

This project regenerates the Amazon rainforest through agroforestry and natural regeneration

**Amazon\_Brazil**

**Reforestation of the Amazon rainforest**

**News from the field (July 2024 – April 2025)**

**May 2025**

**Conservation International**



## **Project Overview**

The city of Tomé-Açu, located in the Brazilian State of Pará, is situated at the entrance to the Amazon rainforest. It flourished in the 1970s as the base for Amazon's development under a national policy. Tomé-Açu and its surrounding areas were once developed on a large scale, but they have since been abandoned due to their less productive land, and vast areas of secondary forest now lie in ruins.

Degraded lands can be greatly regenerated through reforestation with the combination of agroforestry and natural succession. Therefore, in Tomé-Açu, reforestation has been undertaken from an early on. As a result, a unique system of “successional agroforestry” has been established in Tomé-Açu. The system can facilitate forest regeneration while supporting increased household income by cultivating various crops throughout the year, as well as experimenting with different combinations of multiple crops over time. Agroforestry can also accelerate soil regeneration, thereby promoting the regeneration of forests.

Under these circumstances, in July 2024, we launched a reforestation program, which combines agroforestry and natural succession, targeting small-scale farmers in Tomé-Açu with support from Daikin Industries, Ltd. Through this program, we will also improve the resilience of the area, such as food safety and security and disaster reduction in the region.

### **1. Forest conservation activities / 2. Biodiversity conservation**

As mentioned above, large-scale deforestation was conducted due to the development of Tomé-Açu in the past. The remaining forest is still being fragmented due to deforestation or forest fires caused by development. The regeneration of deteriorated forests and the conservation of remaining forests are the most significant challenges, as the forestry ecosystem plays a crucial role in mitigating climate change and provides various ecosystem services, including water resources.

As this is the first fiscal year for the project, we conducted a survey, selected partner farmers, and formulated an agroforestry plan to launch forest regeneration.

#### **1-1. Survey of the target site conditions**

To launch forest regeneration, we surveyed forest connectivity, the ecological corridor, and the distribution status of remaining native species in the entire project area. The survey results will be used to formulate a conservation plan and set a goal at the regional landscape level. Our project will also promote forest regeneration in line with the plan for the entire area.

#### **1-2. Selection of project partner farmers**

To farmers who own land in the priority forest regeneration areas, as designated in step 1-1 described above, we explained the project's purpose. We invited their participation through the Amazon

Environmental Research Institute (IPAM)<sup>1</sup>, a local partner organization for the project. As a result, as of April 2025, eight farmers (7.41 hectares in total) had expressed their intention to cooperate with the project. We will continue to engage in dialogue with other farmers who expressed their interest in the project, expecting to achieve our target of 10 hectares by an early time in the second year.

### 1-3. Formulation of an agroforestry plan

Specialist staff from IPAM visited farmers who expressed their intention to participate in the project and considered the selection of plots on their lands and the combinations of crops for agroforestry based on terrain features and the farmers' interests.

Table 1: Farmers who have declared their participation in the project by April 2025

| <b>Participating farmers</b>   | <b>Land targeted for reforestation (ha)</b> | <b>Method of reforestation</b>         |
|--------------------------------|---|--|
| Sítio Novo Horizonte           | 1.08  | Agroforestry                           |
| Sítio Sagrado Coração de Jesus | 0.59  | Agroforestry                           |
| Sítio Família Lima             | 0.88  | Agroforestry                           |
| Sítio São João                 | 1,06  | Agroforestry                           |
| Sítio Tenorio                  | 0.6   | Agroforestry                           |
|                                | 1.16  | ANR <sup>2</sup> and proper management |
| Sítio Igapó-Açu                | 0.96  | Agroforestry                           |
| Sítio São Raimundo             | 0.67  | Agroforestry                           |
| Sítio Mendes                   | 0.41  | Agroforestry                           |
| <b>Total</b>                   | <b>7,41</b>                                 |  |

<sup>1</sup> IPAM is a network of partners promoting forest regeneration at the state and municipal levels. In this project, it primarily collaborates with state agriculture and environment agencies, EMATER, SEDAP, Unions, SENAR, IDEFLOR-Bio, and others.

<sup>2</sup> ANR (Assisted Natural Regeneration): A forest regeneration method that promotes natural regeneration of forests in the land between trees planted at widely spaced intervals.



