

Agroforestry business models

Investment opportunities in Costa Rica

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Introduction

Agroforestry systems – combining livestock and agricultural production with trees – are a proven way to maintain or increase the productivity of land use while generating environmental benefits. Agroforestry systems combine forestry and agriculture/livestock activities on the same land area, taking advantage of synergies between the combined production systems. In many cases, there are mutually advantageous productivity reasons to combine different trees, crops, and animals. For example, planting nitrogen-fixing trees in low density can improve the productivity of annual crops below. There are also many advantages unrelated to such synergies. From an economic point of view, an agroforestry system diversifies the cash flow sources of a project, reducing risk against price fluctuations of a particular commodity or disease. Adding agriculture or livestock activities to a forestry project can increase the possibility of receiving external investment for a project. Given the long delay in revenues of most forestry investments, having income from an understory agricultural crop creates intermediate revenues that can help to service a potential loan.

Agroforestry systems also address a host of global and local environmental challenges. Introducing trees into cattle systems, for instance, can help to restore degraded land. Combined systems sequester more carbon dioxide, helping to mitigate global climate change. Agroforestry systems also reduce soil erosion and, in some cases, can provide habitat for local biodiversity.

However, despite the promise of agroforestry, such systems are not widely implemented at commercial scale. There are numerous examples of small scale agroforestry systems, but combined systems have not been widely adopted by large agribusinesses. In part due to the small size of most agroforestry systems, investment in agroforestry remains modest. While existing systems are very

important, significant growth is needed in order for agroforestry to increase its contribution to global environmental challenges.

Private investment in agroforestry systems is constrained for a few key reasons. The long-term payback period of agroforestry projects does not align well with traditional investment mechanisms available. Local banks, in particular, do not offer the long-term credit needed to service such investments. Many lending institutions are unfamiliar with such systems and view them as risky. Additionally, the agricultural producers implementing agroforestry systems are small scale, making it more difficult for them to attract investment.

Widespread implementation of agroforestry in Costa Rica would transform the country's agricultural sector, which contributes approximately 37% of the greenhouse gas emissions (GHG) of the country (GiZ 2015). Cattle ranching and coffee production should be prioritized for agroforestry interventions as they are the two most common production systems (28.5% and 24.3% of all farms, respectively) in the country (VI Censo Nacional Agropecuario 2015). Moreover, both cattle and coffee are well suited to combining with timber production.

Like many countries in Latin America, lending to the agricultural sector as a whole is low in Costa Rica; only 14% of producers have access to credit (OECD 2017). There are many “green” credit products on offer from Costa Rican banks, but these are primarily focused on energy efficiency and renewable energy investments in urban areas. The tenors offered by local banks are not long enough to support many agroforestry investment types. International impact investors are increasing their capital deployment in Costa Rica and have financial instruments that are better suited to supporting agroforestry. However, they typically

have large minimum investment sizes and are unable to reach most producers directly. Large producers, roasters, exporters, and financial intermediaries are likely to be their primary way to influence the sector. However, with the exception of large producers, investing in these types of companies will not allow investors to directly support agroforestry systems.

In order to meet the global environmental challenges introduced above, the barriers to private investment in agroforestry systems must be addressed. This paper examines this

issue by researching agroforestry systems in Costa Rica in general, with a focus on three businesses and their investment needs to implement agroforestry systems. The combinations of coffee and timber production and cattle and timber production are the emphasis of the report. Additionally, the paper assesses the availability of financing options in the country and their suitability to finance agroforestry systems. Based on the comparison of demand and supply of financing, recommendations for how existing barriers can be overcome are made.



Agroforestry business models

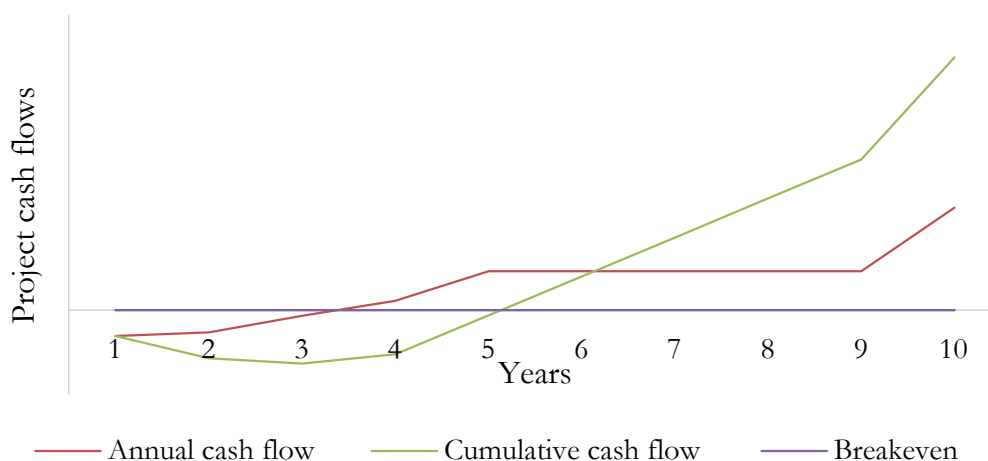
There are many different types of agroforestry systems with different implications for business models. On one end of the spectrum, the interaction between agriculture and forestry can be relatively small, such as in a natural fencing system. In such a system, trees act as a natural fence to agricultural crops, providing a physical barrier for the crops, discouraging property invasions as well as providing a physical barrier. A common example is the establishment of trees along the perimeter of a property that can act as a wind barrier. On the other end of the spectrum is a truly combined system where agriculture and forestry commodities benefit from one another. Trees might, for example, improve soil fertility, boosting the productivity of the agricultural commodity.

