

'GUANARÉ' FOREST PLANTATIONS ON DEGRADED GRASSLANDS UNDER EXTENSIVE GRAZING

Document Prepared by Carbosur



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1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
1) Improve local production conditions and ecological environment, enhance the quality of life, create a good investment and environmental development and play a leading role in forestry sector	Local production conditions have been improved with the introduction of a new activity (forestry) that generates more income per unit of land, compared to baseline scenario. Currently, 426 direct and indirect workers are employed by Guanaré/FAS project.	3-5	Idem
2) Provide experience of forest planting and forest management in degraded grasslands	Forest activity in the area (and in Uruguay) has recently started. The project aims to improve labor conditions and increase workers technical capacity. At present, several hundreds of workers have been trained in forest operational activities	3-5	Idem
3) Improve the ecological environment of the planted areas and the native forests surrounding the forest plantations	Biodiversity monitoring is a key element in Guanaré/FAS project. Results have shown that project sites are being categorized with high biodiversity value, according to standardized methodologies.	5	Idem
4) Create net positive benefits to the community and stakeholders of the project based on a comparison with the baseline scenario.	Communities are being benefited with the project activity from multiple point of views. Local businesses have increased direct and indirectly because of project activity (hotel, restaurants, garages, etc.) Compared with baseline scenario, there are more than 400 medium to highly qualified job positions generated. Landscape beauty has been improved with the establishment of forest.	4	Idem

1.2 Standardized Benefit Metrics

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
GHG emission reductions & removals	Net estimated emission removals in the project area, measured against the without-project scenario	6,042,236		7,806,007 tCO ₂
	Net estimated emission reductions in the project area, measured against the without-project scenario	N/A		N/A
Forest ¹ cover	For REDD ² projects: Number of hectares of reduced forest loss in the project area measured against the without-project scenario	N/A		N/A
	For ARR ³ projects: Number of hectares of forest cover increased in the project area measured against the without-project scenario	18,576 ha		18,576 ha
Improved land management	Number of hectares of existing production forest land in which IFM ⁴ practices have occurred as a result of the project's activities, measured against the without-project scenario	N/A		N/A
	Number of hectares of non-forest land in which improved land management has occurred as a result of the project's activities, measured against the without-project scenario	N/A		N/A
Training	Total number of community members who have improved skills and/or	220		300

¹ Land with woody vegetation that meets an internationally accepted definition (e.g., UNFCCC, FAO or IPCC) of what constitutes a forest, which includes threshold parameters, such as minimum forest area, tree height and level of crown cover, and may include mature, secondary, degraded and wetland forests (*VCS Program Definitions*)

² Reduced emissions from deforestation and forest degradation (REDD) - Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land and/or reduce the degradation of forest land where forest biomass is lost (*VCS Program Definitions*)

³ Afforestation, reforestation and revegetation (ARR) - Activities that increase carbon stocks in woody biomass (and in some cases soils) by establishing, increasing and/or restoring vegetative cover through the planting, sowing and/or human-assisted natural regeneration of woody vegetation (*VCS Program Definitions*)

⁴ Improved forest management (IFM) - Activities that change forest management practices and increase carbon stock on forest lands managed for wood products such as saw timber, pulpwood and fuelwood (*VCS Program Definitions*)

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	knowledge resulting from training provided as part of project activities			
	Number of female community members who have improved skills and/or knowledge resulting from training provided as part of project activities of project activities	20		20
Employment	Total number of people employed in of project activities, ⁵ expressed as number of full time employees ⁶	430		450
	Number of women employed in project activities, expressed as number of full time employees	20		20
Livelihoods	Total number of people with improved livelihoods ⁷ or income generated as a result of project activities	2,700		2,700
	Number of women with improved livelihoods or income generated as a result of project activities	1,310		1,310
Health	Total number of people for whom health services were improved as a result of project activities, measured against the without-project scenario	2,700		2,700
	Number of women for whom health services were improved as a result of project activities, measured against the without-project scenario	1,310		1,310

⁵ Employed in project activities means people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out project-related work.

⁶ Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region or economic territory (adapted from UN System of National Accounts (1993) paragraphs 17.14[15.102];[17.28])

⁷ Livelihoods are the capabilities, assets (including material and social resources) and activities required for a means of living (Krantz, Lasse, 2001. *The Sustainable Livelihood Approach to Poverty Reduction*. SIDA). Livelihood benefits may include benefits reported in the Employment metrics of this table.

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
Education	Total number of people for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	157		157
	Number of women and girls for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	5		5
Water	Total number of people who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	N/A. However, forestry practices applied in Guanaré/FAS project are the latest available technology and practices that prevents the laminar erosion or diminishes the leakage of fertilizers, preventing the translocation of sediments or nutrients into the river, which are used as drinkable water.		N/A. However, forestry practices applied in Guanaré/FAS project are the latest available technology and practices that prevents the laminar erosion or diminishes the leakage of fertilizers, preventing the translocation of sediments or nutrients into the river, which are used as drinkable water.
	Number of women who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	N/A		N/A

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
Well-being	Total number of community members whose well-being ⁸ was improved as a result of project activities	10,442		10,442
	Number of women whose well-being was improved as a result of project activities	5,469		5,469
Biodiversity conservation	Change in the number of hectares significantly better managed by the project for biodiversity conservation, ⁹ measured against the without-project scenario	18,576		18,576
	Number of globally Critically Endangered or Endangered species ¹⁰ benefiting from reduced threats as a result of project activities, ¹¹ measured against the without-project scenario	5 IUCN species		As much IUCN species as possible

⁸ Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Health, Education, Water, etc.), but could also include other benefits such as empowerment of community groups, strengthened legal rights to resources, conservation of access to areas of cultural significance, etc.

⁹ Biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation.

