Agroforestry Impact Businesses

Market Vision, Demands and Opportunities

Produced by:

FUNDO VALE

Analysis:

PIPE .SOCIAL

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Letter to readers

We are a business promotion and impact investment fund created and sustained by Vale S/A to generate positive social and environmental impacts. Our purpose is to promote a fairer and more inclusive economy through social and environmental impact businesses.

Since 2019, we have led the implementation of Vale's 2030 Forest Goal, a commitment made by our sponsor company to protect and restore 500,000 hectares of habitat outside the company's sites. This commitment is divided into two broad objectives: to restore 100,000 hectares of forests and protect 400,000 hectares of forests.

In the forest restoration area, we have tested business models that can scale up in terms of hectares, financial return and social and environmental impacts while strengthening the agroforestry business ecosystem to create an investment environment that enables new companies to grow, thereby leaving a positive social and environmental legacy. We started with five businesses in our portfolio and in 2022 we decided to carry out a mapping exercise to identify other ventures that could contribute to our mission. This publication is precisely the result of that process. It presents our findings, reflections and some examples of cases.

We believe that the desired impacts can only be achieved through collaboration. Therefore, we are sharing the results of this mapping exercise with you in the hope of strengthening this sector, helping identify gaps and opportunities for those working with agroforestry systems. All this will happen through agroforestry impact businesses, whose concept is presented in this publication.

Enjoy the report!

Gustavo Luz
Fundo Vale and equity stakes manager, Vale

Contents

Introduction & Methodology

In this report, Fundo Vale wishes to share with the agroforestry impact business ecosystem the lessons learned and opportunities identified during a nationwide sector survey called *"Mapping Brazilian Agroforestry Businesses – Fostering Links Between Scalable Production Scheme Initiatives and Fundo Vale."* This survey was carried out in partnership with Palladium in the first half of 2022.

This mapping exercise focused on positive social and environmental impact businesses with the potential to scale up and that employ sustainable habitat restoration–based production models such as agroforestry systems. The ultimate goal of this initiative is to track enterprises that are in a database of businesses with the potential to support our strategy to restore 100,000 hectares of habitat, in accordance with *Vale's Forest Goal.*

This mapping exercise looked at businesses with positive impacts in Brazilian biomes, focusing on habitat restoration. They are companies that are using sustainable management practices to generate positive socioeconomic impacts and shared value through the creation of employment and income in the field, besides restoring biodiversity and mitigating climate change.

By collecting this information, listening to these entrepreneurs and analyzing their solutions, we were able to produce this publication, *Agroforestry Impact Businesses: Market Vision, Demands and Opportunities.*

Methodology

1 Fundo Vale's sample

For this analysis, 6**9 agroforestry impact businesses** that submitted information to Fundo Vale's mapping exercise, conducted nationwide in the first half of 2022, were considered.

The participating entrepreneurs filled in a basic questionnaire composed of **38 open and closed-ended questions,** with self-declared answers, aimed at selecting initiatives, but without the rigor involved in a research questionnaire.

In order to take part in the mapping exercise, enterprises had to meet the following criteria, as specified in the respective public notice:

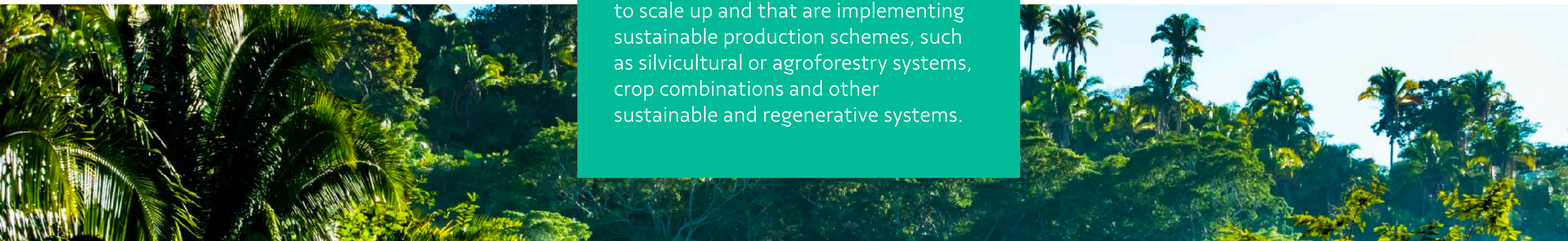
A. Impact businesses that present evidence of being financially viable and preferably at more advanced stages of developing solutions (although businesses in the pilot project stage or starting commercial validation were also considered);

B. Impact businesses with the potential to generate carbon credits; and

C. Impact businesses with the capacity to scale up and that are implementing sustainable production schemes, such as silvicultural or agroforestry systems, crop combinations and other sustainable and regenerative systems.

2 Analysis by Pipe.Labo

The mapping questionnaire was analyzed quantitatively to generate statistics that could point to market visions and the profile of solutions. The responses to open-ended questions were evaluated to identify demands and challenges.



Methodology

3 Specialists

Five specialists were interviewed in order to delve into the basic information in more detail and to clarify terms and concepts that the respondents had expressed uncertainty about.

4 Cases

From the sample, six entrepreneurs in charge of businesses that exemplify challenges, achievements, demands, advances and trends in this area were interviewed in depth.

Credits

December 2022

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Fundo Vale

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Fundo Vale

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Camta
Dinaldo Antônio dos Santos

Cumbaru Parcerias Produtivas
Pedro Nogueira

Futuro Florestal
Valeria Ciriello, Eduardo Ciriello e Rodrigo Ciriello

3 Agro
Bruno Kato

Radix
Giba Derze

1

Agroforestry Impact Businesses

1.1 Context

"This is the new great discovery for global agriculture: the same plot of land, the same people and the same machines can be used to grow various crops, while also planting trees, which will grow into a kind of savings fund. This is a new concept of soil management, planting and sustainability, which will generate successive records in output and naturally lead Brazil to become the world leader in food production."

Alysson Paolinelli, agronomist responsible for Brazil's Green Revolution, former agriculture minister, one of the founders of the Brazilian government's agricultural research agency, Embrapa, and a Nobel Peace Prize nominee.

1.1 Context

This report combines visions of **two market forces** with the aim of generating positive social and environmental impacts in Brazil:

A

Impact Businesses

+

B

Agroforestry Solutions

1.1 Context

A

Impact Businesses

1.1

Context

A Impact Businesses

The topic of impact businesses has been gaining prominence in Brazil. This growing market has been developing for just over 15 years and it seeks new ventures with the clear intention of solving social and environmental problems through enterprises' main activity, either through their products/services or the way they operate. The key factor is commitment to measuring and monitoring the positive impacts generated.

More detailed information on this concept can be found in a study titled *What Impact Businesses Are,* produced by the Alliance for Impact Investing and Businesses, the Institute for Business Citizenship and Pipe.Labo.

The researchers involved in this study consulted stakeholders in this market and identified four key criteria:

1. **intentionality**
2. **impact on the business' core activity**
3. **Pursuit of financial returns and market logic**
4. **commitment to monitoring impacts**

According to a report called *Impact Investing in Brazil – 2020,* by the Aspen Network of Development Entrepreneurs (ANDE), there are now at least R$11.5 billion worth of impact investment assets under management in Brazil. In the case of Brazil, many investors in this field are looking for investments with clear environmental impacts. In addition, there are other areas of opportunity due to traditional investors' growing demand for companies with positive environmental, social and governance (ESG) performance.

1.1 Context

B

Agroforestry Solutions

1.1

Context

B

Agroforestry Solutions

Brazil has enormous potential to promote development combined with nature conservation. One aspect of this vision of the future involves production arrangements based on a production strategy considering positive impacts on the soil, climate, water, biodiversity, and local employment and income, that is, environmental, economic and social dimensions. A report by the *Intergovernmental Panel on Climate Change* (IPCC) – created by the World Meteorological Organization and United Nations Environment Program – points out that solutions aimed at climate adaptation can make rural properties more resilient and resistant to pests, droughts and floods.

In Brazil, agroforestry systems are one option to restore areas, as they contribute to ecosystem services, using different productive tree, crop and/or animal species. This model, which is expanding, makes it possible to combine biodiversity conservation with economic returns. Agroforestry systems feature both areas of crops and trees (native or planted), and the forested areas are also used for crops and grazing by animals. Similarly, discussions about carbon credit markets and their regulations are growing.

There is also great potential for silviculture involving native species. This model can meet growing demand for tropical timber while also producing non-timber forest products such as latex and fruits, and generating various other benefits such as reducing deforestation and forest degradation, maintaining and improving environmental services and biodiversity conservation, and removing many tons of carbon from the atmosphere.

Silviculture clearly offers both environmental and economic impacts. **The big challenge is that as this is an emerging market, different concepts, numbers, laws and visions are still being discussed, especially the boundaries and dividing lines of definitions and impacts.**

Here are some numbers that help tell this story:

1.1

Context B Agroforestry Solutions

• Brazil is rich in forest resources, with more than **500 million hectares of native forests** and around 8 million hectares of plantations of exotic tree species. However, despite this competitive advantage, the country currently accounts for **less than 10% of global production of tropical timber**, according to data from WRI Brasil.

• Tree plantations in Brazil generate huge revenues. In 2021, the silviculture sector (focused on forests) generated **R$23.8 billion across 9.5 million hectares,** according to a report called *Plant and Silvicultural Production* by the national statistics agency, IBGE.

• Looking at establishments that grow trees, the *2017 Agricultural Census* found that Brazil had 299,698 establishments distributed over approximately 2.86 million hectares, or just 0.82% of the total area of land used by people in the country. **The Southern region accounted for more than 71% of silvicultural establishments and around 49% of the total area used for this purpose in Brazil.**

• **There are 17.4 million hectares of integrated crop, livestock and forest systems** across the country, according to a 2020/2021 report by the Integrated Crop, Livestock and Forest System Network (Rede ILPF).

• According to data from the *2017 Agricultural Census*, in Brazil, **9.8% of agricultural establishments make use of land through agroforestry systems**, accounting for just 3.95% of the total area used for agribusiness. **Brazil's Northeast region represents more than 65% of these establishments** and more than 63% of the local area used for agroforestry systems.