Whereas a monoculture system will naturally have only one cash flow source, agroforestry systems expect to receive revenues from at least two sources. This is particularly important for the financing of forestry systems. Forestry is often difficult for traditional investors to finance, given that a large

majority of the incomes come at final harvest of the system, which can be at least seven or more years, depending on the species. Agroforestry system, in comparison, can provide important revenues from the agricultural commodities. For investors that seek repayments in the mid-term (prior to 7-10 years), the revenues from agricultural commodities can help to service investment repayment. Once timber species are mature, they can provide revenues that can enable a large final payment to the investor. Depending on the investment structure, such a large final payment can be important. Mezzanine and quasi-equity structures, for example, can become more financially viable if a large potential upside from timber sales towards the final years of investment is a possibility.

From a financing perspective, one of the most challenging aspects of agroforestry business models is their relatively long payback periods. The figure below demonstrates a hypothetical cash flow model for an investment establishing coffee and timber species, a typical agroforestry model.

Cash flow profile of typical coffee and timber agroforestry system



Evaluation criteria for agroforestry investments

Agroforestry investments present a number of financing challenges to consider in evaluation, as summarized below.

Issue	Description	Implication
Legal		
Borrower legal status	Most investors will only invest in privately registered companies. Cooperatives or other producer organizations are sometimes included, but are considered to be more challenging due to unclear decision-making processes.	Privately-owned companies should be prioritized. Public entities should be avoided unless an investor has specifically agreed to this type of investment.
Land title	Investors want to invest in land use projects where land title is secure for a number of reasons: reputational risk; risk to project success; and using land title as collateral against loan.	Prioritize entities with secure land title.
Business background		
Track record	Early-stage or « angel » investors may invest in a company that is only at a conceptual stage or is pre-revenue. Most debt investors seek a company with at least two years of experience and a track record implementing similar projects.	Companies with a proven track record are much more attractive to investors and will have greater options. Companies at pre-revenue stage should only be considered if early-stage investors are identified.
Revenue and profitability	Related to the above, debt investors will want to invest in companies with revenue and profitability levels that can support repayment of debt.	Companies with revenue at least equal to the desired investment should be prioritized.
Collateral	Debt investors typically require security at least equal to and sometimes greater than the value of the project.	Companies with sufficient collateral should be selected for debt investment.
Leverage	Leverage requirements vary significantly by investor. Some will want to see at least 50% of the project financed by the project developer while others have much lower requirements.	Companies that are able to provide a significant portion of the investment themselves should be prioritized.

Issue	Description	Implication
Desired investment		
Ticket size	The size of the desired investment will greatly influence the investment options of the company. Below USD 100,000 a company will likely only be able to raise funds from local sources. A company seeking USD 100,000 – 1 million increases its options to include investors operating internationally, such as Root Capital or Oiko Credit. Above 1 million larger international investors become relevant.	Larger projects are necessary if international investment is sought. Small investments can rely on local finance, but this may limit the terms of their financing options.
Payback period	A primary barrier for many agroforestry projects is their long payback periods, of five or more years. This requires patient debt investors or equity investors.	Generous grace periods and tenors are typically more common amongst international investors than local commercial banks.
Capital type	Equity or quasi-equity structures may be more appropriate for projects with long payback periods.	Flexible structures are more common amongst international investors than local commercial banks.
Market and production risk		
Access to markets	Investors, particularly larger investors, will want to see reliable markets and preferably off-take contracts. High costs of transportation can make projects that are far from saw mill or other processor and rely on timber revenues unprofitable.	Projects with established customers should be prioritized. Identify timber producers within 50 kilometers of timber processor.
Production risk	Pests, fire, disease, and other production risks are critical concerns for many investors.	Companies with proven track record managing these risks will make investors more comfortably.