¹⁰ Per IUCN's Red List of Threatened Species

¹¹ In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit

2 GENERAL

2.1 Project Description

2.1.1 Implementation Description

The main objectives of the project activity are wood production, land restoration and carbon sequestration through afforestation. All practices follow FSC standard for sustainable forest management, while enhancing biodiversity conservation by increasing the connectivity of forests and generating income and job opportunities for local communities/ rural areas of Uruguay.

The project comprises a total of 18,576 hectares of land previously under extensive grazing by beef cattle, on which forest plantations for obtaining high-value, long-lived timber products and for sequestering large amounts of carbon dioxide from the atmosphere were established. The total area affected by the project is 33,383 hectares, if we include buffer zones, grasslands and native forests.

Forests were based mainly on *Eucalyptus grandis* and to a lesser extent *Eucalyptus globulus*, *Eucalyptus dunnei*, *Eucalyptus maidenii*, *Eucalyptus tereticornis* and *Pinus taeda* plantations in 16 to 22-year rotations, managed with pruning (to a minimum height of 12 m) and two to three thinning operations, to obtain knot-free, high-diameter logs suitable for saw-milling and veneering. Plantation is already completed, and forests will be replanted after clear-cut harvest. Guanaré first areas were planted in 2006 and the last ones in 2011. Practices will be compatible with FSC standard for sustainable forest management. Planted forests will remove carbon dioxide from the atmosphere and store it in different carbon pools (living above-ground and below-ground biomass, soil, litter, non-tree vegetation, dead wood and harvested wood products).

The baseline study determined that continuation of extensive grazing is the most likely use of the land. Additionality is demonstrated through the fact that the expected internal rate of return of the proposed project activity without considering carbon finance is lower than the benchmark internal rate of return for this type of investment in Uruguay. In addition, barriers analysis and common practice analysis showed that afforestation in the area of the proposed project activity is not likely to occur without carbon financing. Leakage is assumed to be zero. See chapter below.

The potential non-permanence of stored carbon was considered by the non-permanence risk analysis and buffer determination, and by the fact that a significant fraction of the sequestered carbon will be stored in long-lived products which will not be accounted.

As it was demonstrated during validation, the project implementation does not and did not cause any displacement of activities. The only activity in the project area prior to the start date is extensive grazing by beef cattle, which continues to occur after project start. This can be audited by the verification team during on site visit. It was also stated and validated in the PD that there was no need for a leakage management plan neither for leakage mitigation options. The information regarding aspects related to the non permanence risks of the project, it is presented as a separate document called "Non Permanence Risk Report".

The project will result in a significant contribution to sustainable development of Uruguay, mainly through: i) increased employment and quality of employment; iii) rural development (decentralization); iv) increased gross value of production; v) improved fiscal balance; vi) biodiversity preservation and vii) improvement and preservation of soil quality.

The total GHG emission reductions or removals generated in this monitoring period is shown in Table 1, which is based in the Current Annual Increment (CAI). After obtaining the CAI, the annual growth by year (m3/year) and the percentage of GHG Emissions Reductions and Removals by year on the forests within the project boundaries was calculated.

Table 1: Year that the emissions reduction took place (Vintage).

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2013	0	1.382.754	0	1.382.754
2014	0	1.469.820	0	1.469.820
2015	0	1.162.199	0	1.162.199
2016	0	784.071	0	784.071
2017	0	679.375	0	679.375
2018	0	720.181	0	720.181
Total	0	6.198.401	0	6.198.401

2.1.2 Project Category and Activity Type

This is an ARR project. The project is not a grouped project.

2.1.3 Project Proponent(s)

Organization name	Guanaré SA
Contact person	Nelson Ledesma
Title	Forest Engineer, General Manager in Forestal Atlántico Sur (FAS)
Address	Gabriel Otero 6559 - Montevideo, Uruguay
Telephone	(+598) 2603 80 96 - (+598) 2606 14 30
Email	info@fas.com.uy

2.1.4 Other Entities Involved in the Project

All activities related to forest investments, marketing and management of Guanaré are implemented by a local company (Forestal Atlántico Sur S.A., hereinafter called FAS), through contractual agreement. FAS was established in 2005, and its partners are highly experienced in managing forests.

Guanaré has a contractual agreement with FAS for the management of its investment. FAS is internally well structured, with experienced staff in the area of forest investments, forest management and trade of timber. Internal organization chart and other information are made available for the verification team.

Carbosur has a contractual agreement with Guarané for the development and management of the carbon component of the project. It is not a project proponent. And Pike Consultora Forestal has a contractual agreement with FAS for the measurement of standing volumes.

Organization name	Forestal Atlántico Sur (FAS)
Role in the project	Property Manager
Contact person	Nelson Ledesma
Title	Forest Engineer, General Manager in Forestal Atlántico Sur (FAS)
Address	Gabriel Otero 6559 - Montevideo, Uruguay
Telephone	(+598) 2603 80 96 - (+598) 2606 14 30
Email	info@fas.com.uy

Organization name	Carbosur
Role in the project	Development and management of the carbon component of the project. It is not a project proponent
Contact person	Alvaro Perez del Castillo
Title	Forest Engineer- Director
Address	Costa Rica 1566
Telephone	+598 26056231
Email	info@carbosur.com.uy

Organization name	Pike Consultora Forestal SRL
Role in the project	Forest Inventories and Carbon Stock Calculations
Contact person	Alvaro Perez del Castillo
Title	Forest Engineer- Director
Address	Costa Rica 1566
Telephone	+598 26056234
Email	info@pike.com.uy

2.1.5 Project Start Date (G1.9)

The project start date was 24th April 2006, when the activities that lead to the generation of GHG emission removals (preparing land for planting) were first implemented.