2017 Agricultural Census	
Overall	**Agroforestry Systems**
5 million establishments	**490,647** establishments
351.3 million hectares	**13.9 million hectares**

1.1

Context B Agroforestry Solutions

"Agroforestry systems have emerged with a greater focus on environmental benefits or ecosystem services. Agroforestry systems seek to align the environment with an intrinsic factor for the sustainability of projects, which is the role of people in the ecosystem. Agroforestry systems are based on the premise of conservation through use, meaning sustainable income generation. However, in this context, productivity is naturally lower and small scale. Over time, it became necessary to look at the financial aspect and product flow logistics, among other demands."

→ SPECIALIST

"think it is important to recognize that indigenous peoples have historical knowledge of combining food production systems with forest species, which we today call agroforestry systems."

→ SPACIALIST

1.1 Context

Bringing together the best aspects of the two concepts, for the purposes of this study and in line with Fundo Vale's visions for *Vale's 2030 Forest Goal*, we can see the following:

A

Impact Businesses

+

B

Agroforestry Solutions

=

Agroforestry impact businesses

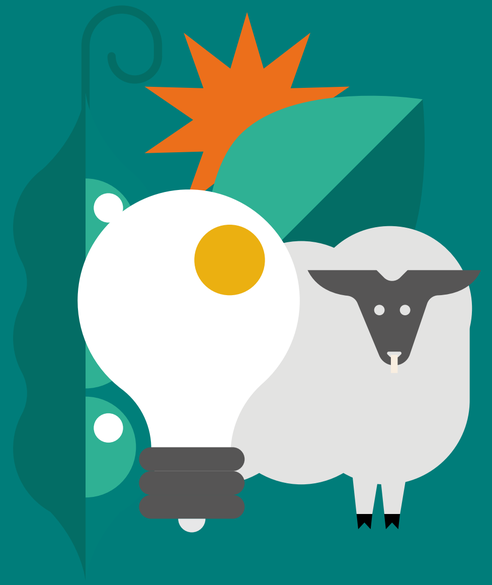
1.1 Context

Business

- Financial return
- Business modeling
- Possibility of expansion or replication
- Production of knowledge and innovation regarding sustainable production systems

Impact

- Increase in vegetation coverage
- Soil protected and restored
- Carbon balance
- Creation of new jobs
- Increased income for families and workers



Agroforestry impact businesses

1.2 Vision of Concepts

This report arose from analysis of agroforestry impact businesses organized in line with the **three main concepts** that are subjects of interest to Fundo Vale:

1

Diversified silviculture

2

Successional/biodiverse agroforestry systems

3

Simplified crop combinations and other integrated crop, livestock and forest systems

1.2 Vision of Concepts

1

Diversified silviculture

Definition in questionnaire:

Growing trees to produce timber. Silviculture is a complex system that combines timber production with environmental services and biodiversity. This is ideal for restoring legally mandated minimum areas of native habitat, given that management is allowed in them. Short, medium or long-cycle species may be used.

1.2 Vision of Concepts

Definition in questionnaire:

They are more diversified systems, similar to local natural forest ecosystems, with a high diversity of species. Their management is based on the natural succession of species. Implanted simultaneously or sequentially, they can be static or dynamic.

2

Successional/biodiverse agroforestry systems

1.2 Vision of Concepts

Definition in questionnaire:

They are more diversified systems, similar to local natural forest ecosystems, with a high diversity of species. Their management is based on the natural succession of species. Implanted simultaneously or sequentially, they can be static or dynamic.

3

Simplified crop combinations and other integrated crop, livestock and forest systems

1.3

Cases 1 ● ○

Business

Futuro Florestal

Location

Garça, São Paulo; it operates in different biomes across Brazil

Stage

Expansion phase (the business is gaining traction, growing and starting to make a profit)

Partners

Valeria Ciriello, Eduardo Ciriello and Rodrigo Ciriello (founders)

Production scheme:

Diversified silviculture

Production Scheme

Atlantic Forest native species (Cariniana legalis, Calophyllum brasiliense, Cordia trichotoma, Zeyheria tuberculosa, Plathymenia, Centrolobium tomentosum, Astronium graveolens, Handroanthus albus, Handroanthus impetiginosus, Genipa americana, Dalbergia nigra, Peltophorum dubium and Dipteryx alata); Amazon Rainforest native species (Calophyllum brasiliense, Cordia trichotoma, Cordia goeldiana, Bertholletia excelsa / Brazil nuts, Astronium graveolens, Bagassa guianensis, Handroanthus albus, Handroanthus avellanedae, Genipa americana and Dipteryx odorata); and exotic species such as Khaya ivorensis / African mahogany, Toona ciliata and Tectona grandis / teak.

What it does

It prospects areas to implement forestry and agroforestry projects, via forestry consulting and advisory services. It then carries out forest management for these projects, including the supply of saplings (from its own nursery) of native and exotic hardwood species of high commercial value. The company works on the implementation of mixed forest plantations based on the close-to-nature concept (a productive design that considers the ecological aspects and dynamics of natural forests) with the support of a broad technological base in the forestry production system for the sustainable production of tropical timber, integrating elements of diversity through combinations of productive species (native and exotic). The company's innovation lies in its ability to apply available low-impact forest regeneration and management technologies, thereby restoring soil fertility and microbiology. The model also allows for a smaller carbon footprint in forestry activity and greater additionality in carbon sequestration.

1.3

Cases 1

Business

Futuro Florestal

Business Model

It establishes strategic alliances and technological partnerships with domestic and international companies and research institutions. In practice, it plans, guides and executes field studies with the objective of producing knowledge to ensure success in the commercial production of tropical hardwoods, offering technical support to make projects viable, providing forestry technology services, and supplying saplings and seeds of proven quality (a segment in which it is a leader in the forestry sector). It also produces and sells timber and forestry and agroforestry byproducts in a sustainable way, with social responsibility, environmental benefits and economic viability.

Business Vision

To develop superior genetic material and be an international leader in the management of sustainable hardwood plantations, as part of a mission to take care of the planet in a profitable way, transforming landscapes into sustainable production systems.

Impact Vision

The social impacts include job creation (between 50 and 500 direct jobs in the operational field and between 10 and 100 indirect jobs are projected), expansion of the supply chain, and social benefits such as food vouchers, transportation vouchers and health insurance. In the environmental sphere, conservation and restoration initiatives are under way in permanent preservation areas and legally mandated minimum areas of native habitat. Other environmental benefits include water conservation, a better microclimate, the rescuing of wildlife and the domestication and conservation of endangered species.

"We are continually focused on boosting the planting of native trees for commercial purposes, something that has always generated cultural and legal resistance, although legislation has evolved in recent years to guarantee legal certainty in the exploitation of tree plantations. We have taken on the mission of contributing to the evolution of legislation, participating in taskforces working to reduce bureaucracy in laws related to the growing of native trees. So, we need to attack on several fronts, as specialists in law, in the production of high-quality saplings, in genetic improvement, in applied silviculture, in modeling systems and in the challenges of timber improvement..."

→ **ENTREPRENEUR**

1.3

Cases 2

Business

Cumbaru Parcerias Produtivas

Location

Mato Grosso (Cerrado savanna biome in municipality of Poconé)

Stage

Consolidation (significant position in the market and growing profits)

Partners

Pedro Nogueira and Thiago Farias Nogueira

Production scheme

Integrated crop, livestock and forest system

Species

Dipteryx alata (fruit), Bagassa guianensis, Calophyllum brasiliense, Cordia goeldiana, Colubrina glandulosa and Bertholletia excelsa / Brazil nuts

What it does

It aims to disseminate sustainable farming practices based on regenerative systems. To this end, it uses plantations of a tree species native to the Cerrado savanna to recover degraded land, restoring pastures and making them more productive. Dipteryx alata tree plantations enhance producers' income, capture carbon and reduce the pressure to deforest new areas of native vegetation. The goal for 2030 is to rehabilitate 3,000 hectares over the next five years and collect 150 metric tons of Dipteryx alata fruit per year through sustainable management.

1.3

Cases 2

Business

Cumbaru Parcerias Produtivas

Business Model

It operates with two models. The first is based on leasing land from small and medium-sized producers and forming rural partnerships with them to rehabilitate degraded pastures through integrated crop, livestock and forest systems. The second is based on the structuring of social and biological diversity chains and the commercialization of products. The idea is to support small producers and traditional communities, focusing on enabling the sustainable management of social and biological diversity products. In this context, the revenues come from the sale of agricultural products such as milk, calves, adult beef cattle and Dipteryx alata nuts.

Business Vision

Help solve deforestation, one of the biggest problems in the Amazon, by rehabilitating degraded pasture lands.

Visão de Impacto

Increasing producers' income is one of the main social impacts, as well as the dissemination of a production system featuring best practices. By changing producers' mindset, which tends to be more traditionalist, these entrepreneurs believe that they are helping show that there is a system in which trees can bring about more benefits and income to the business from fruits, timber and carbon credits. From the perspective of environmental impacts, the emphasis is placed on combating the high level of deforestation in Mato Grosso.

"It is essential to be clear about the production schemes. In the case of Cumbaru, we adopted a silvopastoral model because we want to contribute to solving the main problem in the Amazon: deforestation. We want to rehabilitate degraded pastures with the support of a cattle raising system that is more sustainable and regenerative. When integrating livestock with trees, having clarity about the carbon issue, for example, is essential for any impact investor, because the tree component in the production system helps sequester more carbon than it emits. In this arrangement, there is the potential to generate and not just sequester carbon."

→ ENTREPRENEUR

1.3

Cases 3

Business

Radix Investimentos

Location

Roraima

Stage

Consolidation phase (significant position in the market and growing profits)

Partners

Giba Derze, Thiago Campos and Gabriel Dias

Production scheme

Diversified silviculture

Species

Khaya ivorensis / African mahogany (main crop), Ochroma pyramidale, Jacaranda, Handroanthus and Bertholletia excelsa / Brazil nuts

What it does

This company was founded with the purpose of democratizing green investments through forestry crowdfunding and, since 2015, it has already restored 160 hectares of degraded areas by planting trees and implementing agroforestry in the Amazon. It has so far raised more than R$6.5 million of capital from 928 investors. The use of technology is key to ensuring the efficient management of farms and forestry assets, ensuring quick decision making in the field and improving processes and activities. The technological solutions used include digital dendrometers integrated with the Internet of Things and Bluetooth (aimed at monitoring forest development with precision technology); connectivity (the farms have Wi-Fi access points and the management processes are carried out via chat and cloud); the use of satellite images for mapping forests and monitoring operations in the field; and drones that fly over the plantations, recording the evolution of the forests, inspecting the operations carried out and identifying possible pests and deficiencies.

