a QR code on the product packaging, which can be scanned by customers to see the farmers and landscape where the arenga sugar comes from.

The arenga-based forest protection and forest regrowth model could also be replicated in other landscapes that have abundant arenga trees or can be planted with arenga trees. Mahorahora hopes to extend the traceability system to other sourcing areas and to an arenga-based forest regrowth pilot location.

Outside of P4F's support, Mahorahora also encourages farmers to gain skills and knowledge to manage their finances, for example providing financial literacy training.

Read more about Mahorahora's sustainability goals here [↗](#)

Figure 31: Slamet Sudijono, Mahorahora's co-founder, next to the precious arenga tree



What can others learn from the P4F examples?

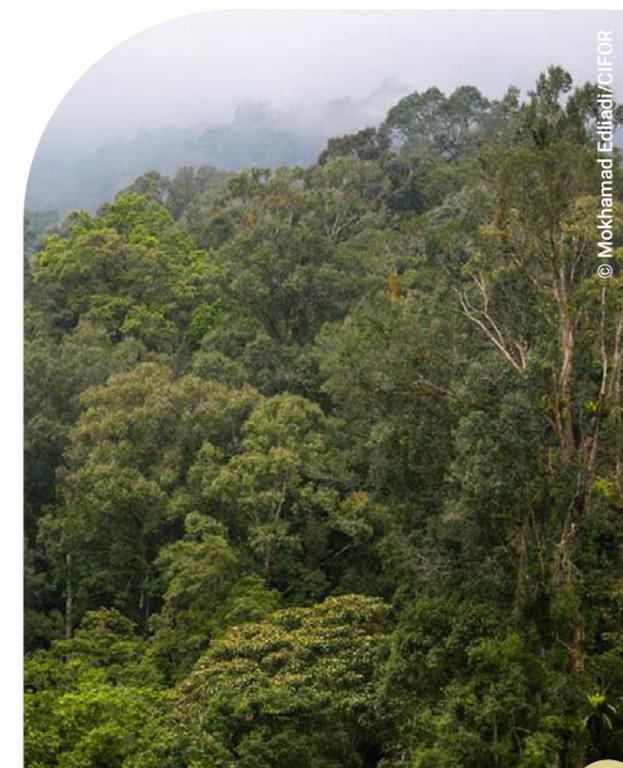
Investing in traceability systems can bring a range of business benefits. For ranchers, meatpackers and retailers, using Conecta to engage and track their supply chain offers a solution to the significant reputational risk surrounding beef sourced from high-risk supply areas in Brazil. For the farmers and Mahorahora, introducing traceability controls into the supply chain is enabling these actors to positively differentiate the brand in the market, while providing farmers with a premium price and understanding of the business benefits of forest protection. In both cases, these systems can be used to provide transparency to external audiences, including consumers and investors, and to report on progress made against company production practices or sustainability commitments.

Traceability systems must create value for producers and farmers, including smallholders, as well as for companies. A key design principle for any company selecting or designing a traceability system is to consider how the system can link to and clearly express value for all actors in the supply chain, beyond being used as a compliance control. Without this, such systems risk not being maintained over the long term. Companies can address this by complementing the introduction of traceability systems with adequate training to producers, to support their practice to transition to digital systems, and sensitization sessions to highlight the advantages of using new systems, such as the added value of products, access to formal supply chains and sustainable markets, and more efficient data collection such as functions that capture data on yields.

End-to-end traceability across the entire supply chain is the gold standard, necessary to identify and mitigate exposure to deforestation risk. Due to the complexity of agricultural supply chains, sourcing from low-risk areas (but without 100% traceability to farm level) may not ensure that the product is free from deforestation. Consumer demand and regulatory trends in Europe and other consumer markets are shifting towards higher traceability and due diligence requirements, and this will increasingly influence the traceability infrastructure that companies must have in place if they want to sell to these markets. P4F cases show that developing or licensing a traceability system for the supply chain is feasible because there are already providers able

to offer this at a relatively affordable cost. However, companies should not underestimate the human resource challenge in implementing these systems, particularly getting farmers to input information into the system via smartphone applications. Companies must find solutions that account for existing conditions, for example utilizing farmer groups to input individual farmer data, and training users to understand the system.

Figure 32: A misty morning in the Gunung Halimun Salak Park



Useful resources

- [Accountability Framework – Traceability guidance](#) [↗](#)
- [FAO Guidance for Responsible Agricultural Supply Chains](#) [↗](#)
- [TFA EU Deep Dive: Geolocation and traceability session: beef](#) [↗](#)

03

Developing forest monitoring mechanisms

Targets and commitments are meaningless unless there is a way to check on progress. So, measurement, reporting and verification (MRV) frameworks and tools can be introduced to ensure that environmental and social impacts are monitored, and performance is reviewed. Supply chain actors can use many existing tools and frameworks to support the additional data collection and analysis needed for robust monitoring protocols. Upstream producers and suppliers are closer to the site of production, and so tend to have better ability to monitor in situ. A range of existing remote monitoring technologies can be used by companies further downstream.

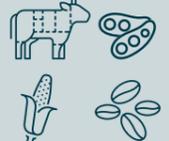
For companies, monitoring can be used to create and share success stories, backed by tangible data, to assure consumers, civil society and investors of their environmental, social and governance (ESG) performance [CDP; AFI, 2022 [🔗](#)]. It is also critical to identify where efforts are not working and check compliance with company environmental and social targets. Measuring results also empowers smallholders, producers and forest communities to continue with sustainable practices where it demonstrates evidence of the ecological, productivity and livelihoods gains. Local producers' and cooperatives' access to further investment or finance can be improved if they can demonstrate the impact their activities have on forests [IIED, 2022 [🔗](#)].