2.1.6 Project Crediting Period (G1.9)

Project crediting period will be of 60 years, from 24th April 2006 to 24th April 2066

2.1.7 Project Location

The project area is located in East Uruguay, in Cerro Largo and Treinta y Tres departments. It comprises several sites, which are classified in 4 regions based on geographic location. The areas are homogeneous in terms of soil types, climate, land use history and socio-economic conditions.

The following map (Figure 1) shows the exact location of the project, and the cadastral units owned by Guarané, where the project is located.

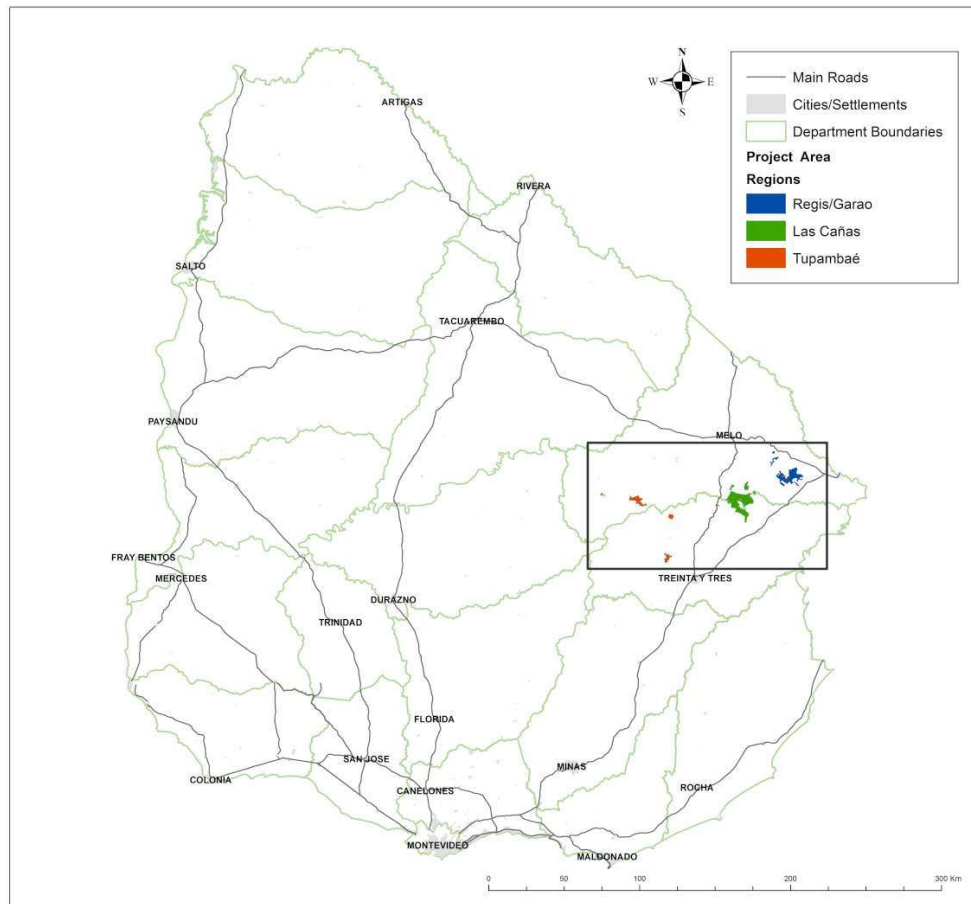


Figure 1. Map of Uruguay showing the location of the areas included in the proposed project activity (black frame).

For the purpose of defining the strata, the project area has been divided into four regions, which are shown from Figures 2 to 5. The areas are homogeneous in terms of soil types, climate, land use history and socio-economic conditions. The division into four regions is entirely based on geographic location.