1.3

Cases 3

Business

Radix Investimentos

Business model

The company has farms that are growing Khaya ivorensis / African mahogany, Ochroma pyramidale, Jacaranda, Handroanthus and Bertholletia excelsa / Brazil nuts. For a small sum, people have the opportunity to invest in this business model through crowdfunding. The investment rationale involves the sale of forestry bonds (which correspond to recently planted trees). As these trees grow, they generate environmental and social gains. Once they are fully grown, they provide a financial return on investment through the sale of timber, carbon credits and forest replacement credits.

Business Vision

The goal for the next eight years is to restore 1,200 hectares of degraded land in Roraima, investing in more diverse and regenerative systems, improving returns for investors based on mixed silviculture, making the transition from monoculture to a system with greater biodiversity and native species, while implementing a more dynamic and democratic forest asset market and increasing investment liquidity.

Impact Vision

In addition to social and environmental impacts, the business allocates 5% of the money raised to support social projects, research, development and environmental education, reflecting its commitment to social and environmental causes.

"Most of our investors are between 35 and 40 years old. Many of them are forming families, they have a stable life and are concerned about the planet's future. It is important to note that the younger generation is more connected with this environmental vision and things could change. When we appeared in the market, we were pioneers and offered investments that were different from those offered by banks. Today, the market is more fragmented and we think that's a good thing! Radix does not currently have a large number of investors but we are starting to enter the world of larger investments and attract major investors. This is a market trend: early adopters will be replaced by more professional investors, who look at the numbers and see our consistency. Four or five years from now, our vision is to be reaching investment funds."

→ ENTREPRENEUR

1.3

Cases 4

Business

Tomé-Açu Mixed Farming Cooperative (CAMTA)

Location

Tomé-Açu, Pará

Stage

Expansion (significant position in the market and growing profits)

Partners

Alberto Keit Oppata, Edimundo Watanabe, Dinaldo Antônio dos Santos, Flávio Yoshimura, Claudio Sugaya and Orleans Mesquita (as well as 170 cooperative members)

Production scheme

Agroforestry system

Species

Cocoa, açaí berries, black pepper, cassava, andiroba (Carapa guianensis) and Brazil nuts, as well as fruit and oilseed products

What it does

The Tomé-Açu Mixed Farming Cooperative (CAMTA) was founded by Japanese immigrants in 1929, when the Tomé-Açu region of Pará State was being settled. It initially grew cocoa, vegetables and rice. As of the 1970s, the cooperative's members, inspired by the agroforestry gardens of native forest peoples, began their first experiments with agroforestry systems. Since then, CAMTA has developed intercropped production techniques involving annual, fruit and forest plants, together with black pepper. This production system was named the Tomé-Açu Agroforestry System (SAFTA). The cooperative has industrial facilities that process fruits into pulp for sale in domestic and foreign markets. A pioneer in modeling and disseminating agroforestry systems in the Amazon region, CAMTA manages a broad portfolio of products (pepper, cocoa, vegetable oils and 17 flavors of fruit pulp), encompassing technical assistance, agro-industrial processing and commercialization activities.

1.3

Cases 4

Business

Tomé-Açu Mixed Farming Cooperative (CAMTA)

Business Model

The agroforestry systems used in Tomé-Açu involve species that continuously generate income over time. The products are sold in domestic and foreign markets through partnerships that have been in place for more than a decade. The cooperative has a robust portfolio of well-established products and services. Using its processing infrastructure, it sells products made from agroforestry system outputs (fruit pulp, oils and cocoa). The biggest sellers are cocoa and açaí. Most of the sales are B2B for export. CAMTA also has its own brand of fruit pulps and oils, sold in regional and national markets.

Business vision

Its vision is based on expanding its production systems, currently covering 5,000 hectares, to meet growing demand in value chains. For example, there is enough demand to double the volume of fine cocoa exported to Japan. With regard to açaí, the plan is to expand the off-season crop production system on dry land and invest in adding value due to the positive impacts generated. The idea includes the structuring of mechanized systems in the cooperative, enabling producers to use machines. An industrial plant will also be installed to produce organic and mineral biofertilizers (with annual capacity of 15,000 metric tons), thereby enabling better use of 8,000 metric tons of agro-industrial waste generated per year.

Impact Vision

The environmental impacts include mitigation of greenhouse gases, conservation of water resources, conservation of biodiversity, soil regeneration and agriculture without slash and burn. The social impacts include creation of jobs and income, as well as food security. Today, CAMTA generates around 10,000 jobs and it is running social and environmental projects in 25 communities of family producers that supply the cooperative. The impacts are monitored and evaluated in accordance with the projects developed and the demands of partnerships.

"Agroforestry systems generate multiple solutions, represent a viable development model for the Amazon and enhance the integration of environmental restoration with financial profitability and social development. They yield major positive impacts."

→ **ENTREPRENEUR**

2

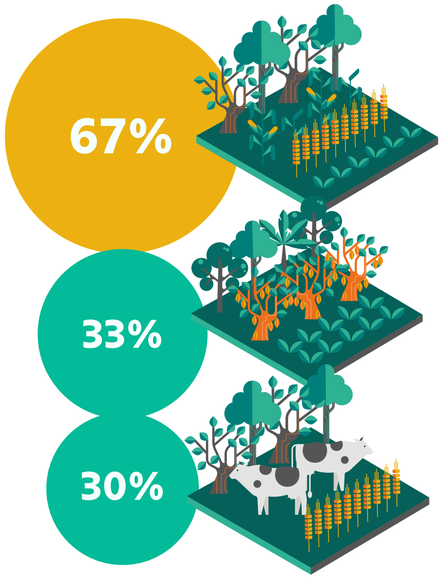
Description of Sample

2.1 Breakdown by Production Scheme

The entrepreneurs were asked to state which of the three production schemes targeted by Fundo Vale they work with. **The majority, 67%, said successional/biodiverse agroforestry systems.**

The businesses operate:

Base: 69 businesses



Successional/biodiverse agroforestry systems

Successional/biodiverse agroforestry systems

Simplified crop combinations and other integrated crop, livestock and forest systems

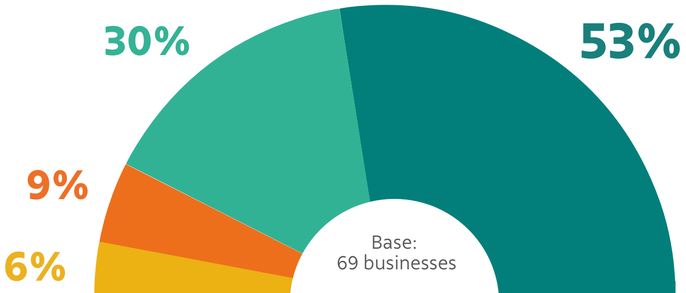
33% **Others**

More work needs to be done to align concepts

Interestingly, **33% of the entrepreneurs checked the "Other" option** and they were invited to explain their production arrangements. Looking at their responses, it is possible to note that some of the respondents could have classified themselves as working with one of the three target schemes, while other people were not able to explain their methodologies or did not respond. It is also worth considering that some businesses aimed at carbon sequestration do not fit these arrangements.

More than half of the evaluated businesses are only involved in one of the three types of production schemes sought in the mapping exercise.

- **53%** are involved in one of the three types of production schemes
- **30%** are involved in two of the three production schemes
- **9%** are involved in all three production schemes
- **6%** are involved in all three production schemes, associated with other ones.

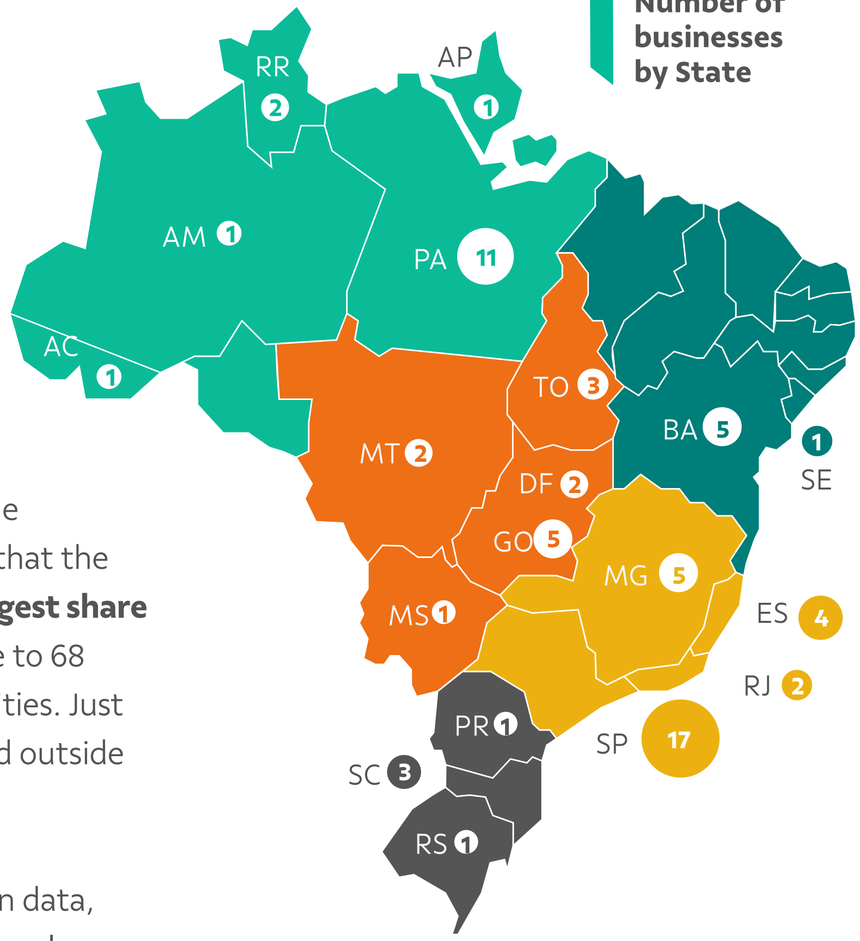


2.2 Breakdown by Region and State

Percentage of businesses per region

41%	Southeast
28%	North
14%	Midwest
9%	Northeast
7%	South
1%	Outside Brazil

Number of businesses by State



Analyzing the municipalities in which the businesses are headquartered, we saw that the **Southeast region accounts for the largest share (41%)**. In all, 19 Brazilian states are home to 68 organizations, in 59 different municipalities. Just one organization said that it is domiciled outside Brazil (in London).

