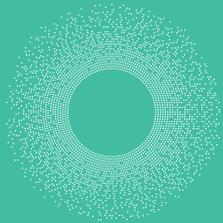




Global
Landscapes
Forum

Luxembourg 2019

White Paper



Breakthroughs in
Sustainable Finance

Barriers to mainstreaming

What is preventing successful pilot studies in deforestation-free commodity production from scaling-up?

This White Paper was produced by the **UN Environment Programme**.
The content of this GLF white paper is the sole responsibility of the author.



Photo by Axel Fasolo/CIFOR

Commodity production is one of the main drivers of deforestation. To date, much of the focus has been on commitments by many private sector companies to remove deforestation from their supply chains. Forest Trends has identified 484 companies that have sustainable commodity commitments; of these, 72 have committed to zero or zero-net deforestation for at least one forest risk commodity, while the other 412 have a commitment short of a zero-deforestation supply chain (Rothrock et al. 2019). In spite of these efforts, the uptake of sustainable production models remains limited. There has been a proliferation of pilot projects, yet measurable impacts on deforestation and forest degradation remain hard to demonstrate at scale. Only 21 of the 72 companies with zero or zero-net deforestation commitments have provided a quantitative report of their progress (Supply Change 2019). Scaling up these projects beyond single actors, single supply chains or single locations remains challenging.

With large shifts predicted in the future suitability of key cultivation areas (Leemans & Solomon 1993; Elliott et al. 2013, Smith and Gregory 2013), it is critical that producers adopt production models that can increase resilience against climate change and provide

better economic certainty to producers, while at the same time delivering environmental and social benefits that, to date, have not received appropriate levels of consideration.

Sustainable models for commodity production that can generate positive risk return ratios compared to business-as-usual projects do exist (UNEP no year). However, across the globe rates of adoption remain low (Tey et al. 2012, Mutyasira et al. 2018, Van Thanh & Yapwattanaphun 2015). In recent years, UNEP has undertaken analysis on the relationship between soft commodities and deforestation, including analysis into the business case for production models that promise both environmental and economic benefits in Vietnam and Costa Rica. Yet, in spite of both countries adopting policies promoting the adoption of sustainable agricultural practices that can improve livelihoods and reduce environmental degradation¹, levels of uptake have remained limited. There are significant barriers preventing widespread investment into, and adoption of, novel and sustainable agricultural practices. This paper identifies some of the barriers preventing the transition to new paradigm of commodity production.

¹ Costa Rica has developed a Low Carbon Livestock Strategy and a NAMA for the livestock sector.

Box 1. Robusta cultivation in the Central Highlands, Vietnam

Between 1990 and 2000, expansion of Robusta coffee and rubber cultivation led to considerable loss of primary forest cover in the Central Highlands region of Vietnam. Decades of intensive agricultural practices have subsequently led to degraded soil and loss of productivity. Models of climate change impacts suggest that much of the area may become unfit for coffee cultivation, threatening a second wave of deforestation. Agroforestry or intercropping has the potential to generate adaptation benefits by reducing soil and water erosion, improving water management and in reducing crop output variability. Trees or bushes also yield additional products to be used for food consumption (fruits) or generating additional revenue and can help to uphold household income during times of volatility in the coffee market. Planting trees and bushes also increases carbon sequestration both above and below ground (McCarthy et al. 2011). In recent years, both the government and agribusinesses have made successful interventions to improve smallholder livelihoods, but fluctuations in the price of coffee and other commodities produced in the region have led to doubts concerning the long-term sustainability of production.

Box 2. Beef production in Costa Rica

In Costa Rica, around 20% of the country's land is dedicated to cattle grazing (Sierra and Cambroneró 2015), and forest clearance to create additional pasture has been one of the key historic drivers of deforestation. Once cleared of forest the land can quickly deteriorate, losing its capacity to preserve water and its ability to sequester and store carbon. There are opportunities for improving grazing practices that support land restoration and carbon sequestration, and that also provide financial returns for farmers.

i. Volatility and market cycles

Commodity markets are dominated by phases of over and underproduction (Gelb 1979). For many agricultural commodities, there is an initial period of a few years before the crop becomes productive. This, in combination with the difficulty of predicting commodity prices at such time horizons, means decisions to invest in new production capacity are based on adaptive expectations. This creates the conditions for lead-lag cycle in commodity markets: Signals sent by increases in real commodity prices induced by increases in global demand set in motion investment in new productive capacity and productivity-enhancing technological innovation. This leads to a lagged increase in supply and eventually to oversupply (Abaunza and Arango). Oversupply then leads to a reduction of market prices, which in turn leads to a reduction in the volume supplied as producers respond by taking additional capacity offline.

