



CLIMATE-SMART AGRICULTURE: CASE STUDIES SERIES

FLORESTA VIVA AND MORINGA FUND: IMPACT INVESTING IN INTEGRATED CROP AND FORESTRY SYSTEMS IN THE ATLANTIC FOREST

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1. Local Context

The Atlantic Forest in the State of São Paulo

The Atlantic Forest is located in the most populated and economically developed area of Brazil. It is extremely species-rich, but it is one of the most endangered forest types in the world. Although the forest represents 0.8% of the planet's surface, it provides habitat for 5% of the world's vertebrate species and 5% of the world's flora¹. Indeed, the Atlantic Forest of Brazil is the second-most biodiverse terrestrial hotspot (only Madagascar forests are more biodiverse). Originally, the Atlantic Forest covered 1.3 million km² across 17 states. However, only 12.4% of the forest is currently preserved, of which only 8.5% is uninterrupted forest larger than 100 ha. Trees, animals, and flowers share space with 72% of Brazil's human population. Population growth and urbanization have substantially influenced the current condition of the forest.

The largest continuous area of Atlantic Forest in Brazil occurs in the Ribeira Valley, located along the southern seacoast of São Paulo. The region (1.7 million km²) supports 23 municipalities with 373 thousand inhabitants. Besides supporting high biodiversity, the Atlantic Forest region of the Ribeira Valley also hosts high cultural diversity, which includes Portuguese descendants, indigenous communities, *quilombolas* (descendants of Afro-Brazilian slaves), and more recent European immigrants.

Because the region is so biologically and culturally diverse, its economic activities are idiosyncratic. For example, although tourism is an important source of income for local inhabitants, there are only a few cities in the region. The urban areas that exist occur within 10% of the municipalities' total area, which means that around 90% of the Ribeira Valley are legally demarked as conservation units or preservation areas. There is a synergy between tourism and forest preservation, but agricultural activities are strictly regulated, which imposes economic challenges. Environmental-friendly agricultural practices could potentially induce social and economic development in the Ribeira Valley.

2. Moringa Impact Investment Fund

Moringa is a private equity fund established to support sustainable agroforestry. It was founded in 2010 through a partnership between the Edmond de Rothschild Private Equity (a subsidiary of the Edmond de Rothschild Group and a general partner of the Moringa Fund) and ONF

¹ Source: SOS Mata Atlântica, a Brazilian NGO dedicated to preserve the Atlantic Forest.

International (a subsidiary of the French *Office National des Forêts*). The investment target is dedicated to support businesses in Latin America and Sub-Saharan Africa. In their first fund, Moringa € 84 million in committed capital targeting profitable, large-scale agroforestry projects associated with high environmental and social impacts.

The group of limited partners of the fund comprises development finance institutions and private investors, who tend to invest in funds bearing the same general risk characteristics. Their decision to fund agroforestry initiatives was to ensure a genuine sustainability for their investment. The philosophical underpinning of the fund is that investments in sustainable agroforestry can mitigate climate change and help alleviate poverty worldwide.

Agroforestry inherently provides an alternative to unsustainable land-use practices that drive deforestation. Agroforestry investments can also be used to minimize risks for investors by supporting a mix of agricultural products, each with different production life cycles and market conditions. In this approach, investment in long-term products, such as timber, occur in concert with investments in food (shorter-term products), which together create conditions that potentially achieve higher profits while also being less vulnerable to price volatility, weather conditions, or plagues.

The fact that we have an impact will not affect our financial return. (Clément Chenost, co-founder and investment director of Moringa Fund)

The Moringa Fund seeks a 10–12% annual rate of return at the time of exit. The fund expects to exit individual investments after six years. Moringa's goal is to provide high-liquidity investments because they typically sell their shares to either conventional agribusinesses or institutional and conventional investors. Both of them prefer innovative, late-stage investments in new markets, particularly markets associated with organic products. In contrast, the Moringa fund is a closed-ended fund, with a 12-year timeframe. Currently, two-thirds of Moringa's committed capital is invested in equity and quasi-equity instruments, with ticket sizes ranging from USD 4 to 10 million for each business.