Looking at the geographic concentration data, it is important to emphasize that the sample contains businesses that provide services to other entrepreneurs who need help to develop agroforestry systems, for example. In these cases, the company may be domiciled in a certain municipality, while operating in different locations. The same goes for the part of the sample made up of cooperatives that distribute inputs.

It is also possible to observe that some small businesses may benefit from proximity to consumers to sell and distribute products, since agroforestry system models themselves allow greater added value per planted area.

41% **of the analyzed enterprises are located in the Southeast region.**

23% **of them are based in Brazilian state capitals.**

73% **of the businesses are based in Brazilian municipalities with fewer than 50,000 inhabitants.**

2.3 Maturity of Enterprises

Fundo Vale defined four business development stages, in line with its own criteria, and the entrepreneurs were asked to say what stage their business is at. It is important to note that more mature businesses with evidence of activity were encouraged to apply. **The following results were obtained:**

13% **Idea phase** (investigation)

13% **Proof of concept phase** (validation and market fit)

30% **Expansion phase** (business gains traction, grows and makes its first profits)

9% **Startup phase** (first sales and pursuit of scale)

6% **Consolidation phase** (significant position in the market and growing profits)

Base: 69 Business

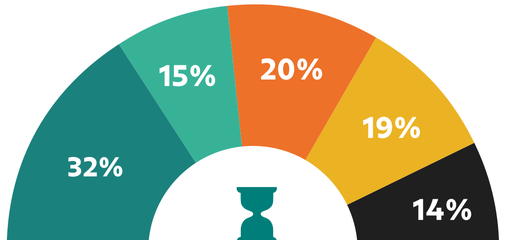
Business management support seems to be in demand.

Most of the evaluated businesses are currently organizing themselves to generate recurring sales and consolidate their products and services for expansion. So, when asked to state their most pressing demands, the businesses mentioned factors such as financial resources, team members and communication. (See page 61 of this report.)

Length of existence

Analyzing the companies' legal registration details, it was found that 32% of them are less than two years old and 47% (almost half of the sample) are up to five years old. Looking at *Pipe.Labo's 2021 Environmental Impact Business Map*, we see that the maturity of businesses was similar – there were many young businesses and 31% of them were under two years old. However, what makes this mapping of agroforestry businesses different is the number of solutions that have existed for more than five years. More than half of the sampled businesses (53%) have been on the market for more than five years, compared to 26% in the case of the 2021 Environmental Impact Business Map. Despite the adopted criterion of observing the businesses in this sample that are already active, we must also consider the size of enterprises. Most of them are microenterprises, as we will see on page 36.

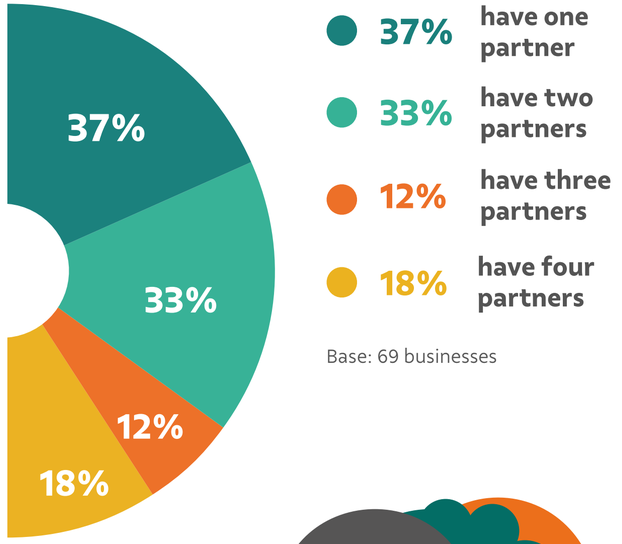
- **32%** up to 2 years old
- **15%** between 2 & 5 years old
- **20%** between 5 & 10 years old
- **19%** between 10 & 20 years old
- **14%** over 20 years old



Base: 60 business

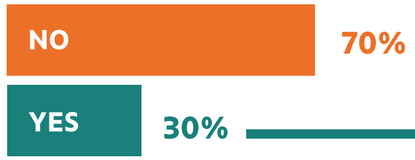
2.3 Maturity of Enterprises

Most of the analyzed businesses have just one or no more than two partners running them.



Base: 69 businesses

Proportion of businesses that have been accelerated



Of the total of **21 businesses** that have already **undergone acceleration**

13 businesses have undergone **two or more** accelerations.

There is an opportunity to create more customized programs for agroforestry impact businesses.

Most of the businesses – even the more mature ones, of which there are many in the sample – have not had access to acceleration programs. In the *2021 Environmental Impact Business Map*, whose sample contained more early-stage enterprises, 40% of businesses had been accelerated. This result also reflects a more varied base of environmental solutions, beyond agroforestry.

Many of the acceleration programs mentioned by the entrepreneurs are not specifically aimed at environmental issues, much less agroforestry.

2.4 Legal Status of Enterprises

The mapping exercise sought more mature businesses that were already operating. It is likely that this focus party explains the high proportion of businesses that are legally incorporated (87%), which exceeds the results found in other studies in the sector. In *Pipe.Labo's 2021 Environmental Impact Business Map*, for example, 68% of the surveyed enterprises were legally incorporated.

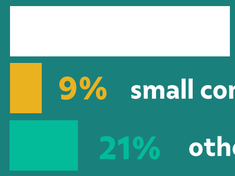
Cooperatives and associations

24% of the organizations are classified as **cooperatives or private associations.**

Base: 60 businesses

Companies

Leaving aside the cooperatives and associations, the other businesses are distributed as follows:



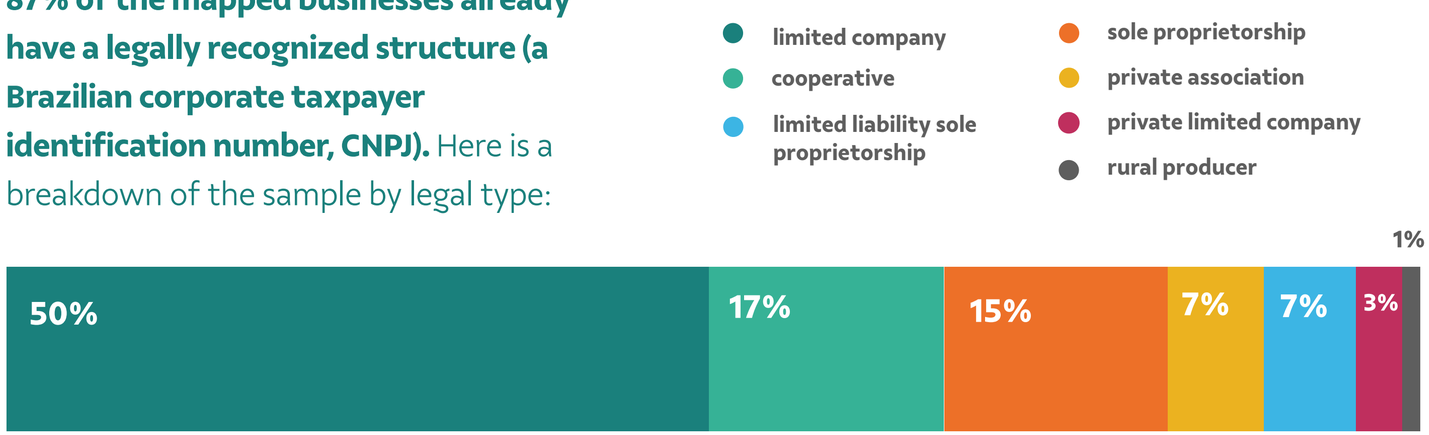
70% microenterprises

9% small companies

21% other companies (medium and large)

Base: 46 businesses

87% of the mapped businesses already have a legally recognized structure (a Brazilian corporate taxpayer identification number, CNPJ). Here is a breakdown of the sample by legal type:



Base: 60 businesses

There is a scale challenge.

In addition to the specific characteristics of small cooperatives and associations, **two-thirds of the companies** in the sample are microenterprises. Given that the intention was to map mature businesses, as investors seek large numbers (whether in terms of financial returns or impacted hectares, for example), this is a significant point.

3

Business Models and Monetization

3.1

Business Modeling

In an open-ended question, the 69 mapped businesses presented their business models and monetization plans. Looking at the qualitative information and crudely segmenting it, we can observe that many of the businesses are focused on providing services for the development of agroforestry systems or selling agroforestry products, such as timber, fruits and roots.

It is important to emphasize that most of the mapped service providers act as consulting firms that provide services to the agroforestry sector, especially in the implementation of agroforestry systems.

Base: 69 businesses

Breakdown of the 43 businesses that **provide services:**

74% provide services to producers (they are consulting firms)

19% are cooperatives

7% provide tourism services

Land use

Looking at the data on service providers, we can see that half of these businesses are pure-play consulting firms, without any other model for selling their own products or carbon credits. These are suppliers that do not directly use land but help other entrepreneurs to do so and achieve greater impacts.

3.1 Business Modeling

"When we talk about moving from forestry systems to production systems, we really aim to generate revenue throughout the year. When we talk about economic impacts, this means that we must plan these activities in an organized way – which people generally do not do, especially farmers who do not organize very precisely what will happen in terms of financial flows during the current year and the next one. It is important to understand cumulative and adjusted cash flows, for example. This prognosis, this vision of future scenarios, needs to be done by analyzing each product in an agroforestry system. I see the importance of thinking about and disseminating knowledge about the economic management of restorative systems in order for entrepreneurs to think about how to optimize and reduce costs. Farmers need to generate some income that is enough for them to at least pay for their implantation expenses and comply with the law."