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Produzindo Certo: transforming the agribusiness value chain through a combination of agri-tech and strong on-site interventions



Location: Brazil	Duration: 3-4 years	Commodity: 	Scale: Supply chain	Who can replicate: Other food or agri-business buyers or traders can buy a licence to use the platform
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Key costs (GBP)

HR	~50,000	Engaging IT analysts to make the diagnostic process of farmers more efficient and digitize the platform
IT system development	279,779	Investment made in the technological improvement to monitoring functionality



Why managing environmental and social risk is important for agribusiness companies

To avoid further deforestation, food demand must be met through sustainable farming practices, without clearing more land in the Amazon rainforest. In Brazil, laws that require farmers to implement good socio-environmental practices already exist, yet rural producers face challenges in complying with these laws for a range of various products, including beef, soy and corn. This is due to lack of information about how to comply with regulations, combined with a lack of monitoring and transparency and difficulties in accessing technical assistance from the state and private providers. Meanwhile, markets, consumers and civil society increasingly demand more transparency on companies' socio-environmental impacts, yet buyers in the agribusiness sector face challenges in evaluating and demonstrating their supply chains ESG performance.

The Producing Right Platform (PRP) operates as an ESMS for stakeholders along the supply chain to improve their sustainability. No single activity can address all the challenges that smallholders face in becoming compliant, but some will make this significantly easier. Increasing and improving monitoring systems to track compliance and providing differential market access could be part of successful strategies to incentivize producers to protect forests.

The PRP offers a database of rural properties, matching farmers that produce to high socio-environmental standards to a diverse range of buyers who are looking for responsible rural producers. Any registered property must fulfil specific socio-environmental criteria. The platform is supported by a monitoring system that provides downstream actors with the information they need to confirm their supply chain meets sustainability criteria.



How does the ESMS work?

P4F is supporting PRP to improve the cloud-based platform's functionality by adding new features that simplify and automate the data collection, upload and update processes, meaning that information from field visits is now integrated into the platform rapidly, saving time and cost.

These improvements enable PRP to perform remote and real-time environmental, social and production assessments on farm. Technicians access and input data from the field, and farmers can remotely add data and evidence of socio-environmental actions taken to achieve more sustainable land-use and comply with the PRP monitoring protocol. Another update has removed inefficiencies around the manual monitoring of properties. This was streamlined by linking the platform to official databases, such as the Ministry of the Environment, the National Indigenous Foundation, the Brazilian Institute of the Environment and MapBiomias.

The PRP has become a digital database that gathers farms' social and environmental diagnostics, generates updated performance reports, tracks improvements made by the owner, connects to systems for monitoring illegal deforestation and embargoes, and more. With these digital improvements, the PRP has been able to scale-up the contracts signed with farmers to allow a greater number of rural properties to register under PRP monitoring, with reduced operational costs and improved diagnostic functionality through the automation and ability to engage with the platform virtually. There are now more than 2,000 properties registered on the platform.

Environmental and social criteria

The PRP monitoring system provides information on environmental aspects related to the Brazilian Forest Code, e.g., CAR implementation, deforestation,

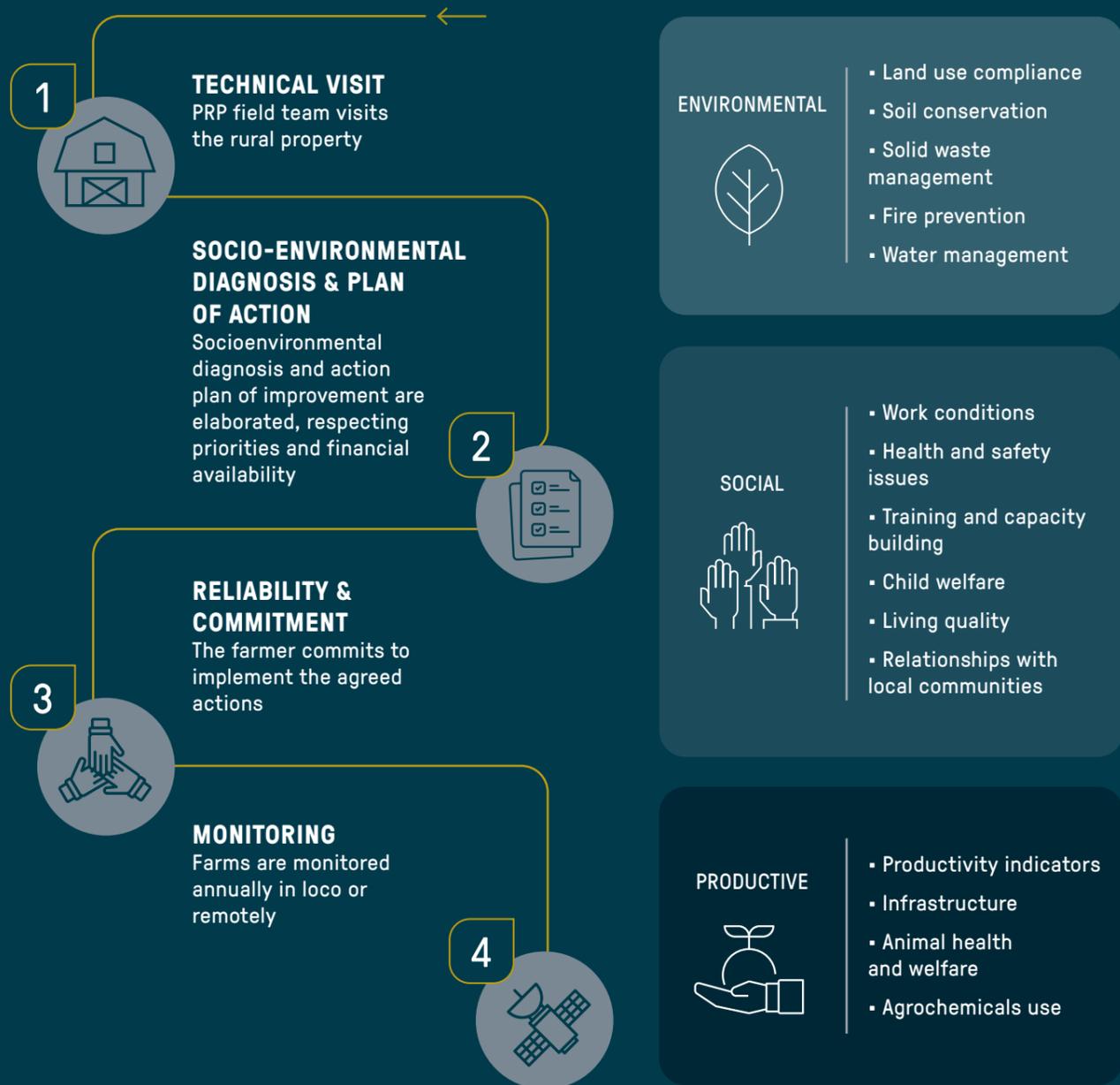


FIGURE 33 | Map of the Producing Right Platform support to producers to adopt best socio-environmental management

PRP SUPPORT PRODUCERS TO APPLY BEST SOCIO-ENVIRONMENTAL AGRONOMIC PRACTICES...