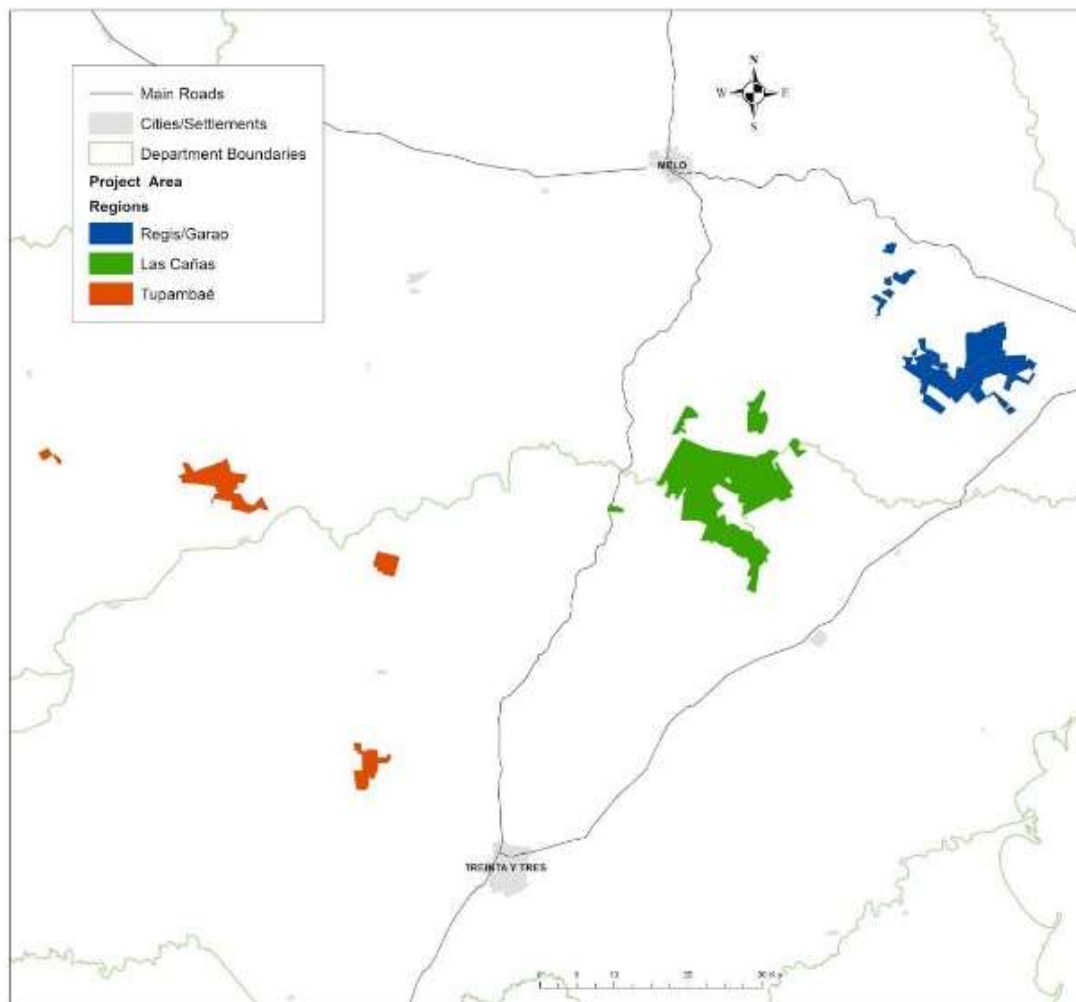


Figure 2. Map indicating the four project regions divided in four different colors.

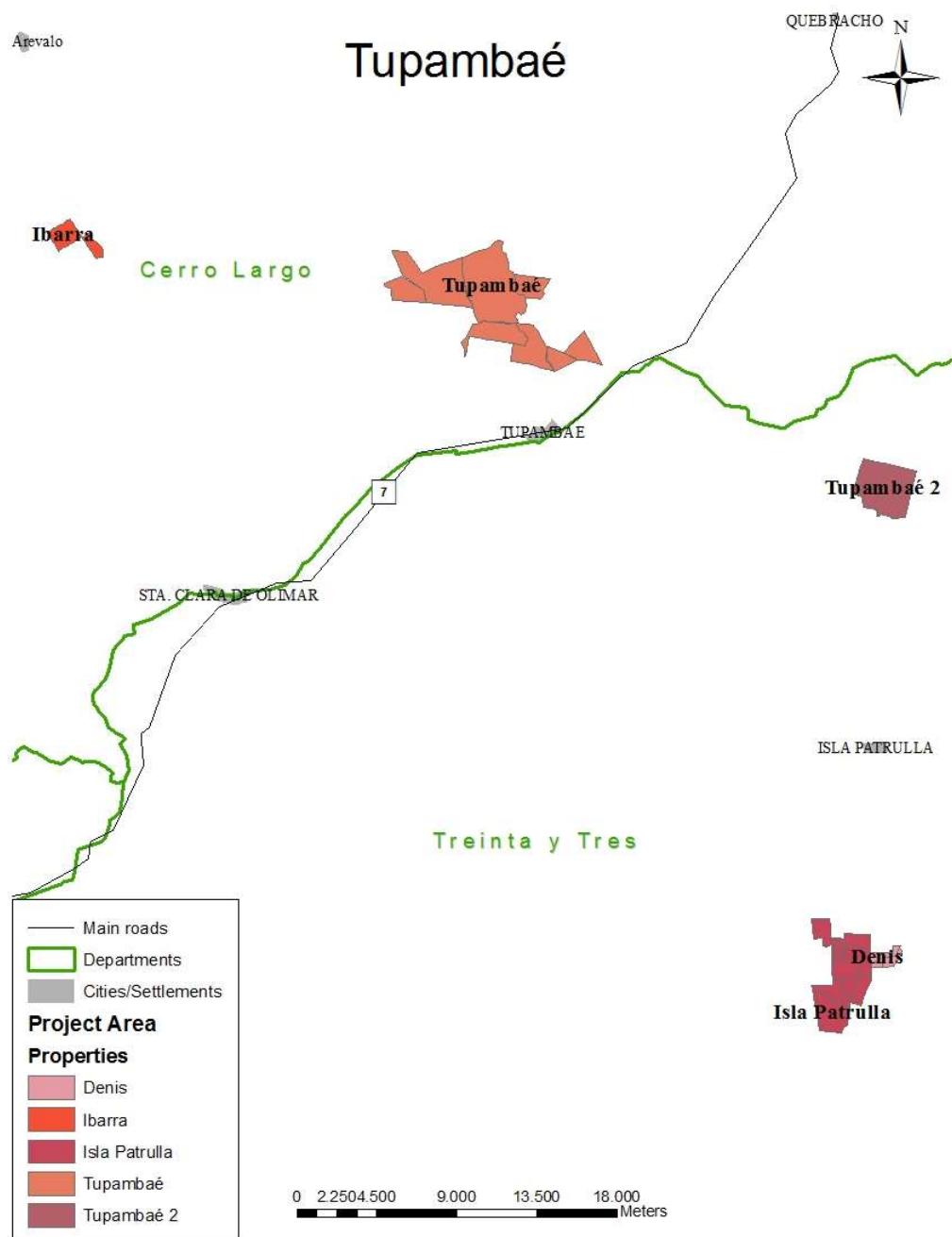


Figure 3. Location of properties which make up the region Tupambaé.