Overview of financing options in Costa Rica

A wide variety of financing institutions that could potentially support agroforestry systems are available in Costa Rica. Microfinance institutions, national banks, impact investors (including international investors), and public subsidy programs provide a variety of financing instruments. Nonetheless, investment in agroforestry remains low.

It is important to first acknowledge that barriers to investment in agroforestry are not exclusive to agroforestry. Investment in agriculture as a sector is low, as fewer than 14% of farmers are able to receive finance from banks, ranking Costa Rica below Chile, Mexico, Brazil, and Colombia (OECD 2017). Many of the barriers to investment in agroforestry apply to the agricultural sector as a whole.

Given the small size of the majority of coffee and other agricultural producers in the country, microfinance institutions are well-placed to support agroforestry investments. Dedicated agroforestry credit lines would be able to service the thousands of small producers with potential for combining systems. However, microfinance institutions would have to make significant changes to the terms that they are currently offering in order to effectively service agroforestry investments. Specifically, tenors and grace periods would have to be extended in order to support the long term payback periods of most investment. Another obstacle is that microfinance institutions are currently primarily servicing clients in urban areas. New infrastructure – in the form of rural branch offices – and training for credit officers



would be needed in order to reach agricultural producers.

National banks, both public and private, can also play a role in investing in agroforestry. In terms of client profile and credit terms, however, they face similar obstacles to microfinance institutions. Banks have “green” credit lines, but these are primarily targeted towards energy use amongst urban businesses. Additionally, banks are typically servicing medium and larger enterprises and are not lending at significant volumes to small agricultural producers; as noted above, only 14% of farmers currently have access to credit.

International impact investors face different obstacles in lending to agroforestry businesses. Their terms, especially their flexible structures, are best suited to the long repayment profiles of agroforestry investments. However, impact investors have higher transaction costs than local banks and therefore significantly higher minimum project sizes. The small nature of the majority of agricultural producers will make it difficult for them to directly invest in agricultural production at scale. There are only a limited number of producers companies that could potentially take on the necessary size of investment.

Companies that process, trade, and export coffee represent an untapped opportunity for enabling agroforestry investments. Many downstream agribusinesses currently provide seasonal credit for inputs to coffee and other producers. While these short-term loans do not offer sufficient tenor to support long-term investments in agroforestry, given their proximity to coffee producers, these actors could play an important role. For instance, with the support of the International Finance Corporation, ECOM in Nicaragua provided long-term loans to its suppliers for renovation of coffee plantations in agroforestry systems.

Finally, there are a number of public subsidy programs that currently promote agroforestry or could be modified to increase support for agroforestry. As mentioned above, FONAFIFO’s payment for environmental services program provides subsidies for improve land use, including payments of 931 Colones per tree for exotic species and 1,379 Colones per tree for native species in agroforestry systems. Other programs specifically provide financing to producers. The Sistema de Banca de Desarrollo (SBD) offers loans with low interest rates to agricultural producers. However, it is underfunded, limiting its ability to reach a large number of farmers (OECD 2017). ICAFE also provides loans at concessional terms, specifically to coffee producers. The Ministry of Agriculture and Livestock subsidizes the purchase of machinery, equipment, and irrigation for the agricultural sector. Cost-sharing programs split the costs of purchase between the Ministry and the producer.

Recommendations

Based on the identified barriers and opportunities, the authors have developed a number of recommendations to increase private sector investment in agroforestry systems in Costa Rica and elsewhere. Recommendations are targeted for three distinct groups: international actors, agroforestry project developers, and public policy actors.

International actors

- **Focus on commodities with greatest potential to expand in agroforestry.** Coffee, cocoa, beef, dairy, and timber sectors should be global priorities in the near term. Other commodities may have potential in specific geographies.
- **Identify barriers at different stages of supply chain in key commodities.** Sector assessments should focus on key bottlenecks to expanding agroforestry. One constraint found in many countries, for example, is the lack of a strong timber processing sector, which makes it more difficult for timber producers, including those in agroforestry systems, to commercialize their product. International actors can help to catalyze investment if bottlenecks to investment are addressed.
- **Characterize investment needs and financing options across commodities' supply chains.** From input providers, to producers, to intermediaries, to processors, to exporters, actors in the supply chain have different profiles and investment needs, which affect the type of financing that they can access. Smaller actors are likely to be best served by microfinance institutions or local banks while larger actors can access international finance sources. Next, financing options for each link in the supply chain should be assessed. This

analysis will demonstrate where the greatest opportunities for linking investment to projects are and the points in the supply chain where there are significant barriers.