Moringa's portfolio comprises six companies, three of them located in Africa and the other three located in Latin America: (1) Tolaro Global, a cashew processing company in Benin; (2) Asante, a timber and ginger business in Kenya; (3) Jus Délice, an organic pineapple-juice processing company in Togo; (4) La Cumplida, a coffee and timber agroforestry company in Nicaragua; (5) Texbel Farms, a coconut and lime company in Belize; and (6) Floresta Viva, an organic heart of palm and timber tree company in Brazil.

Moringa searches for companies operating or adopting agroforestry approaches that are looking for financial partners. The fund examined nearly 650 businesses before selecting the six listed above. The Moringa Fund established a partnership to invest in Floresta Viva after screening 66 potential businesses in Brazil.

Moringa's investment philosophy is based on three principles: economically strengthening family-farming enterprises, securing farming supplies, and adding value to an agricultural industry by developing processing facilities. One investment (São Pedro Farm) met only two of the three investment criteria of Moringa initially; it secured the supply of raw agricultural products and facilitated the involvement of smallholder farmers. Therefore, to meet the third investment guideline, it was necessary to create a bottling facility to deliver processed products to the market. This is one of the key roles of Floresta Viva (i.e., to become a value-chain cornerstone). This role was critical for the project's success.

3. Floresta Viva

Floresta Viva is a Brazilian company that produces food and timber products following syntrophic and ecosystem-revitalizing agricultural (ERA) principles. The company was founded by a joint venture of private Brazilian investors (mainly the Pini Brothers and Fernando Meirelles) and Moringa (the France-based impact investing fund). Floresta Viva's vision is to become a leading seller of pupunha heart of palm and the first organic pupunha producer. Additionally, its goal was to nurture a network of smallholder farmers in the areas surrounding the São Pedro Farm. Currently, Floresta Viva employs 86 people.

Floresta Viva expects to achieve sustainable agricultural practices by restoring degraded soil and reforesting deforested areas. Simultaneously, the company is providing social benefits to inhabitants of the Ribeira Valley by creating new jobs and providing additional income opportunities for the local community.

It was a series of synchronicities that led us to know about the Agroforestry system, and we believe this to be top notch in terms of sustainability and intelligent agriculture. (Roberto Pini, co-investor Floresta Viva)

Floresta Viva's main production site is the São Pedro Farm, which encompasses 1,026 ha, with 70% of it being preserved Atlantic Forest. Based on local expertise in heart of palm production methods and a growing consumption of organic food in Brazil, São Pedro Farm is now

developing a groundbreaking agroforestry system for producing organic heart of palm from pupunha. The new system converted an old cattle ranch into an innovative, environmental-friendly, and labor-intensive agricultural enterprise.

Pupunha (*bactris gasipae*) heart of palm

Brazil is the first producer and consumer of heart of palm. The heart of palm is a vegetable harvested by cutting the bud of certain types of palm trees and extracting its inner core. The heart of palm can be consumed by itself, but usually it is served in a salad. Brazil produces 95% of the heart of palm (by volume) in the world. The global market size in sales for heart of palm is about USD 150–300 million, with the Brazilian market share comprising 75%.

Traditionally, the heart of palm consumed in Brazil is extracted from Jussara (*euterpe edulis*) or Palmeira Real (*Archontophoenix cunninghamiana*) trees in natural forests. The problem with this approach is that harvesting heart of palm from these species results in the palm trees' deaths. This led to near extinction of Jussara palm trees and the current prohibition of harvesting heart of palm in natural forests. Pupunha palm trees can be harvested without killing the trees because the plant produces abundant stems that form a clump. In fact, the agricultural practice of cutting pupunha stalks helps make the trees more productive, achieving a harvest of as many as two palm hearts/year. Thus, this species is widely grown as a monoculture in farms that intensively apply agrochemicals.

4. Floresta Viva's Business Model

Floresta Viva is a private corporation with three main founding partners: the Moringa Fund, Pini brothers, and famous film director Fernando Meirelles. The investment by all shareholders in Floresta Viva totals € 8 million over a two-year period. The project encompasses a scaling up of sustainable agroforestry and organic Pupunha heart of palm production at the São Pedro Farm and the construction and operation of the bottling industry. The shareholders invested € 1.5 million in the bottling facility, which is currently under construction, and supported the development and implementation of a new organic and agroforestry system at São Pedro Farm using another € 6.5 million.