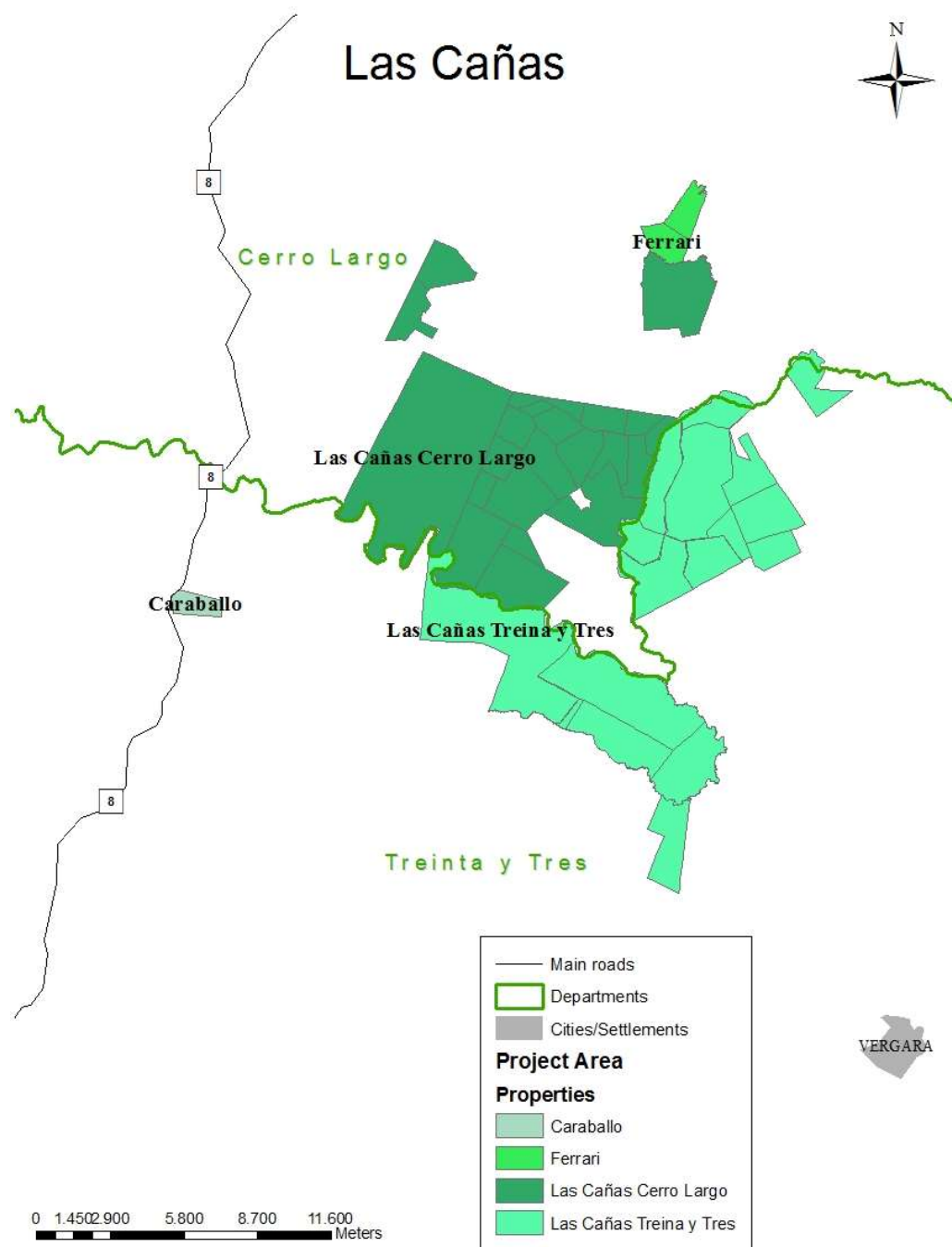


Figure 4. Location of properties which make up the region Las Cañas.

