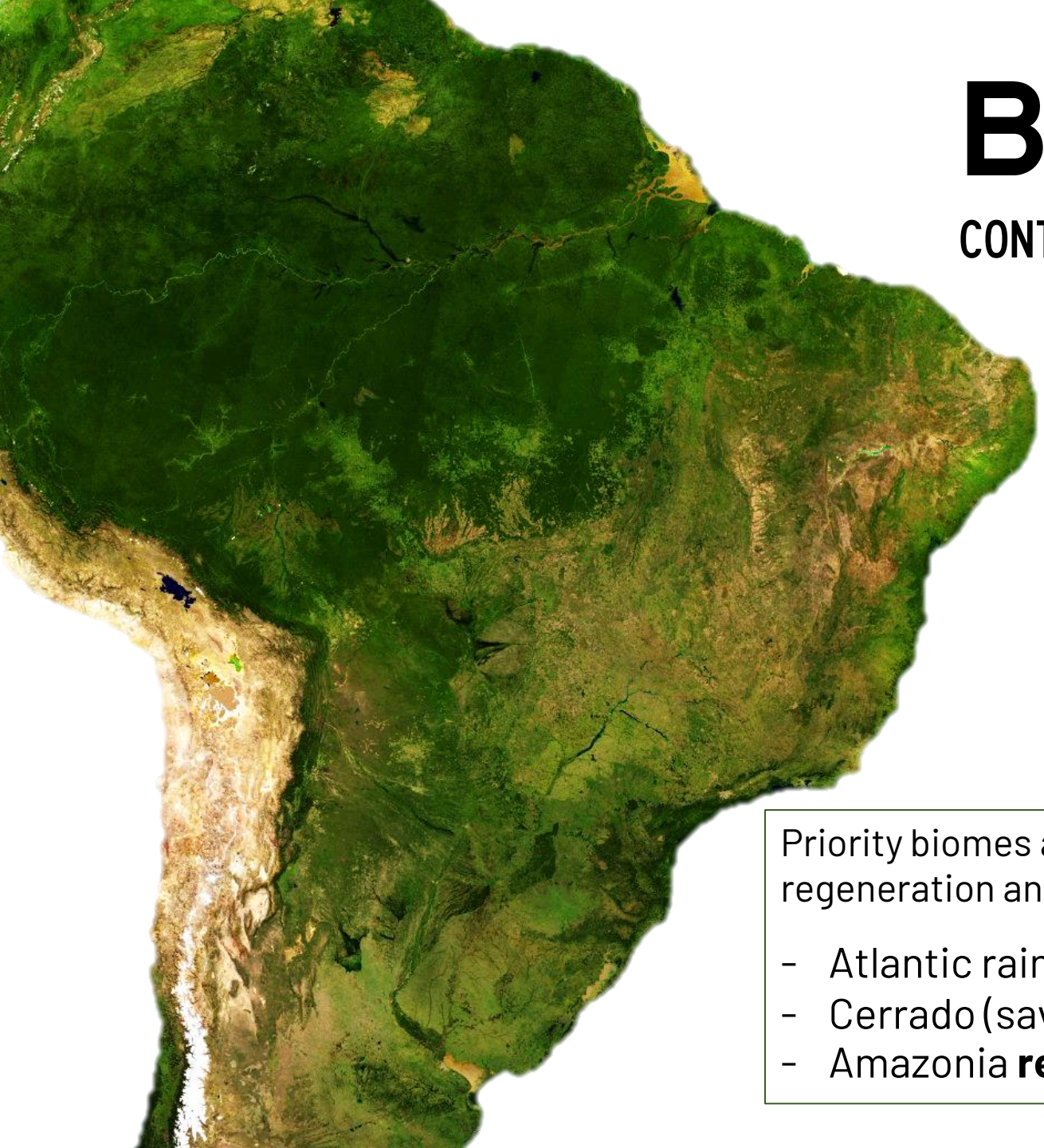
AGROFORESTRY ACTION

BRAZILIAN LANDSCAPE AND LIVELIHOODS REGENERATION THROUGH PRODUCTIVE RESTORATION AND CARBON SEQUESTRATION

PRETATERRA



BRAZIL

CONTINENTAL DIMENSIONS

Heterogeneous landscape
Biodiversity hotspots
Centuries-long deforestation, logging, and monoculture