São Pedro Farm is a rural property owned by Roberto Pini and his brothers. The costs of designing the new agroforestry system and operating the farming activities are covered by two

sources of financing. The first source of funds is from a set of loans obtained from Banco do Brasil; the other is from financing by shareholders. The farm itself is not an asset of Floresta Viva, but it provides technology development, conducts best agricultural practices, and is sustainable. Thus, it serves as a pilot flagship and primary supplier for the bottling facility.

A key element governing the relation between Floresta Viva and São Pedro is its exclusivity supply contract. The supply contract regulates the prices and volumes, investment exit conditions, and the manner of farming. The contract is a strategic device, serving as a mechanism to guarantee the quantity and quality of the agricultural outputs and ESG practices. The provisions for defining quality and manner of production are critical to creating value because Floresta Viva expects to receive a price premium for its products. This pricing strategy is dependent on meeting its vision of becoming a leading national and international brand selling certified organic and agroforestry pupunha heart of palm products. Therefore, creation of brand value depends on the specific contractual arrangements and integrated relations between Floresta Viva and São Pedro Farm.

5. Floresta Viva Delivers Timber and Organic Pupunha Heart of Palm on an Industrial Scale Through a Sustainable Organic Agroforestry System

The underlying logic of Floresta Viva's production system is based on syntrophic and ERA principles. Under this paradigm, the purpose of the farming system is to mimic nature. The design and organization of land plots, which combine management of grass, trees, microorganisms, and other natural sediments, results in the formation of a forest designed to produce agricultural products. This agroforestry approach uses farming byproducts (residuals) to fertilize the soil and form natural barriers to diseases and pathogens. The expected result of this groundbreaking production technique is a self-sustaining system, where fertilizers are naturally produced from the organic matter generated by the farm's activities. The essence of this agricultural model is to restore soil fertility, a basis of healthy soil, which should lead to high productivity and no occurrence of pests or diseases.

The biggest challenge in implementing this special kind of agroforestry system (originally conceived for small areas) is scaling up production to nearly 1.5 million stalks of pupunha heart of palms per year using from more than 800,000 palm trees. In other words, the farm has to deliver agrochemical-free stalks to a bottling facility at an industrial scale using an organic

agroforestry system. This task demands an intensive investment in agronomic knowledge, adapting specialized machinery, and a sustainable farming model.

Main points of the impact investing by Floresta Viva

- The investing structure does not include tranches for first loss partners; everyone is invested for “real investing”
- Moringa is the first agroforestry impact investing fund, and the investment in Floresta Viva is the first impact investment in this field (non-cattle ranching) in Brazil
- The investment is done via equity capital, jointly with local individual investors
- The foreseen exit time is six years, with a minimum annual market financial return expectation of 10–12%
- In addition to investing in scaling-up production at the flagship farm (São Pedro Farm), to produce the planned amount of organic pupunha heart of palm, Floresta Viva will also scale up production with outsourced producers [medium- and smallholder farmers (“out-growers”) in the region], all of whom will apply the same agroforestry organic production principles.
- The investment includes creating a network of smallholder farmers trained and financially supported to implement organic agroforestry plots in the region.
- Floresta Viva guarantees full product traceability

Clear targets for Atlantic Forest restoration and preservation (800 ha) are defined.

All farms in the Moringa Fund have adopted the agroforestry approach. At São Pedro Farm, refined agroforestry techniques were developed in collaboration with experts in the field and with specific consultants. One such consultant is Futuro Florestal, a Brazilian firm with expertise in providing seedlings and advice on commercial reforestation of native and exotic species in starting consortiums and creating palm groves. Floresta Viva also counts on the advisory services rendered by two renowned consultants, a founder of the syntrophic approach (Ernst Götsch) and an expert on ERA systems (Leontino Balbo Jr.). In addition, Esalq/USP microbiology specialist, Dr. Fernando Andreote provides advice.