...THROUGH VERIFICATION OF MORE THAN 70 SOCIO-ENVIRONMENTAL AND PRODUCTIVE CRITERIA



overlap with protected areas— such as Indigenous Lands using ICMBio—and FUNAI databases to detect conflicts. Social criteria not only assess against legislative standards but enquires into wellbeing. Indicators include labour conditions (contract rights, equal opportunities, housing conditions), health and safety and worker training, and Department of Labour’s Modern Slavery blocked list. Finally, productive criteria include producers’ infrastructure data, agrochemical storage, etc are included.



How does PRP monitor impacts?

With the automation of its digital functionality to leverage remote sensing technology, if new areas of deforestation are detected on a registered property, or areas that overlap with Indigenous lands and conservation areas, etc, an alert is generated on the platform and analysts verify the information and whether the property has a license for forest-cover removal. Farmers who deforested without a license or do not implement any environmental improvement after two consecutive years are excluded from the platform.

P4F supported PRP to include additional environmental and social indicators into the monitoring platform. To quantify the socio-environmental performance of each farm on the platform, a score is given. The platform currently monitors 16 socio-environmental criteria and 72 indicators, which are monitored annually, including:

- Protected native vegetation: map and protect endangered species and native vegetation, and implement recovery plan of environmental liabilities;
- Fire safeguards: implement forest firebreaks, fire-fighting training and fire combat equipment,
- Soil conservation: erosion control, water analysis and adequate waste disposal and chemical storage;
- Labour conditions: work contracts, equal opportunities with no gender discrimination, adequate living conditions, etc.

The platform offers a dashboard containing the data monitored, which is accessed via login and

password. This database of production, social and environmental indicators helps companies to understand and map points of risk in their production chain, offering essential information for proper management.

Currently PRP monitors **6.2 million hectares** that are under sustainable land use, and **2.7 million hectares** of protected native vegetation.



What are the early signs of success?

PRP ensures a sizeable number of commitments to zero illegal deforestation, since all farmers in the platform must commit to this. Over 4,500 farms monitored by PRP are in compliance with the socio-environmental criteria. Since P4F support, an additional 1m ha of land was brought under sustainable management in the platform.

PRP also provides technical assistance to farmers and producers, such as guidance on best practices and a tailored action plan to achieve sustainable and productive production. Producers registered on the platform can confirm their farms and ranches are following a land-stewardship approach, opening up market opportunities and connections to traders and retail companies looking for positive ESG performance, supporting them to obtain certification, and unlocking credit with banks and investors.

“Sustainable production is vital for the planet. Nowadays, I can say how pleasant it is to do my part. It captivates producers in a way that they could never run the farm any other way. In the past two years, Producing Right played a huge part in transforming my farm. It was instrumental in organizing the property and making the production system more successful.”

Diego Luft, owner of Silo Certo



Business benefits

PRP has signed four new contracts with clients since P4F supported the digitalization of the platform. By 2022, this represented a 145% increase in PRP's revenue. The enhanced monitoring system has enabled PRP to consistently increase its portfolio, as there is clear value added for buyers in identifying legal compliance with environmental and social criteria.

One quote from new client, Citrosuco, outlines how the PRP's functionality helps businesses to collaborate with their suppliers to manage environmental and social risks within the supply chain:

“In partnership with Produzindo Certo ... we developed a survey to help [our suppliers] get to know [their] property better, receiving a free checklist that will help to understand better the necessary requirements for a sustainable production. With the Trilhar Program, we can continue to build a better citrus farming industry together and produce more responsibly.”

Citrosuco

This is further demonstrated by the several partnerships Producing Right has, such as with COFCO, a food processor that is receiving support to measure carbon emissions in coffee plantations to exchange carbon credits. PRP worked with six farmers covering 1,319 hectares, and used data relating to geographical location, ownership of the farms to confirm the farms met standards relating to no-deforestation, modern slavery, land rights and conservation priorities.

“Partnering with sustainable farming expert Produzindo Certo, COFCO International’s teams have worked with six coffee producers to analyse social and environmental risks on their farms, with an in-depth focus on measuring carbon emissions. This builds on the company’s work to produce more sustainable coffee and is part of a broader push to develop a comprehensive process to measure and independently verify the sustainability performance of coffee farms. Importantly, COFCO International is committed to achieving this in a practical way that creates value for producers.”