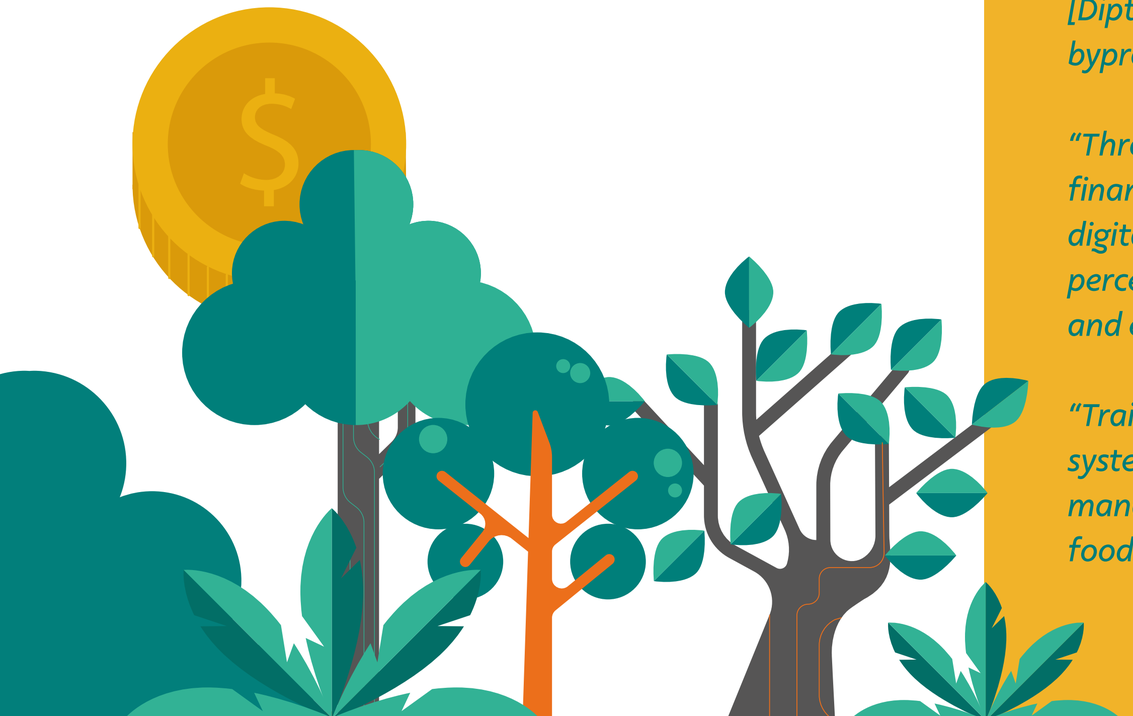
→ SPECIALIST

3.1

Business Modeling

Revenues

The surveyed entrepreneurs were invited to talk about their revenue models. **Here are some examples:**



"We will earn income from products such as açaí powder, cocoa and cupuaçu berries, as well as carbon credit NFTs. The target market is B2B."

"Revenue from growing açaí and cocoa as a basis for the production and sale of products such as açaí sorbet, cocoa nibs, baru [Dipteryx alata] nuts, cocoa powder and byproducts."

"Through technical assistance, producer financing and impact monitoring on our digital platform, we will receive a percentage of productivity, revenue and efficiency gains."

"Training and assistance in agroforestry systems, especially in planning and management for the production of organic food through agroforestry."

"Revenues from forestry products, by selling high value-added timber and biomass."

"Revenue generation from the sale of saplings, seeds, timber, nuts, firewood and hedgehogs; projects to restore degraded pasture land and forests; forest replacement projects; and carbon credits."

"By selling plant-based food products, targeted at retail chains, in a scalable operation."

"Provision of consulting services in agroforestry systems, including financial modeling, species composition, commercial development and support for the implementation of systems."

→ ENTREPRENEURS

3.2

Case ● ○

Business

3 AGRO

Location

Inhangapi,
Pará

Stage

Startup phase (first sales and pursuit of scale)

Partner

Bruno Kato

Production scheme

Agroforestry system

Species

Açaí berries, cocoa, cupuaçu fruit and 15 other species

What it does

It manages Amazon biodiversity assets and sells forestry services, prioritizing projects involving native species.

Business Model

It uses a symbiotic model involving the bioeconomy and digital technologies, working with revenue sources based on freeze-dried açaí powder, carbon credits, biodiversity credits, cupuaçu fruit pulp, forestry asset NFTs, cocoa, and social impact credits, in which investors have the exclusive right to remuneration from the sale of açaí. The main activities are forest management, modeling of digital technology applications for forest assets and management of partners' projects. It has 65 hectares of irrigated açaí trees planted on high ground that does not flood, including three hectares of irrigated agroforestry systems featuring açaí, cocoa and cupuaçu. The company has eight years of experience. Its revenue generation strategy is based on three sources: selling forestry goods to existing markets (açaí, cupuaçu and cocoa); operating an opportunity funnel with strategic partner Horta da Terra, supplying more than 10 metric tons per month and earning revenue equivalent to US$520,000; and selling carbon credits that generate social, biodiversity and carbon dioxide benefits.

3.2

Case • •

Business

3 AGRO

Business Vision

The company's value proposition is to manage Amazon biodiversity forestry assets. Its main clients include green investors; B2B in the case of powdered açaí, cupuaçu and cocoa; companies interested in offsetting their environmental impacts; companies interested in carbon, biodiversity and social impact credits; and organizations focused on operator partnerships for the implementation of forestry projects in the Amazon.

Impact Vision

Environmental impacts are derived from forest restoration using native species, the conversion of conventional rural producers into agroforestry system producers using native species, and promotion of Amazonian biodiversity for the domestic and international markets. Social impacts are generated by the purchase of forest products from communities with good forest management practices and more sustainable production systems, which receive prices 30% to 90% higher than the market rate, training for rural workers and producers on agroforestry systems involving native species, and the generation of additional income from the sale of NFTs related to carbon credits, native forest biodiversity and social impacts. The goal is to sell 10 metric tons of açaí powder per month by 2025 and to plant at least 5,000 hectares of agroforestry systems involving native species by 2030.

"We are accelerating the process of learning to do business with nature. This is an important step, because we see many philanthropic projects that have enormous dimensions but cannot sustain themselves, as they have no source of revenue. That won't happen here, because we have found real revenue sources from the sale of freeze-dried açaí powder. We also generate income by selling well-known products such as açaí and by providing forestry services."

→ ENTREPRENEUR

3.3 Financial Challenges

Financial planning

Of the 69 evaluated enterprises, just over half (55%) said they had made financial projections. However, when asked to share some more complex and strategic data about their businesses, the number of responses fell even more.

Although the type of questionnaire used was not specifically designed for this type of analysis, it is possible to perceive a challenge in understanding and evaluating financial expectations and making future projections in terms of scalable businesses and startups. This point is common to impact businesses as a whole – and also to other Brazilian entrepreneurship markets that experience challenges involving financial education and management.

From the **55% of businesses that said they have made some kind of financial projection**, we obtained the following data:

30 of the entrepreneurs indicated an internal rate of return (IRR) of **between 9.5% and 416%.**

21 entrepreneurs estimated their valuations to be between **R$150,000 and R$120 million.** Most of the businesses fell into the following two categories:

- **8 businesses** estimated their valuations to be between **R$1 million and R$10 million.**
- **9 businesses e**stimated their valuations to be between **R$10 million and R$100 million.**

32 entrepreneurs provided a response about their **estimated payback period.**

5 businesses

estimated a payback period of up to **two years.**

10 businesses

estimated a payback period of between **three and five years.**

10 businesses

estimated a payback period of between **six and nine years.**

7 businesses

estimated a payback period of **10 or more years.**

3.3 Financial Challenges

Demand for financial resources

Asked whether they have received or looked for investment/donations/ funding in recent years, two-third of the businesses said **"Yes."**

67% of the businesses are seeking funding or have recently raised funds.

19 businesses said they have recently raised funds, adding up to **R$85.6 million** invested in these solutions.

The individual investments ranged from **R$7,000 to R$15 million.**

Here are the main sought-after sources of funding that were mentioned:

- Financial institutions
- Public institutions and agencies
- Universities
- International organizations
- Domestic private companies
- Foundations and associations
- Personal investment and investment by partners
- Investment by family members
- Acceleration and investment programs
- Economic support from public contests
- Crowdfunding
- Angel investing

3.3 Financial Challenges

The mapping exercise and interviews with entrepreneurs indicated that financial management is a challenge. A better understanding of some concepts is required, as mentioned above. There is also the need to access capital customized to the specific demands of different business models, in line with the timeframes and challenges of agroforestry solutions.

Consulting experts in the field, we identified an opportunity to work with the concepts listed below, as well as other ones more specifically related to agroforestry business:

- **Payback:** financial indicator that represents the time taken to recover the cost of an investment
- **Valuation:** the calculated value of a company
- **Break-even point:** the point of equilibrium, indicating how much revenue a business needs to generate to make a profit
- **Business plans**
- **Ebitda:** earnings before interest, taxes, depreciation and amortization

Subjects such as access to capital and the rational use of resources received (and sought after) show that there is a significant financial education gap, which deserves to be considered in the support offered to entrepreneurs in the agroforestry impact business ecosystem. This also applies to the sector's investors and promoters as well.

New monetization models such as carbon credits and NFTs also present challenges in terms of understanding and real potential.

"One recurring mistake made by entrepreneurs is to confuse valuation with net present value (NPV). When carrying out a financial analysis for a project, some premises must be respected, including time. If we are working with perennial crops, the analysis timeframe to use in financial indicator formulas is generally 15 or 25 years. The discount rate (interest) is another point to consider, bringing this analysis of the valuation of results to a single point in time. The value of a project refers to its potential to generate wealth in monetary terms. It will ideally be a positive value at the end of the considered years. There is always a correlation between NPV and IRR; it's a downward curve."

→ SPECIALIST

3.3 Financial Challenges

"Payback means the period taken to recover the cost of an investment. Entrepreneurs always start a project with negative values – the costs exceed the revenues. After a while, they start to make money, when the revenues exceed the costs. Payback is achieved when the cumulative revenues exceed the cumulative costs. When your cumulative revenue exceeds your cumulative spending by one cent, you've reached payback. It's simple to understand, but if you don't know where this comparative data comes from, it's possible to get confused about this concept."

→ SPECIALIST

"Working with entrepreneurs, I realize that they need support to understand the process of carrying out financial analysis. This technical aspect is very important, because there is no point having financial resources if you don't know how to use them. If you lack knowledge, it is likely that these resources will be applied inefficiently. It is important to provide training and advice first, and only then inject resources. That makes much more sense!
To take an example from everyday life, there are many people on high salaries who have high levels of debt, while other people earn less but manage to save money.
The logic is the same: financial education, financial training for teams, is crucial for entrepreneurs."