Price fluctuations are further amplified by the unpredictability of global weather patterns and their effect on harvest yields. Additionally, climate change is predicted to increase both the frequency and intensity of extreme weather events, causing further disruption to production and supply chains, exacerbating the threat of climate-related disasters and price shocks, and further contributing to market volatility (Tran et al. 2012, Chatzopoulos et al. 2019).

Volatility in commodity markets deters producers and supply chain actors from making investments to improve production or increase resilience because it reduces confidence in future market conditions. For example, farmers or producers who increase their investments following a period of high prices may find it difficult to recoup their investments if agricultural prices fall.

Additionally, few smallholders have access to risk management tools to hedge against price swings leaving them fully exposed to the fluctuations of commodity markets. This contributes to producer insecurity (Maurice and Davis 2011) and can lead to a vicious cycle for producers where lower levels of investment lead to the production of lower quality commodity, lower yields and a greater exposure to emerging risks, such as climate change. This in turn suppresses earnings expectations for smallholders further reducing their incentive to invest, while also increasing the motivation to move to alternative crops, potentially destabilizing the supplier base and contributing to further market fluctuations. There are perennial calls by industry for a mechanism to stabilize commodity prices (Verma 2019). Other alternative proposals have called for industry bodies to regulate the deals between traders and producers to ensure a more equitable distribution of value in the value chain.

ii. Opportunity cost

Investments with demonstrable environmental benefits are often in direct competition with other investment needs. Additionally, they may have a longer payback period and, initially, have less certain returns (UNEP, no date), making the investment appear less attractive. In addition to competing investment needs, awareness and technical capacity are significant barriers that further inhibit spontaneous investment in novel and environmentally beneficial practices.

iii. Linear marginal cost curve

During the course of development of renewable energy, technological innovation and economies of scale brought down the marginal cost of implementation and led to increasing rates of adoption. However, in land use, many of the investments that either serve to improve sustainability or restore degraded ecosystems for productive purposes have a linear cost curve. This is typically the result of a cost structure dominated by variable costs over fixed costs, such as fertilizers and other phytosanitary inputs that must be applied in equal quantity on each unit of land, combined with the frequent overreliance on manual labor in the absence of machines or more technically advanced solutions.

This implies that the cost of transformation is directly proportional to the area of land to be transformed. Moreover, while demonstration projects serve to show feasibility, differences in the ecological, political and regulatory context between one location and the next, mean that economies of scale may be harder to achieve.

iv. Market fragmentation

Where producers compete on price in a global market, any investment that increases production costs for the short or mid-term reduces their profit margins and/or their competitiveness relative to the market. At the same time, global supply chains operate across multiple regulatory regimes and large buyers have an international footprint. Without a global standard for sustainable production which penalizes negative externalities, regulators enforcing more sustainable production models risk this may inhibit the competitiveness of their region, with potentially serious ramifications for the welfare of their producers.

v. Demand-side constraints

Where investments are made to improve production processes, such as those proposed by the various sustainability standards and eco-labeling or certification schemes, without sufficient levels of demand to bolster prices of the end products, producers will not be sufficiently compensated for their additional production costs, making production uneconomical and potentially compromising the welfare of smallholders. This has largely been the experience in Robusta (Box 1) supply chains, which has seen a gradual reduction in the premium provided to farmers for certified production practices.

vi. Supply side constraints – the availability of suitable financing

Sustainability improvements in agricultural supply chains increase both capital and operational expenditure in the short term. At times when margins are depressed due to low market prices or high volatility, this negatively impacts the economic rationale for transferring to more sustainable business models.