São Pedro Farm’s agroforestry system relies on a combination of different crop types and trees from noble essences. The consortium’s choice of crops and timber also affects the riskiness of its investment. The timeframe for returns from commercial forests is based on long-term

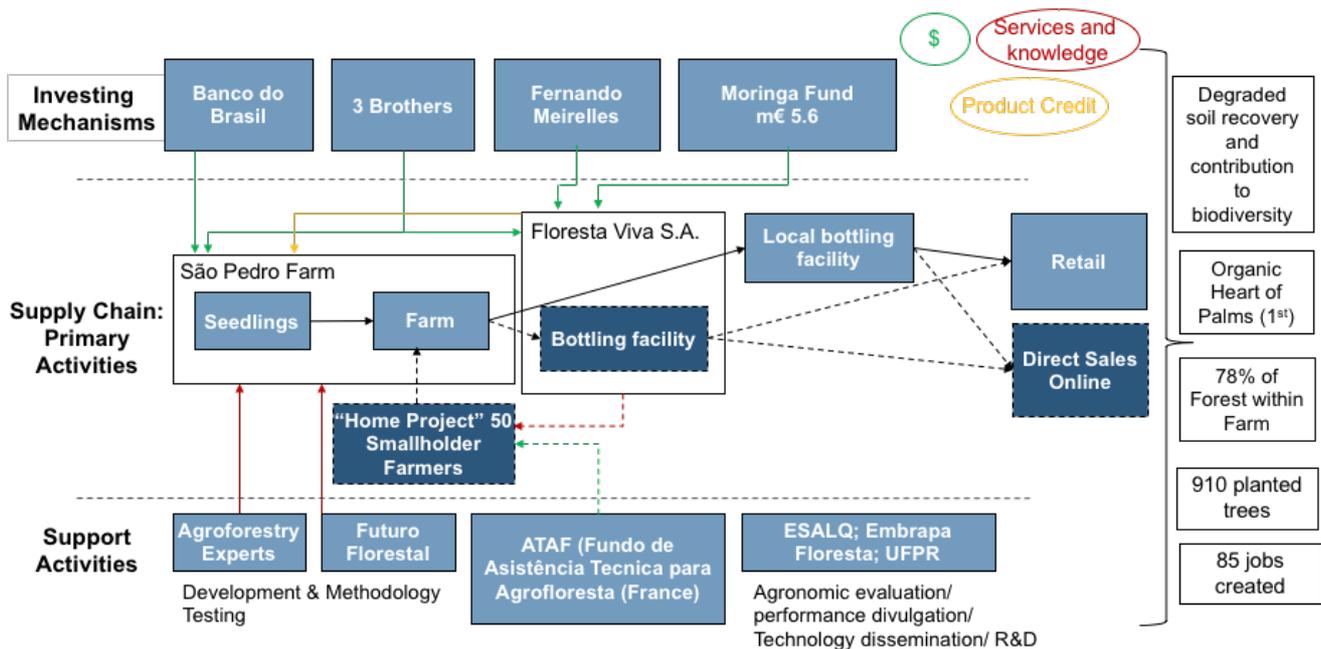
financial flows. Usually, the production of timber from trees of noble essences takes 10 to 25 years. Thus, a variety of food crops share space with wood production to ensure a profitable balance among short, medium, and long-term cash flows.

At Floresta Viva, a few legumes and cereals (those that improve the growth of pupunha palms) provide a continuous flow of short-term revenue, while Pupunha starts producing after two years. Thus, the costs of tree-farming activities are covered by profits provided by food production over the 20-year pupunha production cycle. After 10 to 25 years, an additional revenue flow is obtained from harvesting hardwood trees for timber. The core of the business model is to combine steady medium-to-short-term revenues with long-term revenues, thus minimizing risks and balancing expectations of patient (long-term) capital. Another outcome of the system is the higher profitability achieved over the long-term because after investment amortization, timber sales add significant income to the business.

Because the success of Floresta Viva's investment strategy relies on the quality of its agricultural products, the supply chain is based on closed vertical coordination. In effect, high investments in production at the farm have to be followed by careful processing procedures at the industrial stage. Organic certification requires that specific industrial processes be followed. Therefore, management of both Floresta Viva and Fazenda São Pedro is run by Floresta Viva corporate staff, and their finances are jointly administered. Currently, food-processing activities are outsourced, which takes place at a leased facility. Meanwhile, Floresta Viva is building its own production bottling facility, which is scheduled to start producing in 2019.