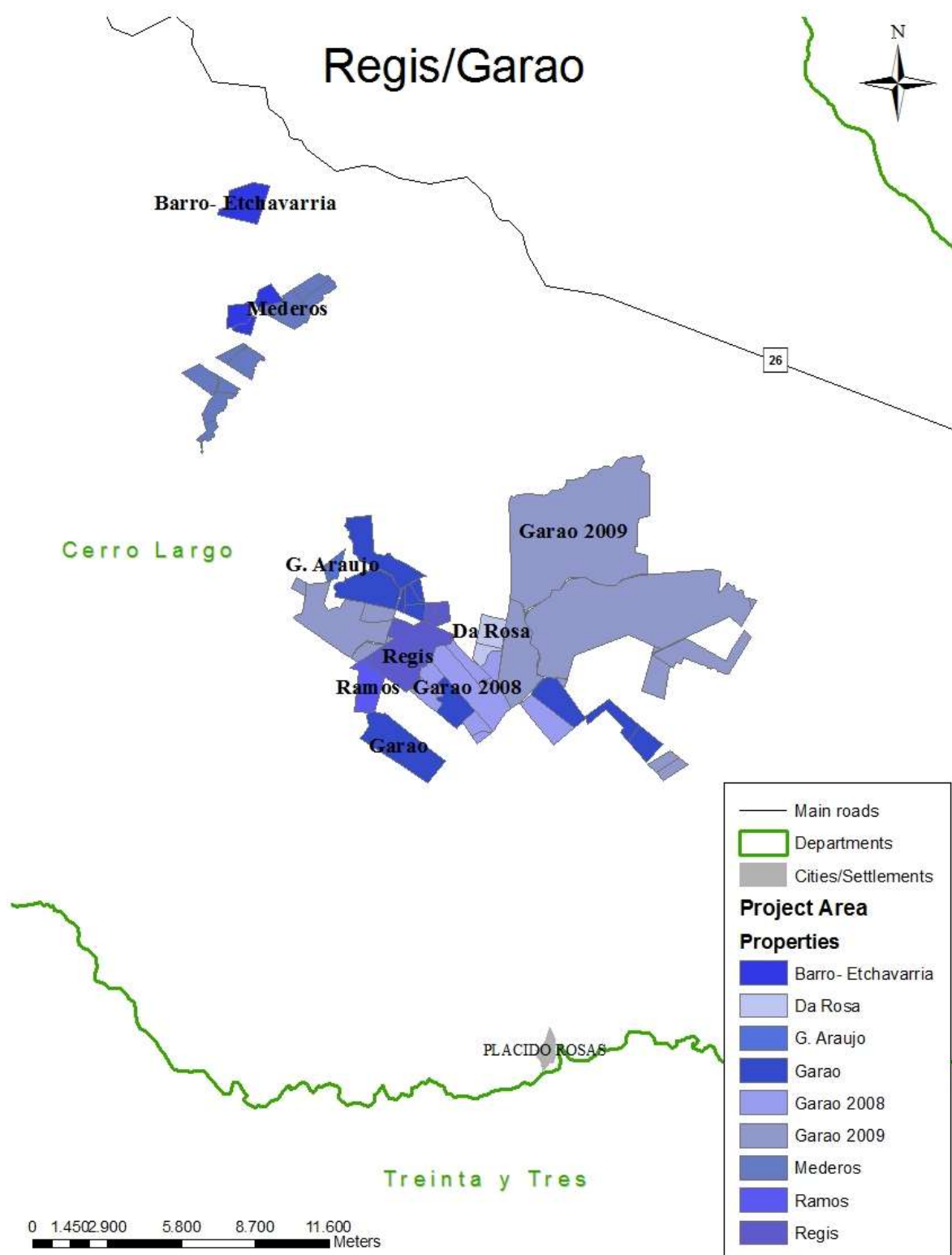


Figure 5. Location of properties which make up the region Regis/Garao.

Table 2. Indicators for unique identification of all project properties.

Region	Property Name	Cadastral Unit N°	Coordinates	
Regis / Garao	Barro-Echevarria	2101	32°29'28.80"S	53°50'07.65"O
		9605		
		15416		
		15812		
	Carballo	3307	32°38'13.76"S	53°43'55.86"O
		3689		
		6212		
		12670		
		13111		
		13112		
		13368		
		14932		
		15059		
	Casas	6254	32°38'13.76"S	53°43'55.86"O
		9619		
		15595		
	Da Rosa	12689	32°38'13.76"S	53°43'55.86"O
		14931		
	Derley González	2085	32°38'13.76"S	53°43'55.86"O
		5345		
		7810		
	G. Araujo	16435	32°38'13.76"S	53°43'55.86"O
	Garao Norte	2313	32°38'13.76"S	53°43'55.86"O
		3348		
		10284		
		15655		
		15656		
		15657		
	Garao Sur	12857	32°38'13.76"S	53°43'55.86"O
		15058		
	Julio González	15471	32°38'13.76"S	53°43'55.86"O
		15596		
	Mary Lopez Ramos	6235	32°38'13.76"S	53°43'55.86"O
		7549		
	Mederos	2106	32°29'19.35"S	53°48'47.12"O
		2204		

		4093		
		8463		
		12188		
		12189		
		15958		
		15959		
	Méndez	9618	32°38'13.76"S	53°43'55.86"O
	Ramos	10240	32°38'13.76"S	53°43'55.86"O
	Regis	2078	32°38'13.76"S	53°43'55.86"O
		3732		
		3906		
	Santa Sofía	2072	32°38'13.76"S	53°43'55.86"O

Region	Property Name	Cadastral Unit N°	Coordinates	
Las Cañas	Azotea de Ramírez	1809	32°42'38.83"S	54°06'28.30"O
		4713		
		4714		
		6763		
		6764		
		6765		
		6766		
		6767		
		6768		
		6820		
		7442		
		12383		
	Azotea Norte - VAZ	6409	32°41'26.65"S	54°01'54.82"O
	Caraballo	9451	32°42'38.83"S	54°06'28.30"O
	El Yugo	778	32°42'38.83"S	54°06'28.30"O
		779		
		780		
		2425		
		5941		
	Ferrari	999	32°42'38.83"S	54°06'28.30"O
		4723		
	Las Cañas	892	32°42'38.83"S	54°06'28.30"O

		6401		
		8538		
		11294		
		11295		
		11296		
		11297		
		11353		
		11354		
		11355		
		11356		
		11357		
		12376		
		12377		
		12378		
		12384		
		12470		
		12484		
		13220		
		15349		
Tupambaé	Ibarra	4860	32°44'12.23"S	55° 3'8.50"O
		16441		
	Isla Patrulla	321	33°05'44.31"S	54°32'46.83"O
		335		
		341		
		348		
		4776		
		5188		
		5189		
		5190		
		5371		
		5661		
		5662		
		7285		
		7523		
		7524		
		7525		
	Tupambaé	426	32°48'20.11"S	54°45'26.78"O
		14549		

		15682		
		15685		
		15686		
		15687		
	Tupambaé 2	512	32°52'02.75"S	54°34'11.97"O

2.1.8 Title and Reference of Methodology

The consolidated CDM methodology AR-ACM0001 "Afforestation and reforestation of degraded land" (version 05.2.0, EB 65) was applied.

The following methodological tools, to which the selected methodology refers to, were used:

Version 01 of "Combined tool to identify the baseline scenario and demonstrate the additionality in A/R CDM project activities";

Version 01 of "Tool for testing significance of GHG emissions in A/R CDM project activities";

Version 04.0.0 of "Estimation of non-CO2 GHG emissions from burning of biomass attributable to a A/R CDM project activity" (*) (Validated and registered as Version 4.0.0)

Version 01 of "Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities";

Version 02.0.0 of "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activity". (*) (Validated and registered as Version 2.0.0)

Version 03.0.0 of "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity". (*) (Validated and registered as Version 3.0.0)

Version 01 of "Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity";

Version 01.1 of "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities";

2.1.9 Other Programs (G5.9)

'Guanaré' Forest Plantations on degraded grasslands under extensive grazing is not participating in other GHG Programs other than CCB and VCS.

2.1.10 Sustainable Development

The project contributes to achieve national sustainable development through the removal of carbon dioxide from the atmosphere, generation of job positions, promotion of biodiversity enhancement and improving the trade balance.