→ SPECIALIST

4

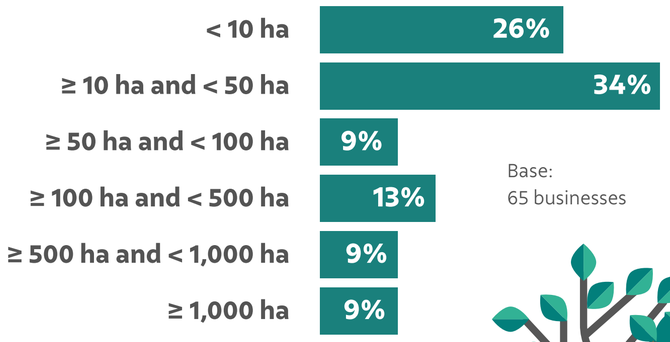
Impact Vision

4.1 Species Grown

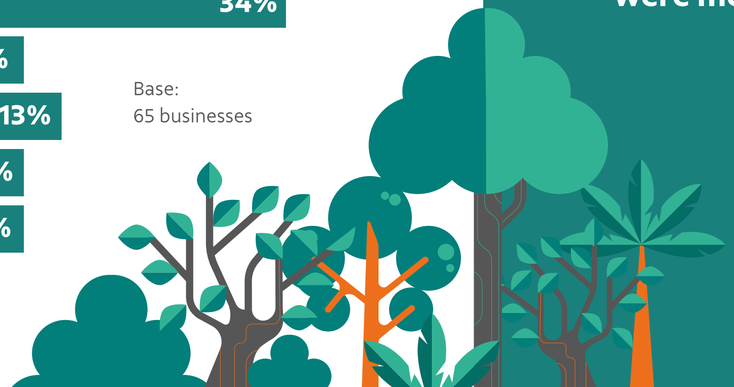
The mapped entrepreneurs were asked to state the size of their operations in hectares. The answers encompass production systems that have been implemented, those that are currently being planned or implemented, and operations implemented through partnerships or cooperation with other parties.

In all, the areas reported by 65 entrepreneurs amounted to 22,415 hectares.60% of the entrepreneurs operate on up to 50 hectares.

Area of operation



Base:
65 businesses



Across all the analyzed production schemes, 300 different crops were mentioned.

Observing the frequency with which they were cited, we generated a word cloud to help visualize each species' weighting in the cultivated areas. Handroanthus trees (commonly called ipê in Brazil), bananas, coffee, cocoa, baru (Dipteryx alata), açaí, corn, guava, eucalyptus, African mahogany, teak and Brazilian peppertree (Aroeira-vermelha) are among the most common crops.

4.1

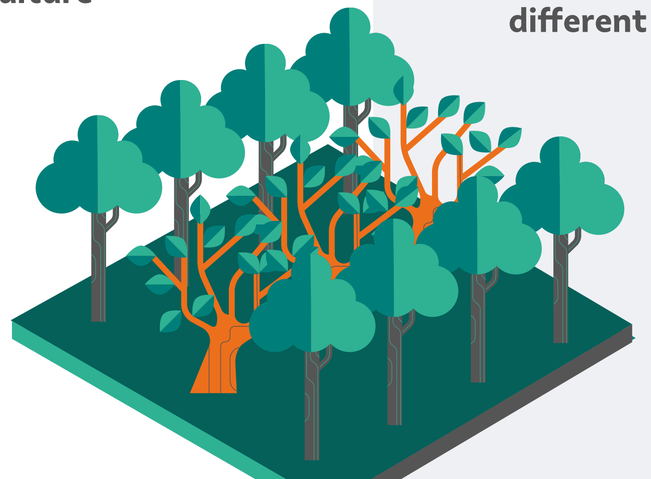
Species Grown

Diversified silviculture

Out of the 69 analyzed businesses, 21 said they use diversified silviculture schemes.

Out of these 21 businesses, 10 said they work with up to nine different species.

In all, 80% of the species grown by the surveyed entrepreneurs who are working with diversified silviculture schemes are native.



The entrepreneurs who work with diversified silviculture schemes mentioned 125 different species.

Observing the frequency with which they were mentioned, we generated a word cloud to help visualize each species' weighting in the cultivated areas. Among diversified silviculture schemes, the most commonly mentioned crops (not considering the quantity or volume produced) were Handroanthus trees (commonly called ipê in Brazil), eucalyptus, Stinkingtoe (Hymenaea courbaril), cinnamon, Calophyllum brasiliense, teak, Cariniana, Brazilian peppertree (Aroeira-vermelha), Anadenanthera colubrina, Copaifera langsdorffii and Centrolobium tomentosum.

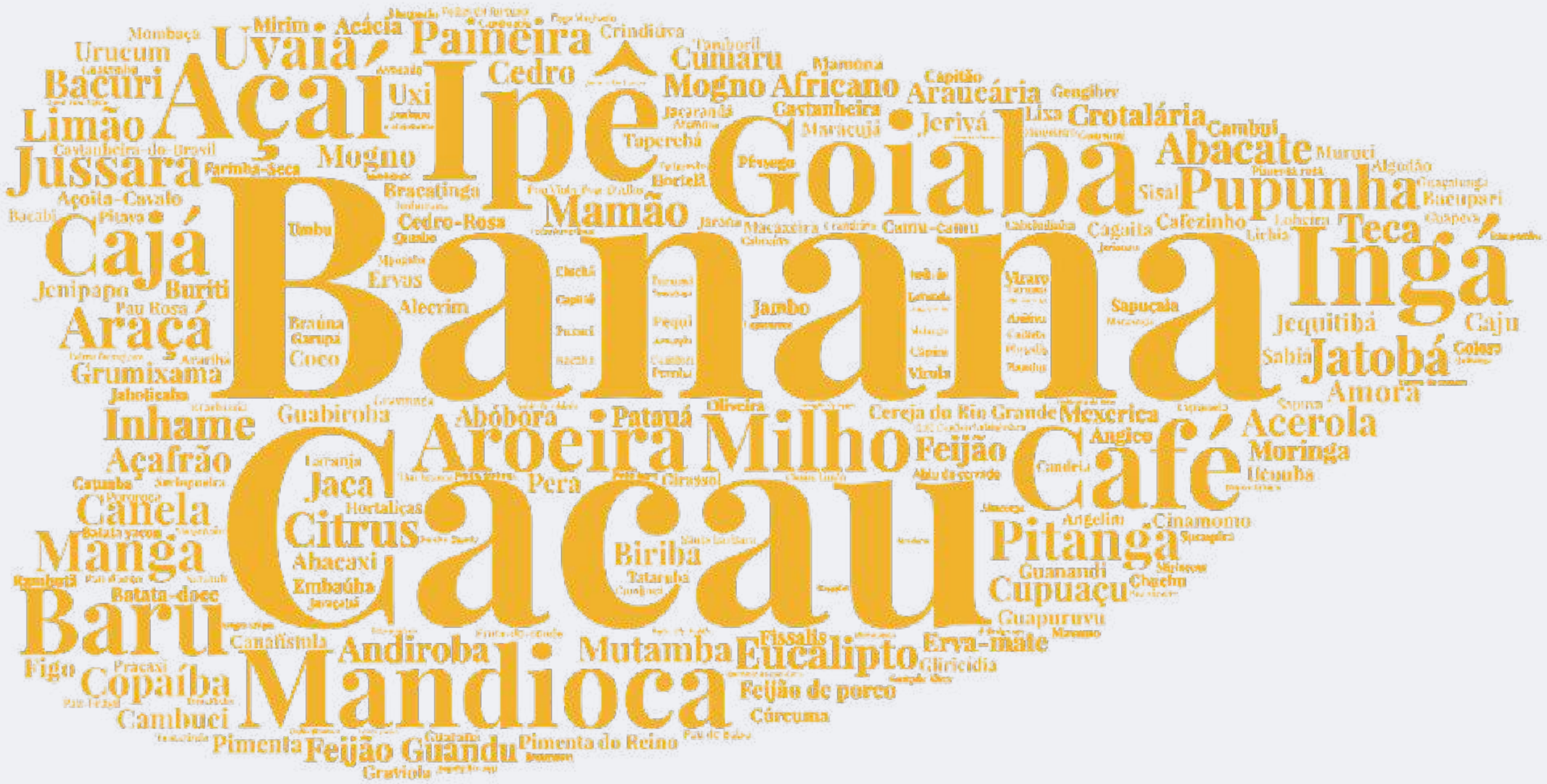
4.1 Species Grown

Successional/ biodiverse agroforestry systems

Out of the 69 analyzed businesses, 46 said they use successional/biodiverse agroforestry systems.

Out of these 46 businesses, 16 said they work with between 20 and 49 species, while 11 work with between 10 and 19 species.

In all, 56% of the species grown are native.



The entrepreneurs who work with successional/biodiverse agroforestry systems mentioned 245 different species.

Observing the frequency with which they were mentioned, we generated a word cloud to help visualize each species' weighting in the cultivated areas. Among successional/biodiverse agroforestry systems, the most commonly mentioned crops (not considering the quantity or volume produced) were banana, cocoa, guava, Handroanthus trees (commonly called ipê in Brazil), cassava (a root vegetable), Inga (a genus of tree), açaí, coffee, Brazilian peppertree (Aroeira-vermelha), corn and baru (Dipteryx alata).

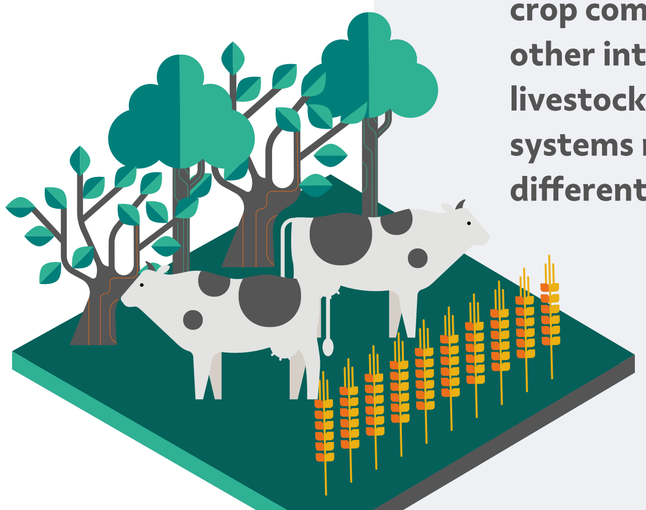
4.1

Species Grown

Simplified crop combinations and other integrated crop, livestock and forest systems

Out of the 69 analyzed businesses, 23 said they use simplified crop combinations and other integrated crop, livestock and forest systems.