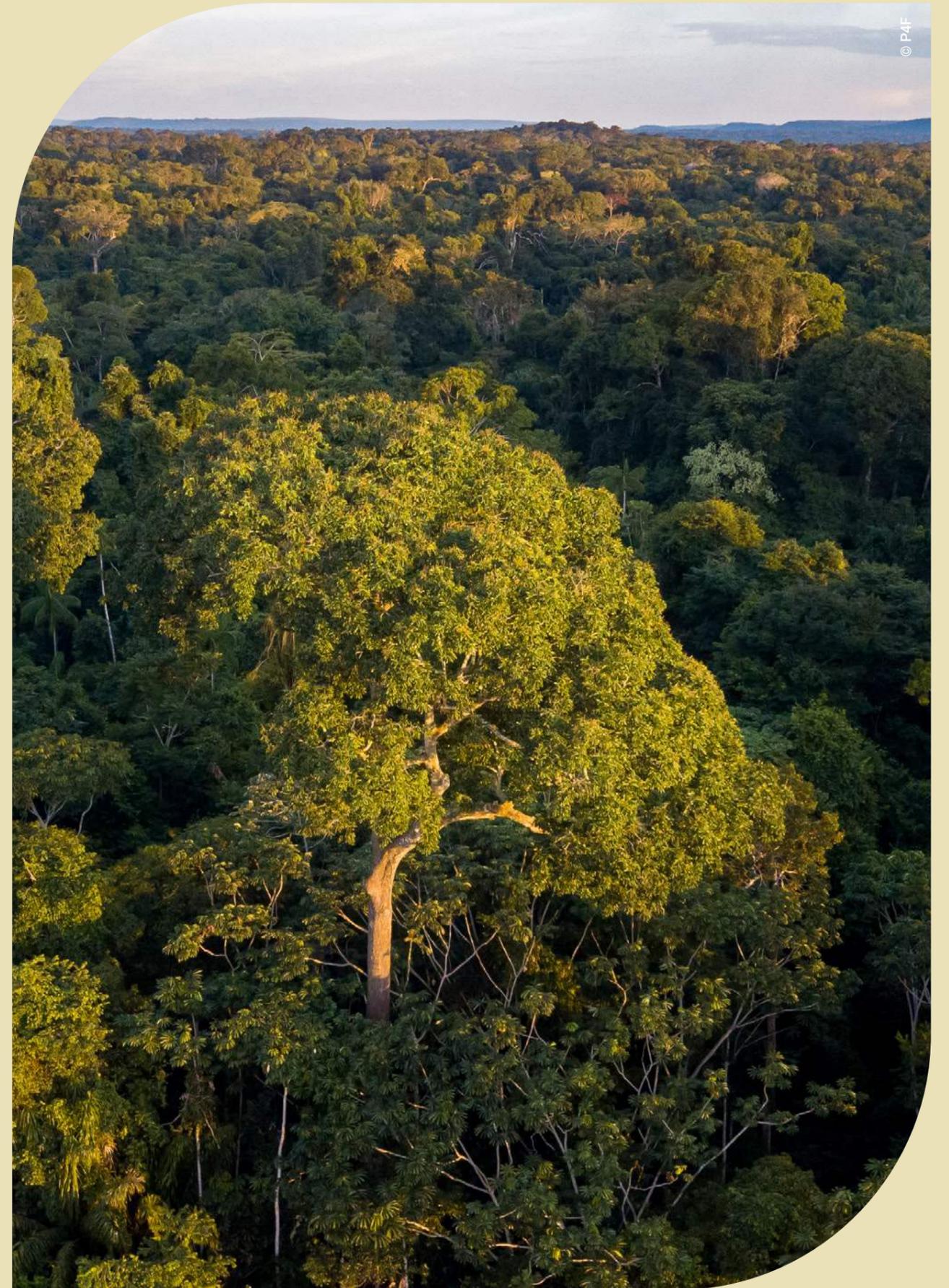
COFCO, June 2022



What's next?

PRP continues to scale the platform, aiming to add a further 10,000 farms and reach 10 million hectares under sustainable land use on its system by 2023.

P4F is currently working with PRP on its scale-up plans that include creating notifications to allow registered producers to demonstrate interest in specific opportunities (such as certification or credit). Though PRP's clients can access the dashboard, the platform is not integrated into companies' systems – part of the scale-up support will help to integrate the PRP into its clients' systems, making the platform an interactive tool to connect the entire value chain in pursuit of more sustainable agribusiness.



© P4F



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Introducing a landscape monitoring system to protect forests and wildlife in the Meranti Harapan Landscape

Figure 34: The treetop in the Meranti Harapan rainforest



Location: Jambi and South Sumatra, Indonesia	Duration: 2 years	Commodity: 	Scale: Landscape	Who can replicate:
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Key costs (GBP)

HR	~405,000	Includes neutral facilitator project staff, ranger salaries and a range of technical consultants that support the planning, training and implementation of the ESMS protocols across the landscape, such as GIS and mapping specialist; social and community consultants
Monitoring tools	<28,000	Cost of 100 x Audio Moth and 10 x Guardian devices, and illegal activity and biodiversity monitoring consultant to analyse data
Workshops	~20,000	Approximate cost of monthly and quarterly meetings for Forum members over two years



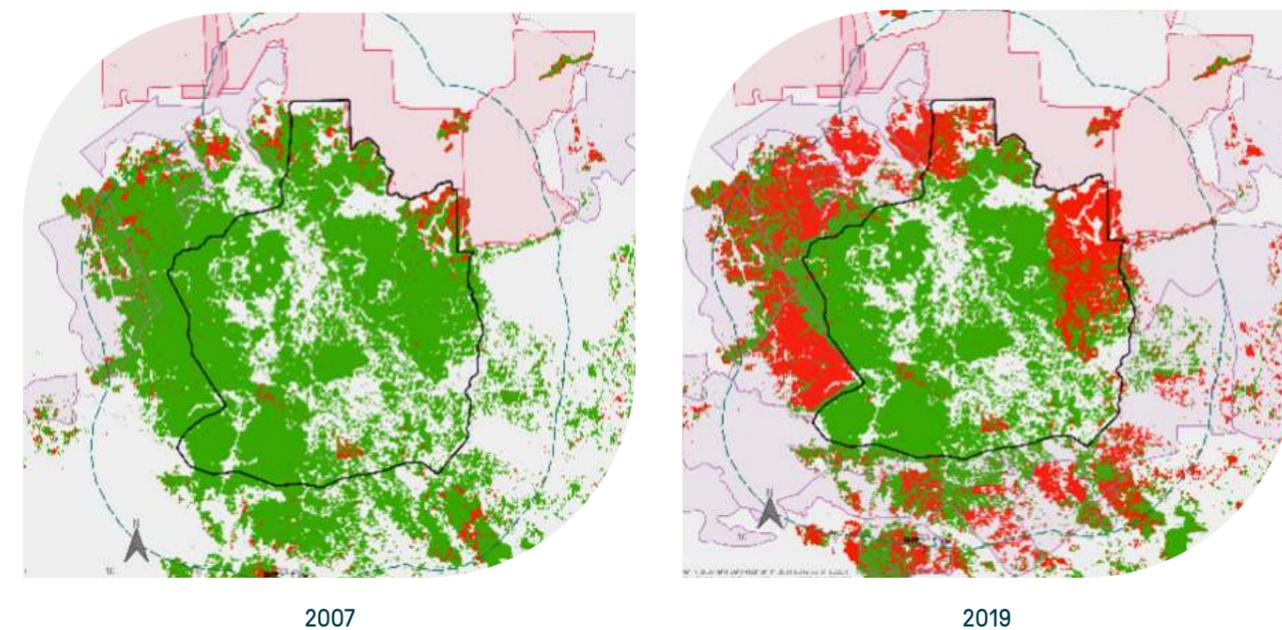
Why managing environmental and social risk is critical to the land managers' business

The Meranti-Harapan landscape is a 288,265 hectare low-land forest area with abundant biodiversity across the Indonesian provinces of Jambi and South Sumatra. At the heart of it, lies Hutan Harapan (HH), also known as the Forest of Hope, which is a 98,555 ha production forest managed as an ecosystem restoration concession (ERC). The landscape is important for maintaining ecosystem services, including water supply, carbon storage and sequestration. Protecting

its biodiversity helps to contain pests and invasive species, which is as beneficial for concession owners as it is for the integrity of the forest ecosystem [Burung Indonesia, 2016].

