

Restauração Florestal—Agroindústria de Reflorestamento Nativo, Ltda.

Marituba, Pará, Brasil

September 2013

GDI Area Proposal

1) Executive Summary

Restauração Florestal (“Restoration Forestry” or “RF”) is a private-sector reforestation company operating in the Amazon region in the state of Pará, Brazil. The company specializes in the restoration of degraded land through ecological tree plantations that mix commercial tree species with natural vegetation, supported by surrounding conservation reserve areas.

Restoration Forestry has been in operation since 2009 and currently manages five project areas totaling 415 hectares, of which 203 hectares have been planted. Plantings are annual, and the first harvest is scheduled for 2017.

The company sites its projects on land degraded by traditional shifting agricultural practices and grazing activities. Much of the land has been subject to fire, or “slash and burn” clearing techniques. Often, RF’s tree planting projects take place on charred ground with cinders still in evidence.

Restoration Forestry converts these areas into productive, mixed-use plantations that approximate native forests. The plantations contain a diverse mixture of native tree species, planted in widely spaced rows, between which natural forest is allowed to regenerate. Over time, the planted trees converge with the natural forest to form a forest canopy with its attendant biodiversity. Annual harvesting impacts are programmed to be very light, corresponding to the varied maturities of the tree species. In any given year, only a small fraction of the trees reach maturity and are subject to harvest.

A conservation reserve area, equivalent to 50% of total project area, surrounds the plantations. These areas act as a buffer zones and sources of colonist plant and animal species to spread into the regenerating area. To the extent necessary, restoration activities are undertaken in the reserve areas.

The company was formed as an alternative to conventional reforestation companies in Brazil. Conventional reforestation in the region is characterized by the use of non-native species, mono-cropping, heavy use of chemical inputs, and subject to clear-cut harvests. Scientific studies have shown that biodiversity levels in such plantations ranges from 8% to 25% of natural forests. Ecological reforestation as practiced by RF aims to converge on 100% of native biodiversity in the project area.

Restoration Forestry is currently expanding the project areas, and is looking for donors/clients to support the “opportunity costs” of ecological restoration. These costs relate to the lower return on investment inherent in the lower commercial tree density of the plantations, and the associated costs of conservation activities in the reserve areas.

2) Area Characteristics

a) Address:

Fazenda Mangue Seco
Ramal São Benedito
PA – 140, KM 42
Vigia, Pará, Brasil

b) Geographic location:

W: 48:05:14.70
S: 00:55:04.30

c) Geographic size:

RF manages five project areas in the surrounding area:

(1) Fazenda Mangue Seco (“Dry Swamp”) -- 170 hectares, 52 hectares planted, 110 conservation reserve, 8 hectares utility

(2) Fazenda São João (“St. John’s”) -- 98 hectares, 48 hectares planted, 50 hectares conservation reserve

(3) Fazenda Dos Reis (“King’s”) -- 32 hectares, 25 hectares planted, 7 hectares conservation reserve

(4) Fazenda Casa do Pedro (“Peterhouse”) -- 35 hectares, 26 planted, 9 hectares conservation reserve

(5) Fazenda Emanuel (“Emmanuel”) -- 80 hectares, 52 planted, 28 conservation reserve

d) Description of the landscape and its environs

Originally, a moist tropical forest with open canopy, Amazonian biome. Now, predominately secondary forest in various stages of regeneration, characterized by burned over and cleared areas for small holder cultivation of manioc and corn, and pastures for cattle. The land is generally flat with

adequate soil for tree plantations. The area receives heavy rainfall and many small streams and rivers are present.

3) Area Manager

a) Contact details:

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b) Legal status

Restauração Florestal, Ltda. is a legally registered, private sector Brazilian company. Project areas operated by Restauração Florestal are held in fee simple ownership with definitive land titles issued by the state of Pará and supported by chain of title registration in land registry office (*cartorio*). There are no outstanding claims on any of the land. Land use, including reforestation activities, is subject to environmental licensing by the state environmental agency. All required licenses and permits have been obtained and are on file at the company's office.

c) Operational structure and administrative capacity

On-site project implementation is supervised by a forestry engineer. The forester is the author of *Manual de Reflorestamento* (AIMEX, Belém, Brasil: 2013), on the subject of reforestation in the Amazon. He has been the head forester on several reforestation projects in the area over the past fifteen years, and has been a consulting forester on a major ecological reforestation project in the state.

Each project area has its own team leader and operational staff. There are currently a total of eight field staff in addition to the forester. Logistical support is provided by the project administrator located in nearby Marituba, Pará. Third party contractors are used for human resources, tax and legal support, and accounting. Environmental licensing is handled by the forester.

The company director is responsible for overall project planning, land acquisition, relationships with project partners, and finance.

The company draws from the experience of the administrative staff of EXMAM-Exportadora de Madeira Amazonica, Ltda. a wood exportation company that has been in operation for 30 years, the last 11 under the direction of the majority owner and director of Restauração Florestal.

In summary, Restoration Forestry is administratively structured to expand its forestry operations over an extended period of years. Given harvest maturities of 7-30 of the planted tree species, the company expects to remain in operation over the long term. Its current operational plan is to plant 100-200 hectares per year, and add at least an equivalent amount to the conservation reserve area each year. The company has a good knowledge of the land ownership in the adjacent areas and is confident of the opportunities to expand operations.

d) Other project participants

A long term biodiversity monitoring project at the site is being carried out by Toby Gardner, Department of Biology, University of Cambridge, in association with students from local research institutions, including Museu Emilo Goeldi in Belém, Pará. Dr. Gardner is author of *Monitoring Forest Biodiversity. Improving Conservation through Ecologically-Responsible Management* (Earthscan, London: 2010).