Over 19 million ha deficit for forest restoration

Priority biomes and territories for forest regeneration and carbon sequestration:

- Atlantic rainforest **reforestation**
- Cerrado (savanna) **afforestation**
- Amazonia **restoration**

THE ATLANTIC RAINFOREST

WHERE WE ARE GOING TO BEGIN

Covers 15% of the national territory across 17 States, dwelling 72% of the entire Brazilian population (over 145 million)

It is where the Guarani's Aquifer, the largest fresh water reservoir in the world, is mostly recharged

Biosphere Reserve by UNESCO

THE BIGGEST AND OLDEST DEFORESTATION PRESSURE IN BRAZIL

Increasing forest fragmentation, logging, monoculture and cattle ranching

Most degraded biome of the country, one of the most endangered landscapes on Earth

Only 8% of its original territory still remains

Biggest timber market – silviculture buffer-zone
Small-holder farmers willing to adapt
Logistics and infrastructure available
Land tenure – consolidated properties

PRODUCTIVE RESTORATION THROUGH

AGROFORESTRY

Agroforestry carbon-sinks are the most powerful strategy to tackle climate change; it is the definitive way of addressing socioeconomical and environmental issues, at the same time, conciliating agricultural production, livelihoods enhancement and forest restoration.

Principles and practices of agroforestry will not only sequestrate carbon but also catalyze a variety of ecosystem services, creating climate change resilient buffer-zones, while improving livelihoods and food security.

AGROFORESTRY FOR LIVELIHOODS

Diversifying farmers production and revenues guarantee food security, and reduces their dependence on the commodity market, while spinning-off rural development and entrepreneurship.

PRETATERRA develops methodologies for enhancing belonging and empowerment between farmers and communities throughout the entire process, from farming until inclusive market value-chains, using participatory tailor-made agroforestry designs, adherent to each context and landscape.

DESIGN #1
AGROFORESTRY FOR RIPARIAN ZONES

Riparian zones are the main areas that need to be restored in Brazil, especially because of its importance for watersheds maintenance.