Vast areas of the forest have been converted for agriculture. Over the past ten years, HH alone has lost 25% of its forest cover. Illegal logging, encroachment and a recently approved road infrastructure plan also threaten forest businesses legally operating in the landscape. In the absence of an integrated and rigorous plan to monitor and protect the forest, the road will mean easier access to the forest, leading to a surge in deforestation and forest degradation, biodiversity loss, and social conflicts: a situation that is not only bad for the environment but also for business.

FIGURE 35 | Forest cover change across the Hutan Harapan landscape



2007

2019



P4F supports an innovative Landscape Protection Forum that brings together six private land managers (LMs)—PT REKI, PT Agronusa Alam Sejahtera (AAS), PT Berkat Sawit Utama (BSU), PT Bumi Persada Permai, PT Sentosa Bahagia Bersama (SBB) and PT Alam Lestari Nusantara—that surround the ERC in the Meranti Harapan landscape. The Forum is facilitated by local NGO KKI Warsi, and is developing more effective, shared prevention and mitigation measures to reduce the risk of doing business within the landscape, resulting in a protected and thriving forest. P4F funding has targeted the introduction of joint management approaches and monitoring tools that leverage data and processes, adding value to members’ environmental and social resources and risk management.

Though the many actors that operate in the Meranti-Harapan landscape have different objectives, by addressing landscape-level threats and risks together, promoting collective action and strategies between stakeholders and more efficient use of the existing resources, the landscape is made more stable, and thus more attractive for private investment.



How does the ESMS work?

There are three key areas where P4F has supported this landscape-level ESMS: (1) strategic decision-making through stronger data systems and tools; (2) prevention and mitigation strategy to landscape-level environmental and social risks; and (3) strengthening stakeholder engagement and collaboration. Together, these elements provide a foundation for integrated landscape management.

1. Better data, better decisions: promoting strategic decision-making through stronger data systems and tools

Protecting the forest landscape and its biodiversity is a complex problem, involving many stakeholders. Actors need good data from multiple sources, good organization and integration of data, and sound analytics if they are to make strategic risk mitigation decisions and maximize limited resources. The Forum supports members to improve consistent data collection, monitoring and analysis.

One concession, PT REKI, uses the SMART application (app) for ranger patrols and biodiversity data collection; others use tally sheets or different tools. There was a lack of scrutiny of data generated by the security posts

that control access to people and vehicles entering and leaving the concessions. Despite the similar nature of the risks faced by all land managers, the data collected was used individually and not shared.

In the first year, the Forum facilitated data-sharing protocols for integrated landscape-level risk management and extended the use of the SMART mobile app to monitor non-authorized vehicles passing by security posts. Rangers were trained to use SMART Patrol apps across four concessions. SMART patrol is an analytical tool that helps to standardize and streamline data collection. Rangers can record patrolling data, such as non-authorized vehicles passing by security posts, into the SMART app on their mobile device. With SMART, observations from the forest can be easily, accurately and quickly collected. The data is integrated into a landscape monitoring dashboard, which facilitates data collation for automated analysis, for example tracking the history of incidents by geolocation or by vehicle.

An integrated dashboard is still in development however the prototype has been built. 26 personnel responsible for data management in six concessions have been trained on how to conduct analysis using Power BI. Data is aggregated and collected into this central dashboard, which enables Forum members to see trends over time, including when and where incidents are happening across the entire landscape.

Joint-patrolling highlights:

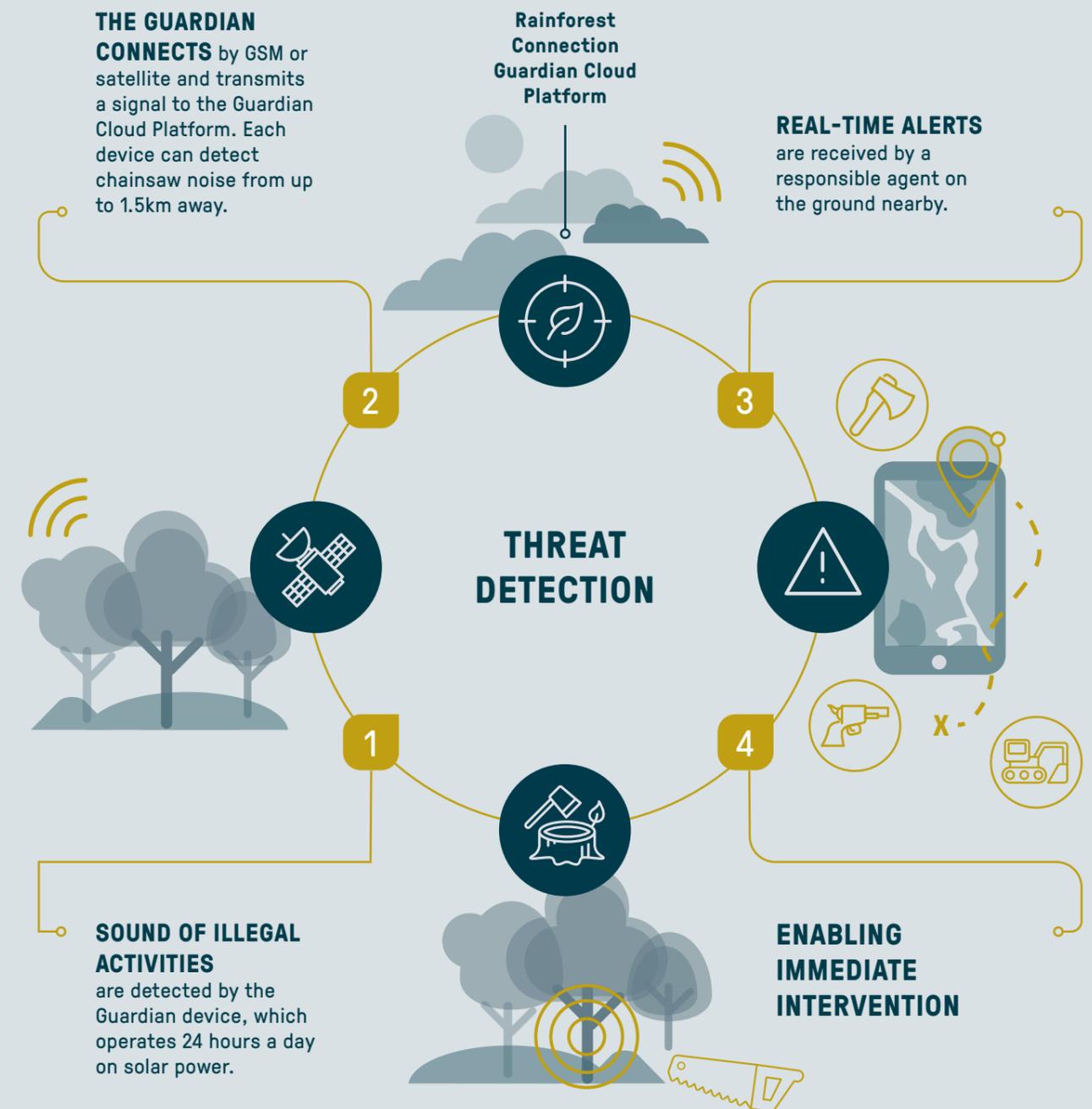
12 cases were found: 7 illegal logging and 5 illegal oil drilling	42 rangers from 5 concessions participated in the patrolling	10 km range of distance were covered
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Expanding the area monitored – and thus protected - through technology

The Protection Forum partners with Rainforest Connection (RFCx) to pilot new acoustic analysis technology for on-the-ground protection against illegal logging and biodiversity assessment and monitoring in HH. Acoustic remote sensing is an emergent and cost-effective technology that allows land managers to monitor larger areas of forests without the need to deploy significant resources, and covers even the deepest part of the forests often unreachable by rangers.

The Protection Forum introduced two types of this technology:

FIGURE 36 | How the bioacoustics forest monitoring works to generate real-time alerts



Source: Rainforest Connection





Threat detection – stopping illegal deforestation in real-time

Ten solar-power devices, called Guardians, were installed in the tree canopy in selected high-risk areas across PT REKI's concession. The devices pick up logging noise, such as the sound of a chainsaw, and create real-time alerts to rangers, so that they can pinpoint where potential illegal activity is happening and respond promptly. The Guardians' satellite connectivity means these devices can be used in very remote areas of the world with no cell phone connectivity. To date, 90 alerts were received and responded to by rangers.



Figure 37: The RFCx team installs the Guardian devices

Biodiversity assessment and monitoring – informing conservation efforts with data-driven insights

One hundred Audio Moth devices were installed throughout the concession. They capture trends associated with the sounds of the animal community, combining recordings with artificial technology (AI) recognition models to identify species present in the area.

The data collected is available in a central dashboard, and is analysed by manual validation of RFCx scientists to produce a biodiversity report. This is used to understand and measure the biodiversity impacts in the landscape.

So far, bioacoustics monitoring has detected 103 species of birds and mammals across 77 sample sites, which represents over a quarter of the total birds that are typical in the region. Thirty-eight of the species detected are listed as threatened according to IUCN³. All species detected in the recordings are considered native to Sumatra; one is considered endemic. The biodiversity data will be used as a baseline and reviewed periodically to measure positive/negative impacts over time. The members of the Protection Forum will use this to determine the right strategy for wildlife conservation interventions, based on the species detected by the devices.

Automated recordings have improved the land managers' ability to monitor biodiversity in many sites simultaneously. This generates millions of recordings, but it is often difficult to extract valuable data from these recordings. To help solve this problem, RFCx developed a database and analytical tools that integrate file management, audio processing, spectrogram evaluation, soundscape analysis, species-specific identification modelling, and verification in a web-based application.

3. The International Union for Conservation of Nature's (IUCN) Red List Categories and Criteria are a system for classifying species at high risk of global extinction



Figure 38: The Wreathed Hornbill (Julang Mas in Indonesian), at high risk of extinction in the wild

2. Prevention and mitigation of landscape-level environmental and social risks

The poor management of environmental and social issues associated with business activities can create risks to the business itself, and to the financial institutions backing operations. Without proper planning, the consequences can cause production delays, accidents, revocation of operating licences, and negative publicity. Although the land managers and top decision-makers understand the benefit of having good environmental and social risk management, those working on the ground may not be so aware.

Introducing IFC's Performance Standards to middle-managers, rangers and field officers

Companies in complex landscapes often hire rangers or security personnel to protect their assets and facilitators to engage with communities living inside or surrounding the concessions. Patrolling landscapes is no easy task: they often encounter illegal activities such as encroachment, illegal logging, or wildlife poaching. These interactions introduce the risk of social conflict and harm to communities.

The Forum promoted the adoption of best practices for compliance with the IFC Performance Standards and the Voluntary Principles on Security and Human Rights. These guidelines help organisations conduct robust environmental and social practices, encourage accountability, and contribute to communities' positive development impact. Middle managers, security and field officers were trained to identify, prevent and mitigate risks, specifically related to IFC PS 1 on Assessment and Management of Environmental and Social Risks and Impacts, PS 5 on Land Acquisition and Involuntary Resettlement, and PS 7: Indigenous Peoples. One key result was that land managers agreed to a standard operating procedure (SOP) governing engagement with local and indigenous communities, which meets international best practices.