Uruguayan government has approved its first Nationally Determined Contribution by Executive Decree number 310 in November 3rd, 2017, in the framework of the Paris Agreement. It establishes a conservative goal to maintain 100% of the native forest area of year 2012, forest plantation net area under management

of year 2015 and shade and shelter forest plantation of year 2012. In a more optimistic scenario, with conditional on additional specific means of implementation, the government's goal is to increase 5% in the native forest area of year 2012 and 25% in the shade and shelter forest plantations area of year 2012, including silvopastoral systems. Guanaré/FAS project will contribute to achieve the government's goal by the continuation of the project.

The Government has also signed for the Sustainable Development Goals. Guanaré/FAS is contributing to accomplish several of the SDG for example SDG N°15 "Land Ecosystems".

2.2 Project Implementation Status

2.2.1 Implementation Schedule (G1.9)

Date	Milestone(s) in the project's development and implementation
2005-2006	Started the baseline survey
2005-2006	The Project Design for Afforestation Operation was finished
2006	First forest projects were presented to Forest Directorate and EIA were presented to Environmental office
2006	First forest plantations were established over degraded grasslands
2007-2012	Guanaré/FAS continued presenting forest projects to Forest Directorate and EIA to Environmental office
2012-2019	Annual Biodiversity survey reports of the project were completed
2006	Project was FSC Certified (not all the area)
2013	Total area of the project became FSC Certified
2006-2019	Annual Community activities were performed
2008-2019	Silvicultural activities started (pruning and, thinning)
2015-2019	First commercial thinning was implemented
2013	VCS Carbon sequestration project was validated and verified
July 2018	Guanaré sold 1.707 hectares. This area is not included in this monitoring report

2.2.2 Methodology Deviations

There are no methodologies deviations apart from the mentioned in previous monitoring report.

2.2.3 Minor Changes to Project Description (Rules 3.5.6)

Between the VCS validation process done in 2013 and this validation & verification process, some changes occurred in the Guanaré project total area. The final project area changed from a total of 20.878 hectares to a total of 18.576 hectares. The two main reasons for these changes were:

- On July 2018, Guanaré sold 1.707 hectares of forest plantations (the total area of the Cerro Chato/Valentines stratum). This area is not included in this monitoring report

- As new high definition satellite images or aerial photos became available, effective planted areas was re-calculated over those images. Table 3 shows the variation of net planted area between 2013 and 2018 by stratum.

Table 3: Effective planted area estimation—Area variation between 2013 and 2018 by stratum

Location	N°	Stratum	Area (hectare)	
			VCS Verification 2013	VCS&CCB Validation&Verification 2018
Cerro Chato/Valentines	1	CCH/V 2006 globulus	962	0
	2	CCH/V 2006 dunnii	22	0
	3	CCH/V 2009 maidenii	119	0
	4	CCH/V 2009 globulus	335	0
	5	CCH/V 2010 maidenii	291	0
Las Cañas	6	Las cañas 2010 grandis	0	0
	7	Las cañas 2011 grandis	222	200
	8	Las cañas 2009 grandis	376	364
	9	Las cañas 2008 grandis	5.204	5.202
	10	Las cañas 2007 grandis	4.509	4.233
Regis/Garao	11	R/G 2007 taeda	59	54
	12	R/G 2009 taeda	82	93
	13	R/G 2009 tereticornis	39	25
	14	R/G 2006 grandis	353	366
	15	R/G 2007 grandis	772	742
	16	R/G 2011 grandis	371	355
	17	R/G 2008 grandis	879	873
	18	R/G 2009 grandis	3.139	3.010
Tupambaé	19	Tup 2009 grandis	849	776
	20	Tup 2011 grandis	161	161
	21	Tup 2008 grandis	331	325
	22	Tup 2007 grandis	1.802	1.799
Sum			20.878	18.576

2.2.4 Project Description Deviations (Rules 3.5.7 – 3.5.10)

Guanaré is the project developer and the entity implementing the establishment of the total forest area. Since July 2018, a small fraction of the project area was sold to another forestry company, the total area planted with *E. globulus* and *E. maidenii* plantations, located in the Cerro Chato/Valentines stratum. This area was excluded from the “Guanaré Forest Plantations on degraded grasslands under extensive grazing” project.

Another project description deviation has occurred in previous monitoring report. Litter and dead wood pool was presented as a deviation in relation to the PD. The project developer decided not to measure these

two pools and to follow the tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities” that offers the possibility not to measure the corresponding variables. For the estimation of carbon stock in litter and dead wood a conservative default-factor based model was applied, and two factors were used: conservative default factor expressing carbon stock in dead wood as a percentage of carbon stock in tree biomass (8%) and default factor for the relationship between carbon stock in litter and carbon stock in living trees.

2.2.5 Grouped Projects

Guanaré forest plantations on degraded grasslands under extensive grazing is a single GHG Project.