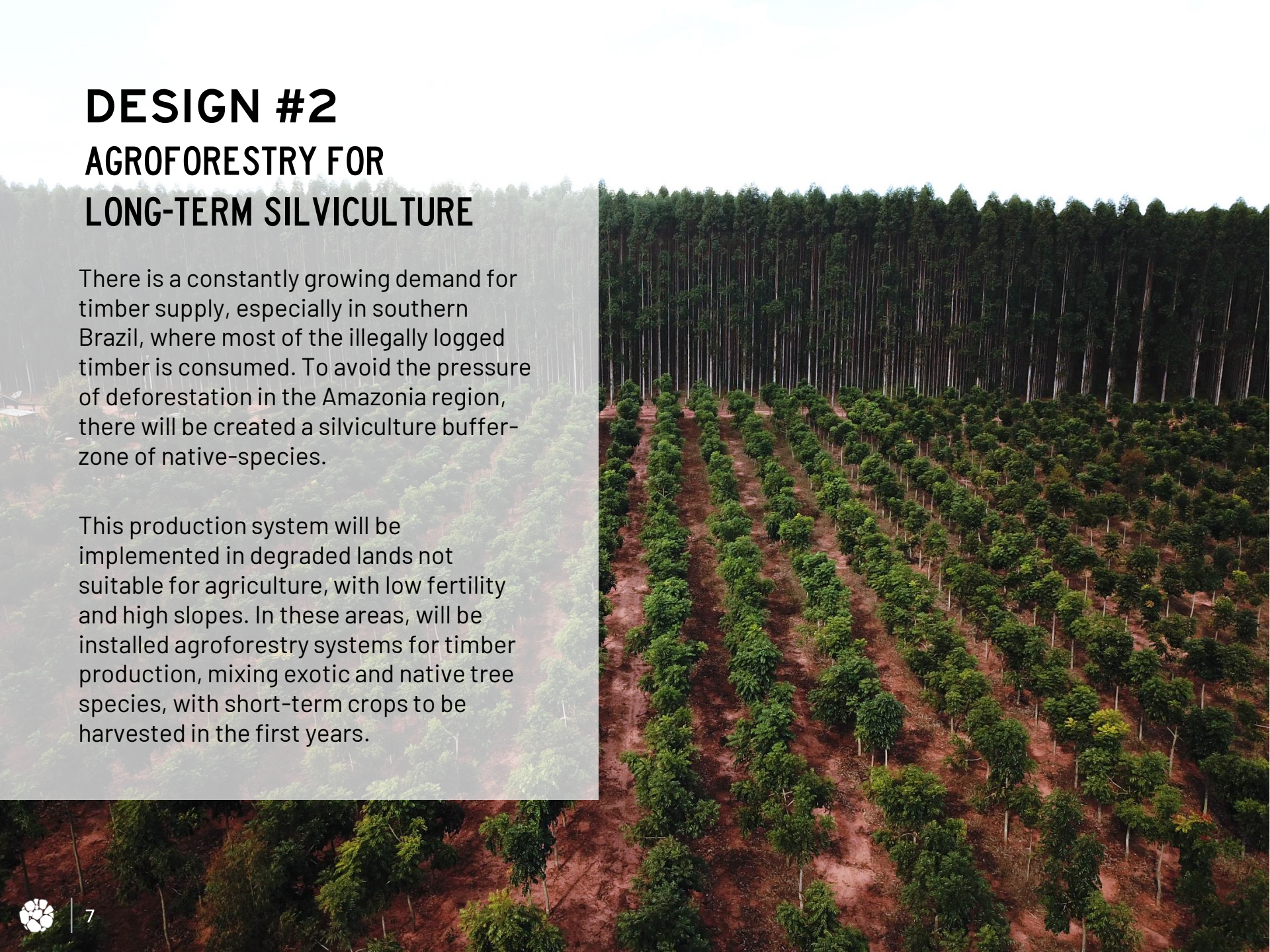
This process can be done through agroforestry techniques, planting short-cycle crops, such as maize, cassava, and peanut, in the first and second years, in between the native trees, while they are still young and small. Also, there can be included non-timber forest products (NTFP) such as nuts, seeds, and fruits, for harvesting in the following years.

DESIGN #2

AGROFORESTRY FOR LONG-TERM SILVICULTURE

There is a constantly growing demand for timber supply, especially in southern Brazil, where most of the illegally logged timber is consumed. To avoid the pressure of deforestation in the Amazonia region, there will be created a silviculture buffer-zone of native-species.

This production system will be implemented in degraded lands not suitable for agriculture, with low fertility and high slopes. In these areas, will be installed agroforestry systems for timber production, mixing exotic and native tree species, with short-term crops to be harvested in the first years.