Figure 1: Land preparation and supply of necessary materials such as seedlings for agroforestry

#### 1-4. Monitoring of reforested areas

In this fiscal year, eight participating farmers planted a total of 1,797 trees, including the combinations of native species and fruit trees. After planting trees, the survival rates of trees largely depend on whether an appropriate control of each sapling is provided. That is why, in our project, we share the monitoring results after planting and the maintenance procedure, and the IPAM staff follow up.

Moreover, we photographed the project site using a drone before planting trees. The drone makes it easier for us to monitor and visualize vegetation conditions, reducing research costs. Therefore, effective use of drones is expected in the future. A comparison of aerial photography is also expected to be used for decision-making.



Figure 2: Images taken by a drone over the project site (1 - Sítio Tenório; 2 - Sítio Novo Horizonte; 3 - Sítio Sagrado Coração de Jesus; 4 - Sítio Santa Maria; 5 - Sítio Lima)

### 3. Improving the livelihood of communities

#### 3-1. Monitoring socioeconomic conditions

To monitor the contribution of our activities' results to improvements in farmers' livelihoods and food security, the project conducted a baseline survey on the socioeconomic conditions of each participating farmer, referring to the items described in Figure 3.

The experts from CI and IPAM collaborated to formulate a survey questionnaire containing 136 questions in 16 sections. It takes about an hour and 40 minutes to answer all the questions. We consider it necessary

to understand the conditions of farmers more precisely and to establish relationships with them through these questions. The IPAM experts are now analyzing the responses that have been collected.

Additionally, we plan to utilize an application called Survey123 to monitor socioeconomic conditions regularly (Figure 4).