Inadequate financial coverage is already a constraint for many smallholders and farmers during the growing season. Many lack the financial resources to reinvest in the crop or working capital for inputs and labour. In Vietnam, smallholders usually borrow money to spend in January and repay the loan when they finish harvesting coffee from October to December. Significant capital is required during replanting or if a farmer wants to transition to another crop (UNEP, no date), this represents a significant risk to lenders as the farmer is not generating any cash flow, and future cashflow from the new crop being planted is uncertain.

In the absence of loans from banks, smallholders often take loans from informal credit providers. In Vietnam these are often non-cash loans from aggregators in the form of seedlings and inputs, that are repaid at harvest with high interest rates. These repayments further inhibit smallholders' ability to invest in future production improvements.

Banks face substantial difficulties in providing the financial solutions needed by farmers to change to more sustainable practices. Long-term investments are often needed to make changes to key areas, such as irrigation, replanting, soil quality, forest and ecosystem protection or nature inclusive agriculture, new farm equipment as well as training. Almost all banks, irrespective of their mandate, perceive the risks attached to these investments to be too high, and regard the required loan tenors too big a step to comply with prudent and increasingly stringent banking regulations and solvency requirements (Tam 2018).

Additionally, local banks may face a duration gap between the short-term nature of deposits and the longer-term credit needs of borrowers. For international sources of finance, country risks or political risks may be perceived as being too high, or an enabling legal system, particularly with regard to land titles, may

be lacking. At the same time, due to insufficient levels of information and inadequate scale, capital markets are not yet ready to assess risks in primary agriculture and mobilize funds.

In order to stimulate the sources of long-term capital needed for the transition to sustainable land use, it is necessary to develop value chains in geographies and sectors where they are limited. This will partially serve to address information paucity and the high transaction cost that currently suppress the apparent commercial viability of alternative and sustainable land use. However, new alternative forms of production do not have to be more costly or risky, but there is an initial sunk cost that will have to be adsorbed in the first few years of the transition, by the first movers. This is where finance has a vital role, but the private sector cannot address this alone. A public-private collaboration is required for unlocking financing for the transition to sustainable agriculture and to reduce deforestation at scale.

It is necessary for de-risking or risk-sharing facilities to support the initial transactions with public sources of concessional capital to reduce the cost of capital in upfront financing, mitigating the costs and risks of transitioning towards sustainable land use. Ideally, the additional costs will have been absorbed by the businesses themselves and new equilibrium will be reached, eventually, where levels of profitability exceed those of the previous level.

While incentivizing finance and investment is vital to increase the adoption of sustainable agricultural production, it is not by itself sufficient. For the transition to sustainable land use to occur at scale and pace, it may be necessary to revisit the distribution of value within value chains and to establish regulatory regimes that are aligned with the appropriate incentives rewarding stewardship and therefore stimulating the spontaneous adoption of sustainable practices. Finance should be seen a necessary component

amongst a multifaceted approach that incorporates issues relating to political economy and regulation as well as social, economic and environmental issues of production.

References

- Abaunza Osorio, F and Arango Aramburo S. 2009. A system dynamics model for the world coffee market. Available online at: <https://pdfs.semanticscholar.org/5d56/64c10f863f9f38e6bcfd1f108da1acd82b53.pdf>
- Chatzopoulos, T, Domínguez, I, Zampieri, M and Toreti, A. 2019. Climate extremes and agricultural commodity markets: A global economic analysis of regionally simulated events. *Weather and Climate Extremes*. doi: 100193. 10.1016/j.wace.2019.100193.
- Elliott, J, Deryng, D, Müller, C, Frieler, K, Konzmann, M, Gerten, D, Glotter, M, Flörke, M, Wada, Y, Best, N, Eisner, S, Fekete, BM, Folberth, C, Foster, I, Gosling, SN, Haddeland, I, Khabarov, N, Ludwig, F, Masaki, Y, Olin, S, Rosenzweig, C, Ruane, AC, Satoh, Y, Schmid, E, Stacke, T, Tang, Q and Wisser, D. 2013. Constraints and potentials of future irrigation water availability on agricultural production under climate change. *PNAS*, 111 (9), 3239-3244.
- Gelb, A. 1979. A spectral analysis of coffee market oscillations. *International Economic Review*, 20(2), 495-514. doi:10.2307/2526496.
- Leemans, R., & Solomon, A., (1993). Modelling the potential change in yield and distribution of the earth's crops under a warmed climate. *Climate Research*, 3(1/2), 79-96. <http://www.jstor.org/stable/24863334>.
- Maurice, NE and Davis, J. 2011. Unraveling the underlying causes of price volatility in world coffee and cocoa commodity markets. *UNCTAD Special Unit on Commodities working paper series on commodities and development*. Available online at: https://unctad.org/en/PublicationsLibrary/suc-miscDP01_en.pdf.