DESIGN #3
AGROFORESTRY FOR PERENNIAL PLANTATIONS

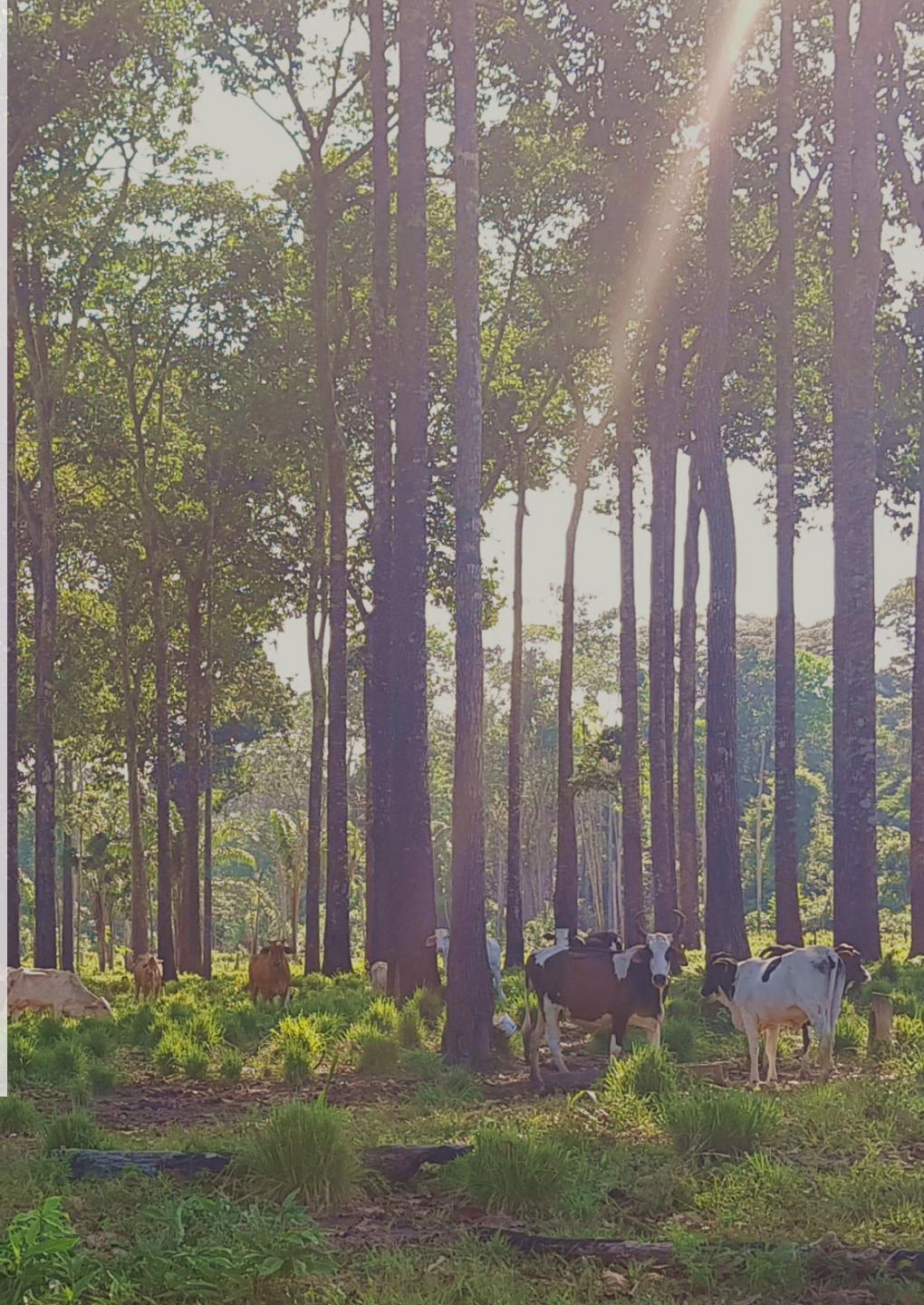
Due to climate change, most monoculture plantations in Brazil are at risk. Perennial crops, such as coffee, cacao, rubber trees, citrus, and other fruits, extend in huge lands and provide important income to farmers and industries.

For diversifying and securing these perennial crops, there will be implemented agroforestry designs, including short-term crops in the first years, timber and NTFP for revenue diversification, as well as service trees for soil restoration and system's health maintenance.

DESIGN #4
AGROFORESTRY FOR PASTURE LANDS

In Brazil, pasture lands encompass near 45% of the agricultural lands, totalizing 160 million hectares, which over 60% is degraded and underused.

Agroforestry design can be applied to these degraded pasture lands, focusing to recover de soil, provide shade and fodder to the animals and diversify revenue. It will Include trees for timber and NTFP along with pasture management techniques for cattle productivity enhancement.



PROJECT TIMELINE

PHASE #1 – ATLANTICA RAINFOREST

Year	1		2		3		4		5	
Semester	1	2	3	4	5	6	7	8	9	10
Final partnerships & Documentation set-up	•									
Hiring processes, Infrastructure & Logistics planning	•	•								
Community mobilization, training & Capacity building	•	•								
Area selection, grouping & Prioritization	•		•		•		•		•	
Stakeholders mapping & Mobilization	•		•		•		•		•	
Planting		•	•	•	•	•	•	•	•	•
Monitoring			•		•		•		•	

Annual expansion within the Atlantica Rainforest, establishing Agroforestry Implementation Units in each new core regions, reaching **10.000 ha in 5 years**

- São Paulo State –Paranapanema Valley & Paraíba Valley
- Paraná State – Norte Pioneiro & Iguazu Watershed
- Minas Gerais State – Serra da Mantiqueira
- Bahia State – South Central Zone

FARMERS ADHERENCE AND ENGAGEMENT

For successful stakeholder engagement, adherent criteria for land and farmers selection must be attended:

- Strong and solid involvement and engagement;
- Counterpart from farmers (providing labor in the plantation, and/or guaranteeing maintenance...);
- Solid land ownership (land tenure);

Possibility of farmers participation in the carbon credits profit overtime.