Restoration Forestry also receives visits from school groups, most recently from the Jucelino Kubitchek vocational school for forestry in Marituba, Pará. The company also recently hosted a week long training session for twenty tractor operators employed in the area. The company contributes to municipal activities, including donation of materials for road building, contributions to children's events, and support for the local football club.

4) Rapid Assessment & Analysis

a) Status of Biodiversity in the Area

The area has been impacted by agricultural activities, hunting and logging since the 1600's, as it is located in the region first settled by the Portuguese colonists in the Amazon. Original traces of the native forest are not known to exist in the area.

Land ownership in the region is a mixture of state and federally owned lands, interspersed with private land holders, the majority of whom are without land titles. Over the centuries, different regimes have prevailed in the granting of land titles, often creating conflicting ownership claims. This has resulted in significant ownership insecurity that has resulted in chronic under-investment in land resources, and a delay in agricultural development in the region. Short term land management practices have persisted over the long term.

Currently, the landscape of the region is characterized by a patchwork of small holder agricultural plots and pastures, interspersed with regenerating forest of varying stages of development. Annual burning of small plots, cultivation for short periods, followed by long fallow stages, has resulted in extreme heterogeneity of vegetative cover.

As a result, land is used extensively, impacting terrestrial biodiversity over a wide area. Hunting is widespread, and trails can be seen throughout the more mature stands of forest cover for this purpose. Watercourses are used for washing and sanitation purposes, also affecting biodiversity.

Environmental impacts of agriculture and other rural activities are regulated by the state environmental agency, SEMA. One requirement is that landholders obtain a License for Rural Activities (LAR) in which their property is defined with geo-referenced co-ordinates, and the various vegetation cover types identified, as well as important topographic features including watercourses. An area must be defined or zoned for each productive activity within the landholding, and a minimum of 50% must be kept in forest cover. To date, only 3 properties in the municipality of Vigia have obtained a LAR, out of tens of thousands of hectares, and many thousands of land users. This suggests that environmental management and regulation is virtually non-existent in the region.

b) BioSWOT Analysis

- i) Strengths – The patchwork nature of the existent biodiversity serves as a source for species reintroduction in the RF project areas. As a result, the restoration of biodiversity can be done largely through natural regeneration. Nearby markets exist for forest products (logs) in Belém, Pará, improves the financial viability of the plantations. There is relatively good infrastructure, eg. roads and power.
- ii) Weaknesses -- Significant financial “opportunity costs” in ecological reforestation, bureaucratic difficulties stemming from government agencies, and unavailability of land titles for many plots.
- iii) Opportunities -- The lack of mechanized agriculture in the region leaves large areas available for restoration activities.
- iv) Threats -- Local populations present a threat in the form of hunting and the spread of fire, especially in the dry season when burning is prevalent.

5) Work Plan for Planning and Registration

Before implementation of future phases of the project, a biodiversity survey will be taken on each area. As noted above, the planned project area has been significantly impacted by fire and deforestation activities related to shifting cultivation. The objective of the baseline monitoring will be to establish the level of remaining biodiversity.

The first phase of the Restoration Forestry project is currently under a long term biodiversity monitoring program. This is headed by Dr. Toby Gardner, a conservation biologist from Cambridge University, and staffed by researchers from local institutions. The same group will carry out the base line survey for the future phases of the project.

Dr. Gardner's research has shown that birds and beetles are statistically significant indicator species of broader biological diversity in tropical forests. Therefore, the project will conduct surveys of the diversity of these species as a proxy for the overall level of biodiversity in each project area. The number and diversity of these species will be monitored over the long term, with at least one survey per year.

Management activities within the plantation area are designed to encourage the natural propagation of forest within the rows of planted trees. Some of the activities undertaken include the elimination of pesticide use, not tilling the soil between the planted rows, and installing posts for fruit and seed dispersing birds.

Restoration Forestry plans to develop an annual reporting framework for the biodiversity objectives, based on the annual surveys. To date, four annual surveys of birds and beetles have been completed in the project area. The results show a significant increase in species numbers. Work on standardizing the annual reports is currently being undertaken, and results will be published soon.

6) Biodiversity-Positive Outcomes

As discussed, the project employs ecological reforestation techniques designed to significantly increase biodiversity above that found in conventional reforestation. The biodiversity values produced by Restoration Forestry include increased forest cover and replacement of ecological complexes (species and their physical environment) that have been lost through previous uses of the land.

Restoration Forestry recreates a native forest stocked with commercially valuable hardwoods. Harvests will take place over long time intervals. 30% of the tree species are long cycle hardwoods with 24-30 year maturities. 70% of the planted trees are white woods, harvested on a seven year cycle.

Only about a quarter of the total project area subjected to seven year harvest cycle, compared to 100% in short rotation in conventional reforestation. This is because of the conservation reserve area, the inclusion of long cycle trees, and the rows of natural vegetation within the plantation.

The propagation of such long cycle species in the Restoration Forestry plantation will take pressure off of native forests. Such species include Ipe, Jatoba (Brazilian Cherry) and Mahogany, all heavily exploited for commercial use. Currently, 100% of production of these species comes from old growth

Amazonian forests. Conventional plantations normally do not include long cycle hardwoods for economic reasons.

In addition, ecological reforestation is a more sustainable land use option than conventional reforestation because of the greater ecosystem services produced. Aside from biodiversity, soil and water conservation is achieved through the reduced use of chemical inputs and greater forest cover. Carbon sequestration is also greater in plantations with long cycle hardwoods, and the permanent conservation reserve area.

7) Letter of Support

To be included as a separate document.

8) Area Photos



Photo 1: Restoration Forestry before planting



Photo 2: One year after planting



Photo 3: Tangará Falso in new growth at Restoration Forestry (photo: A. Lees)



Photo 4: Mahogany after three years