- **Support project developers to make project concepts bankable.** Businesses that are large enough to potentially access financing from international investors often require support to prepare investment proposals that meet international standards. Investors themselves have insufficient available funds to support project development. International actors should subsidize the preparation of feasibility studies, investment plans, and other investor-facing documentation that can convince investors that agroforestry investments are bankable. This is particularly important at this time, when agroforestry business models are not well understood by investors.
- **Directly support investment acceleration and investor match-making services.** Small to medium-sized project developers often have little experience working with investors and require dedicated support in order to access finance. Acceleration programs and match-making services can help project developers to understand investor's requirements and identify suitable investors. Furthermore, they help investors to identify potential investees. International actors should support the development of acceleration and match-making services.
- **Reach agricultural producers via local financial intermediaries.** Given the small size of most agricultural producers and the high minimum investment size of international investors, international impact investors are unable to directly finance the most important segment of potential



agroforestry implementers in Costa Rica. Assuming these investors are unable to reduce the minimum investment size, they should explore means to invest via intermediaries. Microfinance institutions are well positioned to support agroforestry, but lack experience with agroforestry and the funding sources to support appropriate credit products. International actors can provide technical assistance to financial intermediaries in order to develop appropriate credit lines and knowledge of agroforestry.

- **Work with large offtake entities, including cooperatives, roasters, exporters, and international buyers in the coffee value chain in order to reach producers.** In addition to financial institutions, such entities can act as intermediaries between producers and international actors. International actors should support entities that are supporting their suppliers and members to implement agroforestry systems. Entities that are

already supplying producers with short-term credits for input financing are well positioned to extend the tenor of such credit to enable longer-term investments, such as the establishment of agroforestry systems. Moreover, such entities have incentives to ensure that a reliable supply of quality products is available.

- **Absorb the risk associated with agroforestry investments.** The long term nature of agroforestry projects, the profile of producers, and the country's under investment in the agricultural sector demonstrate that risk is a primary barrier to investment. Programs such as the Global Agriculture and Food Security Program (GAFSP), administered by the World Bank and the International Finance Corporation have created models whereby public money can absorb risk through credit guarantees, subordinated debt, and other financial instruments. If targeted and designed to specifically address risk in agroforestry

investments, such mechanisms would have a substantial impact on agroforestry in Costa Rica.

- **Develop agroforestry-specific investment instruments.** Such instruments should take into account the long-term payback period of agroforestry investments and the credit risks associated with investees. Mezzanine structures in particular can allow investees the grace periods and tenors needed for agroforestry investments while compensating investors for this risk for additional upside potential in successful projects.
- **Demonstrate the value of agroforestry systems.** Many actors throughout different value chains are not convinced of the economic viability of agroforestry as a business model. International actors can address this situation by providing catalytic investments for promising but commercially not demonstrated models and, most important, communicating the benefits of these systems, including what works and what doesn't in a certain context.
- **Advocate for an improved public policy framework.** International actors should support Costa Rican policy makers as they improve the investment framework, through the measures recommended below.

Project developers

- **Develop investment proposals and business models to suit the terms on offer from investors.** Although technically and economically viable, many business models do not match the available investment opportunities. If external investment will be required to finance agroforestry activities, project developers should research potential investors and their terms prior to developing business models.

- **Prioritize marketing plans.** If project developers are able to demonstrate a clear market for their products, they will address product offtake risk, a key concern of investors. Branding products will ensure that developers can sell their products at a premium.
- **Identify investment accelerators and/or incubators.** There are many firms offering investment access services, which can help project developers with little experience with finance to access new sources. Accelerators' business models vary; some collect fees or equity shares for their services, while others are non-profit.

Public policy

- **Improve and increase the availability of financing options for small agricultural producers.** The lack of access to credit is not exclusive to agroforestry businesses and hinders the agricultural sector as a whole. Programs such as the SBD should be better resourced in order to reach more producers. Moreover, public financing credit options can be modified in order to make them more appropriate for agroforestry investments. By taking first-loss positions or other risk-sharing mechanisms, public finance could attract more private investment.
- **Link grant programs to financing of agroforestry investments.** Through FONAFIFO, the Ministry of Agriculture and Livestock, and others, there are a number of subsidies available to agroforestry businesses. By linking these subsidies to investment, public options can leverage private sources of funding. For example, FONAFIFO's payment for environmental services offers generous subsidies for establishment of trees in agroforestry systems. Such payments could act as collateral or other risk mitigation measures in order to make agroforestry projects bankable.

- **Encourage the development of green credit products for sustainable land use.** Costa Rican banks offer a number of resources for energy efficiency and renewable energy investments, but few for agriculture and forestry. This is in part due to banks' unfamiliarity with land use projects. Public actors can play an important role in making banks aware of the credit needs of agroforestry projects and demonstrating their financial viability.
- **Invest in building the finance and business capacity of land use businesses.** Public entities already provide needed technical support for improved agricultural practices. Programs should be expanded in order to improve the financial acumen of project developers.



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