Profit equivalent sharing based on opportunity cost of land use.

CONTRACT ROBUSTNESS & EXIT STRATEGIES

The contract must contain:

- Project's 3 parties clear discrimination:
  (i) investor / funder / carbon credit owner;
  (ii) farmer / landowner;
  (iii) developer / implementor;

- Criterial documentation peer review; solid land ownership (land tenure);

- Clear rights and duties of the parties, and the relationship between them;

- Project's time span – farmer's responsibility in maintaining the plantation in the land for at least 25 years;

- Guarantees for contract early termination – investor's participation in harvest revenues and/or land trade.

CARBON SINK ESTIMATION

PHASE #1 – ATLANTICA RAINFOREST

	Agroforestry System Classification	Trees / ha	Implemented area in ha (phase #1)	Potencial carbon sequestration Ton CO2 (eq) / ha	Potencial carbon sequestration (Ton)	Potencial carbon sequestration (NET Ton)
#1	**Riparian zones**	1666 - 2000	4,000	1,702	6,809,806	5,776,324
#2	**Long-term silviculture**	1300-1500	2,000	1,572	3,143,977	2,888,162
#3	**Perennial plantations**	2200 - 3800	2,500	2,104	5,258,779	3,610,202
#4	**Pasture lands**	500-700	1,500	1,132	1,697,369	2,166,121

Total Carbon sequestered (consolidated within 25 years)		
	Ton CO2 (eq)	14,440,809
	Megaton CO2 (eq)	14.44

Ex-ante estimation (projection) of carbon stock in tree biomass based on tools and standards of **Gold Standard, GHG Protocol** and **Clean Development Mechanism (CDM).** OBSERVATIONS: For the calculations were considered Additionality; Baseline; Other emissions; Leakage; CO_2 emission; Biometric parameters variation according to species grouping, the agroforestry designs and supportive references (biomass extention fator, wood density, alometric equations). Conservative calculations were made, considering only aboveground and bellowground tree biomass (disconsidering so far carbon in the soil, and litter & liyng deadwood biomass).

SCALE UP & BUDGET

PHASE #1 – ATLANTICA RAINFOREST

	Year	1		2		3		4		5	
	Semester	1	2	3	4	5	6		8	9	10
Scale up	Area implemented (ha)	0	300	700	800	900	1,000	1,100	1,500	1,700	2,000
	Acumulated Implemented area (ha)	0	300	1,000	1,800	2,700	3,700	4,800	6,300	8,000	10,000
	Average trees planted per semester	0	600,000	1,400,000	1,600,000	1,800,000	2,000,000	2,200,000	3,000,000	3,400,000	4,000,000
	Average trees planted per year	600,000		3,000,000		3,800,000		5,200,000		7,400,000	
	Acumulated tree planted	600,000		3,600,000		7,400,000		12,600,000		20,000,000	
Costs	Set-up Cost	$ 500,000.00	-	-		-		-		-	
	Livelihood empowerment and training	$ 50,000.00		$ 100.000,00		$ 130.000,00		$ 110,000.00		$ 100,000.00	
	Implementation Cost	-	$ 1,274,695.86	$ 2,974,290.34	$ 3,399,188.95	$ 3,824,087.57	$ 4,248,986.19	$ 4,673,884.81	$ 6,373,479.29	$ 7,223,276.53	$ 8,497,972.39
	Maintanence	-	$ 89,228.71	$ 297,429.03	$ 535,372.26	$ 803,058.39	$ 1,011,258.71	$ 1,130,230.33	$ 1,338,430.65	$ 1,576,373.88	$ 1,873,802.91
	Drone Monitoring Cost	-	-	-	-	$ 19,120.44	-	$ 114,722.63	-	$ 223,818.73	-
	Cost / ha	**$ 6,379.75**		**$ 4,870.85**		**$ 5,282.37**		**$ 5,284.90**		**$ 5,272.23**	
	Maintanence / ha	**$ 297.42**		**$ 297.42**		**$ 297.42**		**$ 297.42**		**$ 297.42**	
	Drone Monitoring / ha	**-**		-		$ 63.73		$ 63.73		$ 63.73	
	Cost / tree	**$ 2.90**		**$ 2.21**		**$ 2.40**		**$ 2.40**		**$ 2.40**	
	YEAR Total Cost	**$ 1,913,924.57**		**$ 7,306,280.58**		**$ 10,036,511.31**		**$ 13,740,747.71**		**$ 19,507,244.44**	