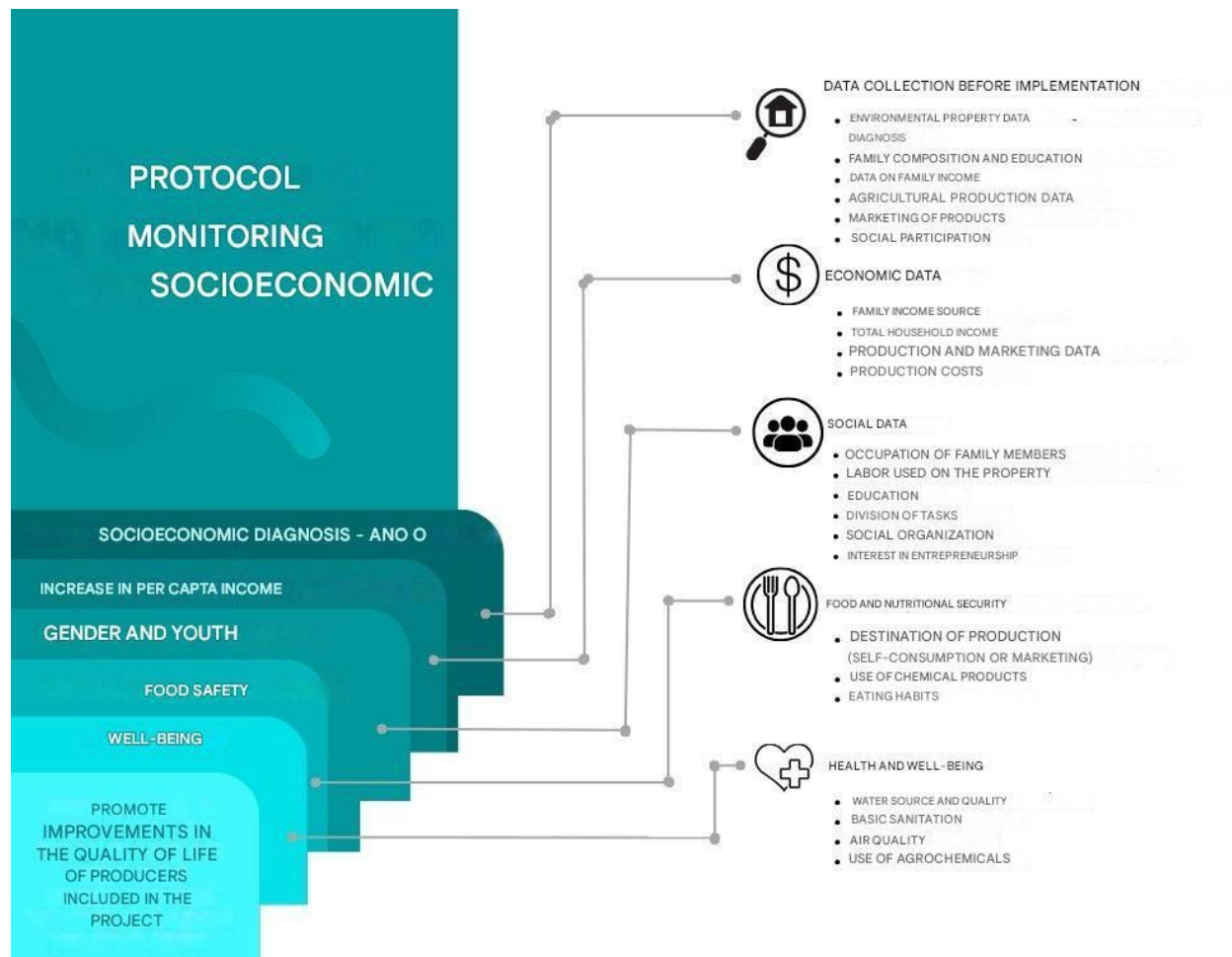


Figure 3: Guidelines for monitoring socioeconomic conditions

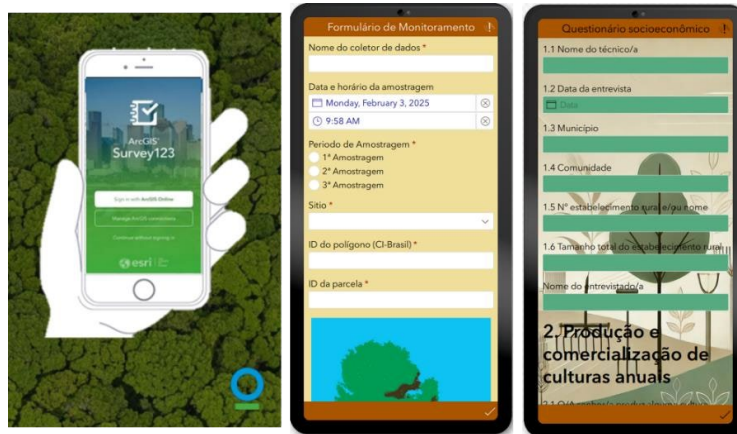


Figure 4: Survey123, an application to be used for monitoring socioeconomic conditions

A big challenge we have faced in this survey is that farmers on the project site are not accustomed to calculating the costs and sales of agricultural production. Therefore, there is no data on production volume and income from agroforestry.

In this project, we will provide training in keeping agricultural product sales and basic accounting. We will also encourage farmers to be accustomed to booking accounts when we visit them regularly.



Figure 5: Monitoring socioeconomic conditions

#### 4. Others

##### 4-1. CI Brazil team visited the project site

From November 19 to 22, 2024, the CI Brazil team visited the project site and carried out the following activities:

- Visited project participating farmers and confirmed their intention to cooperate
- Provided hands-on training in ecosystem monitoring
- Conducted a baseline survey on socioeconomic conditions.

#### 4-2. Ecosystem monitoring training

We will provide ecosystem monitoring training for IPAM staff members on a regular basis, focusing on trainees' judgment of the situation, such as mapping and identifying necessary maintenance.

#### 4-3. Knowledge acquired through the visit

Through the visit by the CI Brazil team, we acquired a wide range of information from the project site. Conducting the socioeconomic survey enabled us to gain a deeper understanding of the conditions and challenges faced by local households, and visiting participating farmers allowed us to comprehend the characteristics and attractiveness of these farmers. For example, on the farm owned by Ginelda, a remarkably wide variety of crops are cultivated in a nature-conscious manner, and we believe that a farmer like her can have a positive impact on neighboring farmers. Moreover, on Edmilson's farm, their children were greatly interested in the process of agroforestry and joined in the farming activities. We gained the impression that agroforestry could be an attractive livelihood for younger generations.

During the visit, however, we found that soil erosion and deterioration of water sources in some areas were caused by the deterioration of trees covering the soil, realizing that reforestation and soil restoration are necessary. We also found that some lands have not been managed due to a labor shortage.

We need to take necessary measures against these situations because the deterioration of water resources and water risks has significant impacts on the livelihoods of local families and farming, and the success or failure of agroforestry.

Under these circumstances, we will need to develop agroforestry gradually by combining new crops, and therefore, technical support for farmers to achieve this will be necessary. In addition, we have some other challenges to tackle to move the project forward, such as forest fires (especially those spreading from adjacent areas), labor required for afforestation (especially the burden of simultaneously conducting afforestation and producing crops during the rainy season), and impacts of climate change. It is crucial that we need to engage in the activities while responding to these challenges.

These observations help us significantly drive our future activities and we would like to maximize the project results based on the situations of the project sites.

Figure 6: CI Brazil team visited the project site



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