Most of the 23 businesses (16) said they work with between two and nine species, **while 56% of the species grown are native.**



The entrepreneurs who work with simplified crop combinations and other integrated crop, livestock and forest systems mentioned 70 different species.

Observing the frequency with which they were mentioned, we generated a word cloud to help visualize each species' weighting in the cultivated areas. Among simplified crop combinations and other integrated crop, livestock and forest systems, the most commonly mentioned crops (not considering the quantity or volume produced) were baru (Dipteryx alata), eucalyptus, teak, African mahogany, guava, juçara palm and pigeon pea (Cajanus cajan).

4.2 Agroforestry Impact Models

A Specialists' Perspective

Agroforestry systems have enormous potential to generate positive impacts – in four different spheres – as long as they are well designed and structured. Otherwise, there is a real risk that the impacts will be highly negative for both people and the environment, as the experts interviewed in this study warned us. The potential impact spheres are:

Social

Emphasis is on the generation of food, employment and income, especially among small producers.

Biophysical

The optimization of organic matter in the soil acts as a structuring agent, involving the rational use of water resources, enhancing thermal comfort and boosting the growth of plants of different species.

Economic

Agroforestry solutions provide the possibility of generating different revenues throughout the year by planting short-cycle species.

Political

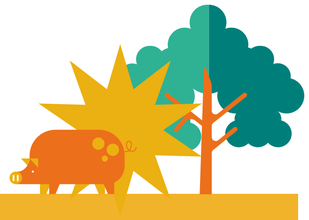
The process as a whole (in its social, biophysical and economic dimensions) has political consequences, generating long-term public policies and inspiring new laws to benefit society.

"There are positive impacts for entrepreneurs, whether they focus on the production aspect or restoration. To generate positive impacts, agroforestry systems need to be well designed. This is the first point that we need to make very clear. Agroforestry systems can generate positive and/or negative impacts, according to their design. If they are well designed, they will generate positive impacts. Otherwise, they can generate negative impacts."

→ SPECIALIST

4.2

Agroforestry Impact Models



B Entrepreneurs' Perspective

Development of market

The entrepreneurs gave qualitative responses about their own impact visions applied to the business models they are developing. It is interesting to note that there is a desire not only to generate direct environmental impacts (involving soil, water, biodiversity and carbon sequestration) but also a vision of the need to open up paths and promote the theme of agroforestry solutions. Many entrepreneurs stressed their own contributions to the dissemination of good practices and the creation of a legal framework, as they have influenced new laws.

Entrepreneurs' vision of **environmental** impacts

"In our business, we seek to achieve results by expanding tree cover, reducing the incidence of solar heat directly on the soil, generating plant litter, increasing the capacity to sequester carbon from the atmosphere, creating more income for cooperative members' families and producing special products with organic certification."

"1) Avoid predatory and indiscriminate conversion of forest areas within sustainable-use conservation areas. 2) Promote prospects for the recovery of any altered/degraded areas subject to environmental crimes. 3) Offer a high-quality private sector project to combat deforestation. 4) Offer sustainable business opportunities linked to the preservation of conservation areas."

"Environmental impacts will be generated by restoring forests with native species, converting conventional rural producers into producers in agroforestry systems involving native species, and promoting the Amazon's biodiversity for domestic and international markets."

"The implementation of legally mandated minimum areas of native habitat will generate positive environmental impacts in the region. The area was chosen with a view to implementing wildlife corridors, joining up forest fragments already present on the property and on neighboring properties. We have established a partnership with NGOs, allowing companies to plant several environmental compensation areas within the property, in addition to our reforestation project."

4.2

Agroforestry Impact Models

B Entrepreneurs' Perspective

Their business models incorporate social elements

Interestingly, in their responses, the entrepreneurs in the sample reinforced the social impacts of their initiatives. As well as pointing out the visions they have of their own environmental impacts (the most evident impacts for many green solutions), there was a desire to emphasize income generation for rural workers, training and local economic development. Part of the explanation for this vision lies in agroecology concepts themselves, given that visions of people's quality of life and support for rural workers are important aspects of their methodologies.

Entrepreneurs' vision of **social** impacts

"Social impacts are generated by the purchase of forest products from communities with good forest management practices and more sustainable production systems, which receive prices 30% to 90% higher than the market rate, training for rural workers and producers on agroforestry systems involving native species, and the generation of additional income from the sale of NFTs related to carbon credits, native forest biodiversity and social impacts."

"We seek to generate environmental impacts by involving communities in agrarian reform settlements and family farmers in the development of agroforestry systems, restoring their areas, training them and generating income."

"Our main target market is small and medium-sized family producers. We work with cooperatives and family farming associations, with which we have developed long-term partnerships to strengthen their organization and assist their expansion and/or modernization of their processing capacity and commercial infrastructure."

"Regenerative cattle raising is known to be capable of regenerating degraded soils and capturing carbon. By including trees, we increase this potential even more. As the system is based on observation and movement of animals on a daily basis, there is a greater need for labor compared to traditional cattle raising. Currently, 90% of our employees on the farms are indigenous people from local communities."

4.3 Carbon Sequestration

The entrepreneurs were asked whether they were aware of the sequestered carbon or the sequestration potential of the proposed production schemes.

The challenge here may lie in the complexity and cost of carrying out these studies and performing monitoring work for certification, as we will see below.

In all, 45% of the entrepreneurs have carried out or are in the process of carrying out a feasibility study to calculate carbon sequestration and assess their eligibility to generate carbon credits.

However, of the 31 businesses that have already carried out studies, only two said they have certification that allows carbon credits to be issued.

"In itself, planting trees does not automatically result in the right to receive carbon credits. The fact is that, in addition to the numerous eligibility criteria of international standards and their respective methodologies, the inherent costs are considerable, often making it unfeasible for small and medium-sized producers to develop a carbon project. For this reason, it is important for producers to be clear about the carbon cycle and its requirements, increasing their possibility of earning money from the generation of carbon credits and thus obtaining a complementary financial flow."

→ **ESPECIALISTA**

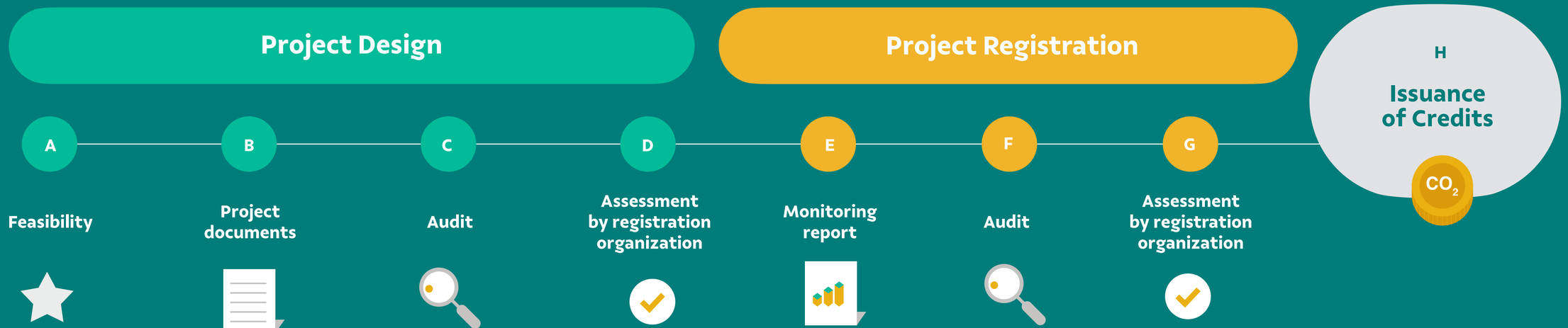
"Carbon standards are evolving with the market. As eligibility criteria evolve, there has been a transition from large renewable energy projects to nature-based solution projects involving strong community engagement and new technologies. It is expected that revenues from carbon credits will increasingly be directed toward projects on the technological frontier that are in line with the net-zero vision championed by voluntary initiatives, in alignment with the Paris Agreement."

Overview of International Carbon Market report,
Fundo Vale and Ecosecurities, 2022

4.3

Carbon Sequestration

Carbon Credit Project Cycle



A B

Hire a specialized consulting firm to prepare the project. This company will assess the project's eligibility, additionality, baseline and feasibility. In this stage, a project document will be produced.

C D

Submit the project to an independent, accredited auditor to validate it and carry out an audit.

E F G

Register the project, specifying the chosen carbon standard. Produce a monitoring report for the next stage. Monitor and record data in line with the description contained in the approved project document and carry out an audit. Finally, verify the data with an independent auditor and get the project assessed by the registration organization.

H

Issue credits in line with the chosen carbon standard.

4.3 Carbon Sequestration

Stages of process

Brazil has the potential to become the global leader in carbon credits, even though its current supply is small, representing less than 1% of the country's annual potential. According to a *report by McKinsey & Company* released in September 2022, Brazil accounts for 15% of the world's carbon capture potential in activities related to land use and it could account for 50% of carbon credit supply in the international market by 2030, by which time the international voluntary market is projected to be worth US$50 billion per year.

Considering entrepreneurs' challenges in working with the carbon credit market, we present below a summary of the certification process and some issues worth paying attention to, which underline this process' complexity for many small and medium-sized entrepreneurs.

"Planted species naturally sequester carbon. This is an indisputable fact. However, in order to develop a carbon project registered in accordance with an international standard, there are various criteria that must be strictly followed. That is the only way to generate credits that can be monetized."

→ SPECIALIST

4.3 Carbon Sequestration

Areas for attention

Combining our interviews with specialists with the findings of *Overview of International Carbon Market*, a study published by Fundo Vale and Ecosecurities in 2022, we produced the following summary of this lengthy certification process and identified some areas that warrant attention:

1. The first step is to carry out a technical and financial feasibility study, with the aim of verifying eligibility in international carbon standards and defining the methodology that best fits the project. After that, it is necessary to carry out a technical feasibility study, verify the additionality potential and estimate. the potential volume of carbon credits generated and the consequent financial viability of the carbon project.

2. If the project is found to be technically and financially viable, the entrepreneur proceeds to the stage of preparing the Project Design Document (PDD), which describes the project, establishes the baseline, declares the envisioned additionality, predicts the carbon credits to be generated and proves compliance with all other aspects encompassed by the rules of the carbon standard and the chosen methodology. Once this stage has been completed, an external audit firm accredited by the carbon standard to be used is hired to carry out a validation audit with the aim of verifying the project's compliance with the carbon standard's rules.