TOTALS		
	Duration	**5 years**
	Investment	**$ 52,504,708.61**
	Implemented area (ha)	**10,000**
	Trees planted	**20,000,000**

NEXT STEPS

HOW FAR WE CAN GO

500,000 hectares

600 Gt of CO_2

30 years

BROADEN AND EXPAND THE PROJECT

Brazil is an agricultural and forestry country, with huge potential for productive restoration. The project can continue expanding into the Atlantica rainforest while broadening its scope to Cerrado and Amazonia.

SCALING STRATEGY

PHASE #0
Over 2,000 ha
(2005-2019)
Small-scale and advocacy

- Capacity and knowledge building
- Test and methodology consolidation
- Trust building
- Network partnership formation
- Small-scale distributed logistics learning
- Agroforestry models prototyping in different biomes and contexts
- First large-scale prototypes in Atlantica, Amazonia and Cerrado

PHASE #1
10,000 ha
(2020-2024)
Medium-scale impact

- Robust structure development and consolidation
- Consolidate agroforestry implementation unit models
- Grow seed collectors and nurseries groups
- Monitoring and report models validation
- Partnership coalition
- Consolidate large-scale prototypes in Atlantica rainforest

PHASE #2
490,000 ha
(2024-2050)
Landscape & economical impact

- Spinning-off distributed self-running agroforestry implementation units
- Implement and consolidate new seed collectors' and nurseries groups
- Livelihood impact throughout NTFP value-chain
- Carbon trade models developed, checked and implemented
- Broaden the scope to Cerrado and Amazonia

WHY

PRETATERRA

KNOWLEDGE & EXPERTISE

PRACTICAL EXPERIENCE

ROBUST METHODOLOGY

PARTERSHIP NETWORK

IMPLEMENTATION PARTNERS

Apoio Agroflorestal

Camará

Instituto ITAPOTY

SUCUPIRA agroflorestas

Baobá Florestal

SUPPORTING PARTNERS

WRI BRASIL

iGive TREES

BLACK JAGUAR FOUNDATION

RIZOMA

SOS MATA ATLÂNTICA

ATA

RESEARCH PARTNERS

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PAULA PONTELI COSTA
PRETATERRA CTO & Founder
Project Designer

Forest Engineer (USP) I Biologist (UNESP) I Specialist in Environmental Management (ESALQ) I Specialist in agroforestry systems and silviculture (ESALQ). Over 10-year experience in regenerative production systems. Advanced knowledge in dendrology, botanic and identification of native trees. Worked in the coordination of the field team and in the development of research and innovation in the agroforestry production systems of Organic Farm 'Fazenda da Toca' (Brazil). Coordinated sustainable projects in large-scale farms and remote communities in different contexts in Latin America.

VALTER ZIANTONI
PRETATERRA CEO & Founder
Project Designer

Forest Engineer (UFPR) I MSc. Agroforestry (Bangor University) I Management Specialist (FGV) I Specialist in International Relations (UFPR). Developed his master's thesis in Lake Tanganyika (Zambia) with ICRAF, working with local indigenous knowledge to foster the success of sustainable projects. Over 15 years of agroforestry experience, including project and budget management and coordination, forest inventories, timber and NTFP classification in Amazonia. Extensive experience in rural economy and sustainable development models, with international experience (Laos, UNDP and Turkey, FAO-SEC) in management and leadership positions.

IMPLEMENTATION PARTNERS

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Camará Nursery

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Apoio Agroflorestal

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Baobá Florestal

LUIZA AVELAR
Sucupira Agroflorestas

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