Joint patrolling with SMART

Most of the LMs already have rangers who conduct routine patrols focusing on securing the companies' assets from illegal activities. While biodiversity is also an asset, only three of six concessions have dedicated teams to monitor and protect biodiversity in their conservation areas. Due to a lack of trust, the LMs did not share information regarding risks or alerts with neighbouring concessions. Limited personnel, lack of holistic intel, and silo patrolling

activities make it difficult to address the underlying landscape-level threats.

Through the Landscape Protection Forum, members have agreed to collaborative actions to address imminent threats, maximising the available resources. They assess the risks jointly and decide on the prevention and mitigation approach in specific high-risk areas. With trust built between Forum members, common goals to protect the landscape, and an SOP to regulate the exchange of information, the LMs now regularly share tactical information including risk assessment, maps, patrol reports, and alerts. By collaborating, the LMs can share resources and insights to jointly improve monitoring and detect encroachment, while sharing the costs of undertaking these patrols.

To date, the Forum has facilitated three joint patrols and agreement to establish a joint security post where high incidents of illegal logging were identified. All encounters are logged on the SMART app, which uses GIS mapping data to pinpoint the location. This information is used to inform patrol management plans.

Landscape SOP for human-elephant conflict mitigation

Human-elephant conflict is one of the main causes of declining elephant populations in Sumatra. The Forum developed a SOP for the stakeholders operating in the landscape. The SOP provides guidelines for safeguarding wildlife and stakeholders, a multi-stakeholder coordination system, various conflict mitigation methods, and the agreed tools and infrastructure. The document was developed in partnership with local NGO, SCENTS, drawing from their learnings in other landscapes, such as Lampung, Sumatra. The SOP will allow stakeholders to take prevention and mitigation measures and respond quickly, effectively, and avoid mistakes that escalate conflict or harm.

Law enforcement strategy

In Indonesia, weak law enforcement has been a constant challenge in the fight against forestry crimes, such as illegal logging and wildlife trafficking. Surveillance by authorities is inadequate relative to the area that needs to be monitored, for example, in Jambi the ratio of forest area to Forest Police officers (Polhut) is 16,728 hectares per officer. Only a very small percentage of illegal activities have been effectively prosecuted.



© PT. Restorasi Ekosistem Indonesia

Figure 39: Rangers planning patrols consult a map of the area

The Forum facilitates coordination, collaboration, and partnership with key strategic organizations that can help enforce the law. Three strategic approaches were agreed: a) including local law enforcement agencies in regular joint patrols; b) joint reporting that focusses on the scale of the incidents at landscape-level; c) building the capacity of land managers to prevent, respond and investigate or report crimes to law enforcement officials. This includes how to follow-up reports to receive proper response from officials.

3. Strengthening stakeholder engagement and collaboration

In addition to having the tools and systems to make efforts more efficient, and the knowledge of how to use these tools, and best practice approaches for environmental and social risk management, LMs also need strong working relationships and trust to work together on the issues they face collectively. The final piece of the integrated landscape management system aims to bring these actors to work together.

The Forum also introduced a SMART Community of Practice (CoP) for practitioners- inside and outside the Protection Forum- to learn and share practical know-how around adopting the technology. Running monthly, the CoP has gathered five times to learn and discuss topics from the basic configuration of the SMART Patrol, to data modelling and verification, reaching around 110 participants.



How are impacts monitored?

The monitoring tools and data management systems reported here are being used across the concessions to monitor threats to the forest and ecosystem in real time. The Forum members established a SOP for taking action when logging or encroachment is identified, which instructs forest rangers to check the location within 24 hours of receiving an alert. Forest rangers can log reports for incidents identified and assessed to document whether it was a false alarm or if illegal logging activities are taking place. Data is aggregated and collected into the central dashboard, using Power BI for data analysis, which enables Forum members to see trends over time, including when and where incidents are happening across the landscape.



What are the early signs of success?

Though it is too early to verify that deforestation rates have reduced, there are notable benefits to actors in the landscape from these management systems. The data generated and shared among the six LMs are used to inform management decisions by authorities in the area and to plan for future interventions, enabling joint responsibility for the risk management needed to protect and sustainably manage the forest.



Figure 40: The sounds of the Meranti Harapan forest

Business benefits

The collaborative platform and landscape monitoring systems are helping LMs progress their sustainability goals while addressing priority operational risks together - no longer tackling these challenges in siloes. One of the key early changes is the change in attitude and practices of the Forum members. With the trust built through the Forum, there is agreement to work together on forest protection, demonstrated through the joint patrolling, joint mitigation plans and policy adoption. LMs have agreed to share data to support monitoring analytics. Warsi introduced feedback questionnaires, which has returned positive results. Members have requested increasing the frequency of communication, including more technical discussions on the integrated landscape management. One concession has expressed interest to adopt the SMART approach across the company's entire operations.

The LMs will use data from the SMART platform and bioacoustics tools to convey tangible impact reporting to investors and customers. The Landscape Protection Forum will use this to leverage additional funding. At least three of the LMs report publicly on their efforts to tackle deforestation and mitigate wildlife conflict/biodiversity impacts of their operations. For example, in PT BSU's sustainability reporting, the Forum collaboration is referenced as

'crucial' to achieving sustainability in their palm oil plantations and the surrounding landscape, as well as a key means of delivering their No Deforestation, No Peat and No Exploitation (NDPE) policy.

“We cannot work in isolation to achieve our NDPE commitments. Collaborating and partnering with experts, including sustainability implementation partners, NGOs and CSOs, local communities, customers, employees, government agencies, smallholders, and academics, is crucial. Notably, we employ a landscape approach within the scope of some initiatives to maximize our outreach and impact in the areas where we operate. KPN is part of several industry and landscape initiatives, including the Meranti Harapan Collaboration Platform Program, which aims to protect the Sumatran Lowland Rainforest in the Meranti Forest area.”

KPN Plantation, parent company of PT BSU, Sustainability Report



What's next?

Going forward, the Forum is also working with LMs to build cross-concession community-based NTFP businesses that will provide a sustainable alternative livelihood for communities, thereby providing economic incentives to farmers to keep the forest standing. Investing in these NTFP models will also optimise the existing social programmes that each concession implements, such as smallholder support schemes, and improve relationships between communities and these businesses.