- McCarthy, N, Lipper, L and Branca, G. 2011. Climate smart agriculture: Smallholder adoption and implications for climate change adaptation and mitigation. *Mitigation of Climate Change in Agriculture Series 4*. Rome, Italy: FAO.
- Mutyasira, V, Hoag, D and Pendell, D. 2018. The adoption of sustainable agricultural practices by smallholder farmers in Ethiopian highlands: An integrative approach. *Cogent Food & Agriculture*, 4(1), DOI: 10.1080/23311932.2018.1552439.
- Rothrock, P, Weatherer, L, Zwick, S, Donofrio, S and Hamrick, K. 2019. Corporate commitments to zero deforestation: Company progress on commitments that count. Washington, DC: Forest Trends. Available online at: <http://www.forest-trends.org/wp-content/uploads/2019/06/2019.06.05-Supply-Change-Targeting-Zero-Deforestation-Report-Final.pdf>
- Sierra R and Cambronero A. 2015. Patronos y factores de cambio de la cobertura forestal natural de Costa Rica, 1987-2013. CDI (Carbon Decisions International).
- Smith, P and Gregory, P. 2013. Climate change and sustainable food production. *Proceedings of the Nutrition Society*, 72(1), 21-28. doi:10.1017/S0029665112002832.
- Supply Change. 2019. Targeting zero deforestation: Company progress on commitments that count. Forest trends. Available online at: <http://www.forest-trends.org/wp-content/uploads/2019/06/2019.06.05-Supply-Change-Targeting-Zero-Deforestation-Report-Final.pdf>.
- Tam, BTM. 2018. Financing deforestation-free soft commodity supply chains in Central Highlands in Vietnam: Overview of issues, value chain financing models and instruments, and policy recommendations. Unpublished.
- Tey, YS, Li, E, Bruwer, J, Abdullah, A, Cummins, J, Radam, A, Ismail, M and Darham, S. 2012. Adoption rate of sustainable agricultural practices: A focus on Malaysia's vegetable sector for research implications'. *African Journal of Agricultural Research*, 7, 2901-2909. 10.5897/AJAR11.1876.
- Tran, A, Welch, J, Lobell, D, Roberts, M and Schlenker, W. 2012. Commodity prices and volatility in response to anticipated climate change'. *2012 Annual Meeting, August 12-14, 2012, Seattle, Washington*, 124827, Agricultural and Applied Economics Association.
- UNEP. No year. Analysis on economic and business case for sustainable coffee cultivation in Vietnam and sustainable beef production in Costa Rica. Unpublished.
- Van Thanh, N and Yapwattanaphun C. 2015. Banana farmers' adoption of sustainable agriculture practices in the Vietnam Uplands: The case of Quang Tri Province'. *Agriculture and Agricultural Science Procedia*, 5, 67-74. Available online at: <https://www.sciencedirect.com/science/article/pii/S2210784315001436>.
- Verma, V. (2019). Coffee needs a mechanism to stabilise prices. *Financial Times*, 28 Oct 2019.



Breakthroughs
in Sustainable
Finance



Global
Landscapes
Forum
Luxembourg 2019

globallandscapeforum.org | #GLFLuxembourg2019

Participating organizations

GLF Luxembourg 2019 would not be possible without the support and participation of the following hosts, partners and organizations. For a full list of everyone involved, please visit: events.globallandscapeforum.org/luxembourg-2019/partners