3. Upon completion of the PDD and the external audit procedures to ensure the project's compliance with the chosen standard and methodology, the person responsible for carbon registration performs a secondary project audit/review. In this stage, both the project proponent and the external auditor may be required to clarify any aspects of the PDD and audit process. In general, most project concerns are addressed in the validation audit phase by the auditor, so the regulatory body's review of the standard tends not to raise any issues.

4. After the project has been registered, the activities must be monitored according to the PDD's parameters and criteria to determine and quantify activities that lead to carbon reduction/removal, supporting

4.3 Carbon Sequestration

the issuance of carbon credits. The monitoring report is then audited by an external professional, who will review the documentation and issue a verification report – the final document to be prepared before submission to the carbon registry.

5. After the stage described above, the organization that performs the carbon registration performs its own verification of the integrity of the documents presented and takes the necessary steps for the carbon credits to be issued in the account of the project proponent.

REFERENCE SOURCE:
Overview of International Carbon Market, Fundo Vale and Ecosecurities, 2022

5

Future Vision and Scale

5.1 Demands and Expectations

A Entrepreneurs' Perspective

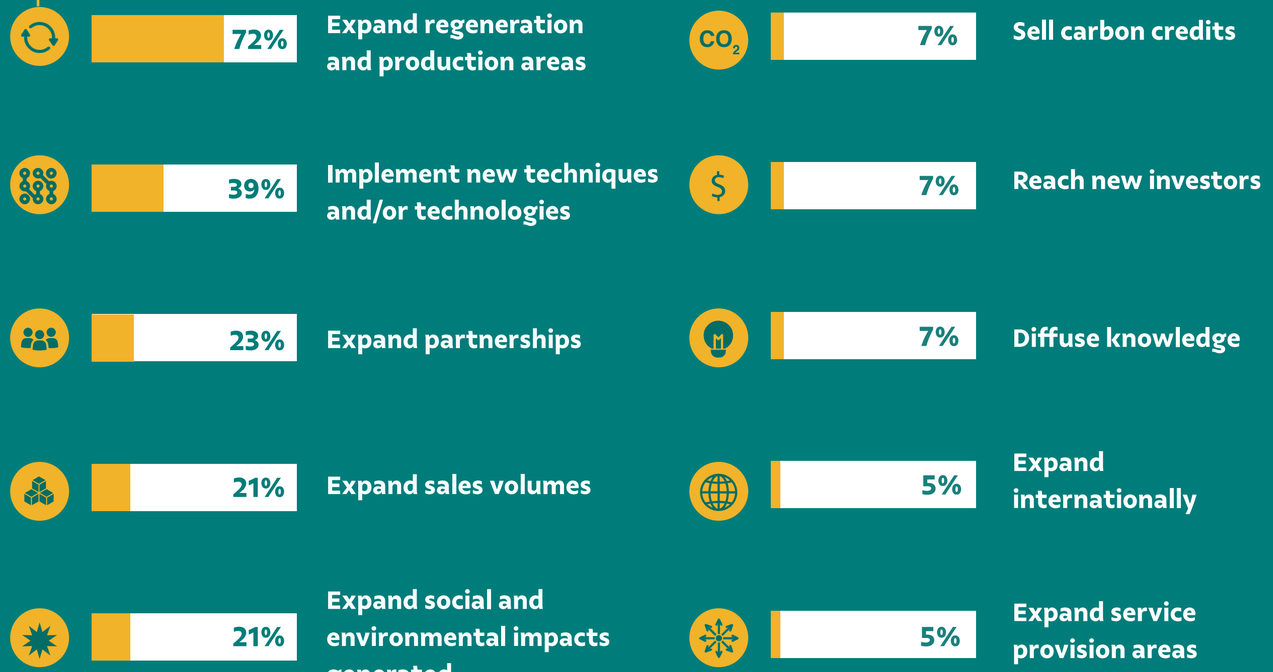
Expansion plan

In all, 83% of the analyzed enterprises claim to have a long-term plan to expand their business and the areas implemented, as can be seen to the side.

Based on the responses to the open-ended questions, we can categorize the planned actions into 10 themes.

According to 72% of the evaluated businesses, expansion of regeneration and production areas is their main goal between now and 2030:

Base: 57 businesses



5.1 Demands and Expectations

A Entrepreneurs' Perspective

Demands to achieve by 2030

The entrepreneurs were invited to explain their expansion goals and what resources would be required to attain more potential for positive impacts by 2030.

Looking at the responses to the open-ended questions, it is possible to notice that traditional demands in the impact business market (as seen in the *2021 Environmental Impact Business Map*) also appear quite frequently among agroforestry entrepreneurs. **Financial resources** and **communication support** are recurring and high-priority challenges for impact businesses in general, including in agroforestry. Specifically for this group of entrepreneurs, there is also considerable demand for **training and human resources**, as well as **monitoring and mapping of assets.**

In all, 62% of the sampled businesses are seeking financial resources, but they also mentioned some other types of support that they need:

- **Finance** donations, investments and loans)
- **Communication and marketing**
- **Training and human resources**
- **Monitoring and mapping**
- **Legal support**
- **Sales**
- **Academic support**
- **Logistics**
- **Links with large companies**
- **Market intelligence**
- **Support for innovation and technology**
- **Support involving carbon market regulations**

"Partnerships with universities, innovation centers and small enterprises."

"High-quality human capital."

"We need resources to expand, to fund training and to implement new areas of syntropic agriculture, given that most beneficiaries cannot afford to pay for consulting services and buy inputs and equipment for their properties."

"Technology and carbon market regulations."

"We need resources to pay for logistics and to produce saplings and other inputs."

→ ENTREPRENEURS

5.1

Demands and Expectations

B Specialists' Perspective

Studies available in Brazil on the scale of agroforestry solutions indicate that this market demands more technical knowledge and business modeling. "The large-scale recovery of degraded pasture lands and forests faces multiple bottlenecks, including poor technical knowledge and lack of understanding of costs and business models involving native tree growing and agroforestry systems," says Suzana Lund, one of the authors of a report titled *Investment in Reforestation Using Native Species and Agroforestry Systems in Brazil: An Economic Evaluation (2021)*, published by WRI Brasil.

According to the interviewed specialists, looking at Brazil's present situation for agroforestry solutions and considering the experiences of key countries with a track record in this sector, such as India, Indonesia and African countries, the main challenge is really that of scale. Furthermore, most businesses have a local vision of subsistence and own and/or community consumption of products and services. Brazil can learn from international experience in terms of management techniques and also governance. For example, in India and Indonesia, farmers have formed organizations and worked together to increase their bargaining power when selling and distributing products, thereby empowering themselves.

Interviews with entrepreneurs in this study and the original mapping exercise carried out by Fundo Vale made us more inclined to seek dialogue with entrepreneurs who have a growth vision. Given Brazil's specific characteristics, we are also concerned to generate sustainable business models that do not depend on philanthropy to become viable on a larger scale.

"In Southeast Asia, Indonesia is a world leader in agroforestry systems, as is India, which has some very interesting experiences. These are poor countries. In Brazil, until recently, agroforestry systems were restricted to marginal groups of people, meaning those who are at the margins of big agribusiness and markets. With some exceptions, of course, agroforestry systems are associated with subsistence and not linked to the possibility of social and economic ascension or solid capitalization for farmers." Specialist

"In Brazil, agroforestry systems are more traditional, associated with sustainable forest management in the Amazon, and they are closely linked to international examples such as in Indonesia, India and Africa (especially in the Congo region). That is, they are closely linked to subsistence. In economic terms, that is a problem. It is important to think about agroforestry systems or forest management within the context of intact forests."

→ **SPECIALIST**

5.1

Demands and Expectations

B Specialists' Perspective

Demands to achieve by 2030

According to experts, there are now good conditions for the dissemination of more agroforestry solutions in Brazil, given that society is better informed than in the past, concerned about sustainability issues and willing to pay more for products arising from agroforestry solutions with positive impacts. In this light, the interviewed specialists and entrepreneurs identified the need for pragmatic support in the following **three areas:**

1

Training for professionals

There is a need for more extension professionals (who are capable of teaching agricultural, forestry and domestic techniques and practices to farmers), in both the public and private sectors. In addition, technical support logistics need to expand their geographical reach.

2

Commercialization models

Best practices and models that help develop markets need to be disseminated. This entails pointing out innovative marketing mechanisms, involving production flows and the design of new products. It is necessary to invest in new ways of monetizing businesses, thereby diversifying income creation possibilities. One positive sign is the new generation of entrepreneurs who see value and life purpose in keeping forests intact.

3

Financial resources

Access to patient capital, with more innovative visions for agribusiness, is necessary to enable cases and good agroforestry practices. For entrepreneurs interested in this area, credit supply and interactions with financial mechanisms (which cannot measure the risks involved in operations) pose issues that are hard to overcome in the short and medium term. It is necessary to look for financial resources that come hand-in-hand with mentoring and support to improve the profitability of properties.

5.1

Demands and Expectations

B

Specialists' Perspective

"We have to see production systems as a business, but a business where the owner lives and takes care of it. This is very beautiful! Agroforestry systems will indirectly save the planet. Agroforestry systems provide opportunities for development and improvement. Since agriculture is a purposeful human activity, the central role of farmers is clear. Biodiversity comes later, by managing to change the conditions, expand shade, increase soil macrofauna and other aspects. It's quite simple!"

→ SPECIALIST

"We have a real possibility of employing a workforce that is today at the margins of these solutions, but which, if well trained, can help us harness this enormous potential for expansion of the models. In countries with developed agroforestry systems, we can find some good examples of this kind. In Africa, women play a massive role. Men are involved in extraction activities, collecting food farther from their homes, but women manage these actions."

→ SPECIALIST

"Many rural producers, even if they want to implement agroforestry systems, lack the capital to do so. Credit programs have not been successful! There are also restrictions associated with extension agents, who could act as brokers, farmers lack knowledge, and financial agents often have problems setting the rules for loans. When it comes to a field of corn, for example, they can measure the risks and chance of losses, but in agroforestry systems, which are naturally diverse, the risks are not so easy to measure. I believe that financial agents and institutions lack courage!"

→ SPECIALIST

December 2022

Agroforestry Impact Businesses

Market Vision, Demands and Opportunities

Produced by:

FUNDO VALE

Analysis:

PIPE .SOCIAL