To date, Warsi has conducted food mapping, market-based commodity selection, identified target areas based on a landscape risk assessment, and conducted joint training on essential oils for farmers. PT Java Agro Spices has been engaged as a potential market player who could become a long-term commercial partner for the business models.

Conservation is a long-term process and requires significant resources. In addition to the stronger partnerships and monitoring measures that are now established there is a need to build financial sustainability for the ERC. P4F is supporting an exit strategy.

Figure 41: Cattle ranching in Brazil



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What can others learn from the P4F examples?

Actors need to set metrics based on what they intend to achieve, how this will be done and what the most relevant data to be measured are. This is the starting point in designing monitoring mechanisms, and actors should focus on the material risks and impacts related to their core business. The indicators and monitoring methodology will depend on the type of forest protection objectives chosen (e.g., restoration, conservation, biodiversity) and should be specific to the aims. Data generated from monitoring needs to be communicated in clear language to company decision makers, operators (i.e. those using or delivering the monitoring systems) and external stakeholders, so that the value and impact from enhanced monitoring is clear to all, strengthening buy-in.

The monitoring capacity of companies across all agricultural value chains is a crucial part of ensuring efforts are working to reduce deforestation. Companies can improve their capability and competency to understand the environmental and social impacts associated with their business by investing in this technical expertise. This can sit within sustainability, risk and/or monitoring teams. Alternatively, P4F is supporting the development of third-party tools, such as the PRP, which provide agricultural companies with this monitoring expertise. Even with external tools like PRP, the services delivered can build companies' understanding of the risks, impacts and key metrics involved with specific forest protection activities. For the land managers engaging with the Harapan Protection Forum, managers, patrol teams and rangers partnered with expert organisations since day one to adopt new technologies and learn from specialists with extensive experience, enabling these private sector companies to build their capacity to undertake monitoring forest and wildlife protection.

Digital technologies are greatly improving the scale, speed and ability to collect the data necessary for quality monitoring and impact assessment. The technologies introduced by the Harapan Protection Forum offers more cost- and

time-efficient monitoring than traditional approaches that require groups of scientists to spend significant time (weeks) in the field. These technologies are replicable and scalable from small- covering hundreds of hectares- to large-scale projects across thousands of hectares. The PRP platform is highly adaptable to a range of actors, large and small farm profiles and multiple commodity value chains. It is able to tailor over 70 indicators to enable the design of monitoring and validation specific to each client's sustainability targets. The monitoring tool can be used simultaneously across a large number of properties. Quality monitoring is an investment and even with newer tech, implementing this takes time, yet this strengthens companies' license to operate.

Companies still need to budget for on-the-ground response protocols and back these up with appropriate resources. There is still a need to combine digital and remote technologies with manual or human verification of the impact on the forest. Monitoring activities do not need to be undertaken by companies individually though. As the Harapan Protection Forum demonstrates, there is value gained from establishing collaborative relationships with forest authorities, communities and other actors in the landscape to harness knowledge and data to inform future strategy, sharing risk mitigation measures that are common to all.

Useful resources



- [Accountability Framework Operational Guidance on monitoring and verification](#)
- [World Resources Institute Guide to Identifying Priorities and Indicators for Monitoring Forest and Landscape Restoration](#)
- [ADM Capital Foundation – Accounting for biodiversity Working Paper](#)



Conclusion and key recommendations

Actors throughout agricultural commodity supply chains face pressure to introduce or improve their systems for managing their environmental and social risks and impacts associated with their products. P4F has been working with partners to design and pilot models that incorporate forest protection and social benefits for producers and forest communities. Across P4F's portfolio, the introduction of these management systems has helped actors to improve the sustainability of their operations, position their products towards climate-conscious consumers, and secure additional private investment. To be effective, P4F's experience shows that often a combination of the three areas of best practices is needed.

Across the P4F examples, the following cross-cutting lessons are evident:

- **Designing processes that are attractive to businesses, and producers and smallholder farmers is key to all ESMSs.** To ensure smallholder and producer engagement, and buy-in from staff, company operators and management, company management systems need to build a strong business case for agriculture systems and traceability or monitoring requirements. When designing and introducing an ESMS, companies must budget for training and sensitization of activities with operators, farmers and communities as a key cost of introducing the system. Developing a system or process without planning how to introduce and implement it with key stakeholders (those that will use it) will have limited success.
- **Effective management systems should be implemented consistently over the long term.** A robust ESMS is much more than a set of policies and processes. Companies also need to establish and invest in long-term relationships to build trust in the systems within teams and help to embed processes within communities. P4F's case studies show that it takes, on average, two years to implement new systems, depending on the scale, e.g., number

of suppliers/farmers targeted, demonstrating that robust management of environmental and social risk is an ongoing process. Companies that want to introduce ESMS need to dedicate time and resource to establish the ESMS as part of their business processes. They should also consider participatory processes for reviewing and updating the systems to ensure they are continually improved, where appropriate.

- **Greater strategic focus on more difficult to measure outcomes and impact is needed.** There are still gaps in robust measurement of indicators that are less easy to quantify, such as living income, social empowerment, gender dynamics and biodiversity impacts, all of which are incredibly important to managing the environmental and social risks associated with food production systems. Though a number of the projects highlighted here aim to improve livelihoods, gender empowerment and biodiversity, it is difficult to collect data and too early to assess the long-term effectiveness of the management systems in improving these outcomes. Companies should ensure they introduce structures to collect these data over the long term to assess how lasting the changes are.

This report has focused on actors in supply chains, but there is also a need for financial institutions to step up their risk assessment of the entities they invest in. The Global Canopy report (2023) [finds](#) that only 18 of the 150 financial institutions surveyed recognize deforestation as a material risk and only 20 see this as a reputational risk. This is staggering given the science and clear indications that deforestation is a systemic—i.e., existential—risk to businesses that depend on forests or agricultural commodities.

Similarly, governments play an important role in supporting effective forest-protection management systems. Governments must also engage with civil society and the private sector to support sustainable governance and monitoring systems of forests at national and subnational levels, and facilitate robust enforcement and accountability measures that disincentivize actors from clearing forests.



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Writers: Charlotte Woodland, Fon Brunstead, Isabella Granero, Kidist Darsema, Wiwik Widyastuti and Mirza Malik

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