Floresta Viva expects a growth in the demand for organic pupunha heart of palm. Past market behavior has shown a growth rate of 350% for heart of palm production in Brazil over the last 20 years. In addition, organic products in Brazil grew by more than 700% between 2010 and 2015. São Pedro Farm is not capable of meeting this growing demand alone. Thus, nurturing a network of suppliers of high-quality inputs for the new bottling facility has also been addressed by the company.

6. Moringa Fund & Floresta Viva Framework



7. An Intrinsic Environmental and Social Impact

The activities carried out by São Pedro Farm are inherently sustainable. The agroforestry system mimics nature and produces agrochemical-free products while restoring soil health and contributing to global carbon sequestration. The management practices and projects are socially responsible because they create jobs and improve incomes for family farmers in the region surrounding the São Pedro Farm.

One of Moringa’s inputs for all of its projects is the requirement of hiring or including an ESG manager position. Floresta Viva has implemented this requirement; it is the best way to guarantee high standards as social and environmental issues will be applied to the production process.

After less than one year of activities, Floresta Viva has already provided social and environmental benefits. It has created 110 jobs, preserved 70% of the farm as natural forest, contributed to increased biodiversity, and planted 240,000 hardwood trees and about 650,000 palm trees.

8. HOME Project – Heart of Mata Atlantica

Floresta Viva is making efforts to create a network of smallholder farmers, with a knowledge and capacity for producing organic crops. Floresta Viva is incubating the “HOME Project” (Heart of Mata Atlântica Ecosystem), developed in part by the financing by Agroforestry Technical Assistance Facility (ATAF). ATAF is part of the Moringa Fund, and it provides technical assistance on investments of the fund in the form of grants.

HOME aims at working within the main economic idiosyncrasies of Ribeira Valley. This is done by integrating labor-intensive agriculture with forest preservation in a framework intended to reverse the exodus of people from rural areas and empower women. In this sense, HOME is a social benefit program, given that it promotes job creation (at São Pedro Farm) and provides new economic opportunities to local family farmers. The initial stage of the project is the design and testing of an agroforestry system at a small scale (800 m²), a test system similar to the one initially adopted at São Pedro Farm. The pilot program is in the final stage of implementation and is being tested at the São Pedro Farm. The aim is to implement the agroforestry system for 50 families of smallholder farmers in the São Pedro Farm area.

The HOME project is supposed to assist producers by providing technical assistance and “learning by doing” interactions. The initial investment in each small farm is a USD 2,000 in the form of loans available through the project. A budget and forecast of financial flows is also provided for the smallholder farmers to guarantee the profitability of the small-scale farmer. Floresta Viva, as the incubator, is responsible for commercializing the products. One of the greatest advantages of the program is that it generates retirement savings, which complements regular social security. Because timbers from noble essences are part of the agroforestry system and these revenues mature in the long run, family farmers are able to use this future profit as part of their retirement income. However, the focus of this program is to empower small-scale producers (especially women) and provide a basis for them to aspire to build and care about their projects. Meeting these goals is the key for elevating self-esteem, something frequently omitted in similar impact programs.

Specifically, these are some of the expected benefits of the HOME project:

- Capacitate 200 additional farmers
- Create 50 ha of agroforestry systems outside the São Pedro Farm system
- Promote Guarani culture to nurture the cultural diversity of Ribeira Valley
- Monitor 800 ha of forests

- Provide biodiversity inventories/surveys
- Produce a germplasm bank of native species

Floresta Viva intends also to cultivate relationships with universities and research organizations to improve agrosystems geared to providing a sustainable, organic pupunha heart of palm production.

Benefits of agroforestry production are attracting attention. There is evidence that some agroforestry systems produce higher rates of carbon fixation in soil. Floresta Viva is creating agreements and research partnerships to answer some basic scientific questions about the benefits of agroforestry. Partners will include the Agronomic School Luiz de Queiroz/University of São Paulo, the Federal University of Paraná, and Embrapa (a state owned research and development firm dedicated to improving agriculture).