2.2.6 Risks to the Project (G1.10)

Identify Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Fire	The risk of fires in commercial forests plantations in Uruguay is very low due to reduced population density and a very humid climate. Normally forest fires in Uruguay only occur in summer in the coastal areas of the South and Southeast of the country, associated with the tourism activity. In spite of prevention activities, fires can happen. In that case, equipment and staff (own and contracted) is ready and trained for firefighting.	In compliance with national regulations, Guarané/FAS has implemented an extensive plan to prevent forest fires. There are many preventive activities such as: i) establishment of a network of firebreaks surrounding forests blocks with an area not larger than 50 ha; ii) the introduction of cattle in early stages of the forestation for maintaining pastures short and green, thus reducing the volumes of fuel; iii) permanent surveillance of the project area, particularly at times of medium to high risk of fire; iv) burning as possible technique for cleaning fields is particularly excluded; vi) warning signs with risk of fire are placed next to forest sites; vii) transit of non-authorized hunters, hikers or campers is forbidden; viii) fire extinguishers must set in vehicles (including tractors) that circulate in the property; viii) PAIF program to detect and prevent fires during summer was implemented since 2013¹²

¹² PAIF: <http://www.spf.com.uy/institucional-actividades-incendios-forestales>
<https://www.fas.com.uy/en/sustainability/forest-managment-plan/fire-prevention>

Diseases and Insects	There could be diseases and insects that may damage the planted trees, but the diseases and insects will be prevented by routine overseeing.	Upon routine overseeing, the diseases will be treated immediately by biological control once occurred. The chemical pesticides are allowed to be used only if there is a serious pest problem erupted in the project area, and the pesticides will be used in accordance with the National Pesticides Policy and FSC standard
Wind	Another risk is related to an eventual increase in felling off or damage to trees by wind storms. Intensive thinning of eucalypt plantations is known to increase the risk of wind damages due to the opening of wide spaces within the forest that may channel the wind and increase its speed, aggravated by the vulnerability of tall trees. There is no information on an eventual increase in this vulnerability in thinned stands with very tall trees such as those with ages 20 or more, but there have been some cases of plantations losses due to strong wind storms	High density initial plantation. Thinned density never below 150 trees per hectare
Frost	Night frosts occur during the winter (from mid-May to early October), with an average of 30 days with frost per year, with temperatures seldom falling below -5 °C.	Those areas imposing restrictions to tree growth or with high vulnerability to frost were excluded; soils occupying low areas were excluded because of risk of frost. Pine or E. dunnii were planted in lower areas to prevent frost damage.

Uruguay is one of the countries in the world with lowest risks of natural disasters. This small nation home to few, if any, natural disasters. There is occasional flooding, but not the sort of thing that makes international headlines for its massive destruction. There are no earthquakes, hurricanes, volcanic activity, etc. There are also no nuclear plants in the country.

2.2.7 Benefit Permanence (G1.11)

Creation of employment is one of the main social benefits of the project. Typically, an extensive livestock production system employs 1.4 persons every 1,000 ha. Guarané/FAS project expected to multiply that figure by more than 10. The project is currently employing 64 direct workers and 362 indirect workers, resulting in a ratio of 21 people every 1,000ha., overpassing the expected result. The number of employees has been much higher than this number in the past, during implementation status with plantation work. In the future more people will be employed for other activities such as harvesting. As it is described in the PD,

the project is expected to last 100 years because a lifetime needs to be specified, otherwise a longer period should be selected. Once a forest plantation is established in Uruguay is very difficult to revert to other activity. The forest business is growing, and forest related products is one of the principals exported goods in Uruguay. The creation of jobs will be maintained after project lifetime.

Beyond an increased number of jobs, the project is expected to contribute to the development of the region and the country pursuant the priorities defined by Uruguayan government (promotion of small family businesses, increase in exports, eradication of rural poverty, incorporation of technology, increased nationally added value, development of new productive chains and geographic decentralization of development) as follows.

'Guanaré' project activity has generated several job opportunities. The vast majority of employees are hired by contractors. The majority of the outsourced contractor companies currently working with Guarané, are registered in Uruguay as "PYMES" (small and medium sized companies), mostly family companies.

The entire production of Guarané/FAS project (wood, meat and carbon credits) will have the international market as the final destination

The main contribution of Guarané/FAS project activity to the eradication of rural poverty will be through the generation of high quality and stable employment, in a region of Uruguay with elevated levels of poverty. A study by Carámbula and Piñeiro (2006)¹³, demonstrate that forestry projects oriented to the production of high value timber, generates high positive impacts in the eradication of poverty in rural areas and reverting the process of internal migration to big cities. Another study by CPA Ferrere (<https://www.cpa ferrere.com/en/>) done in 2017, informed that the total number of direct employees per hectare in forestry is 32 employees every 1000 hectares, while in beef production, the number of employees every 1000 hectares is 6¹⁴.

The project incorporates the best available and affordable technology for optimizing wood productivity and quality through the selection of seeds, site preparation, plantation, weed and pest control, forest management and wood harvesting and logistics, and achieving sustainability objectives. Guarané/FAS has a program for applied research, continuously testing various practices in order to achieve continuous improvement over time and collaborates with other companies and public institutions in this regard. This increase in knowledge exceeds the project activity as is contributing to the forest sector.

Guanaré/FAS project is producing timber that can be used for high-value products. As discussed above, currently there are no wood industries located within a reachable distance from the project site. However, the presence of Guarané/FAS and of other similar initiatives in the area which have already secured (Posco Uruguay) or are also seeking carbon finance (GFP, Weyerhaeuser and others) may induce in the future the establishment of industries in the region.

In addition, the forest management adopted by Guarané/FAS would increase the amount of carbon sequestered by trees, thus increasing the carbon embedded value in wood products and soil organic carbon. Something that will last more than the project lifetime.

¹³ Carámbula, M. y Piñeiro, D. La Forestación En Uruguay: Cambio Demográfico y Empleo en Tres Localidades

¹⁴ http://www.spf.com.uy/data/paginas/Informe_Impacto_Cadena_Forestal_CPA_Ferrere_22-11-17.pdf

As it was mentioned above, Guanaré/FAS project will bring about a number of socio-economic benefits that will mostly impact on its surrounding area, which is currently one of the less developed ones in the country. This would create a development pole away from Montevideo and other areas which concentrate most of the economic activity in the country. This development is translated in more businesses being established in the area, that will continue existing for several years, independently from Guanare lifecycle.

In the fields where FORESTAL ATLÁNTICO SUR operates, environmental assessments and impact surveys are carried out by a team of experts. Based on the results obtained in these studies, management and monitoring plans have been developed for the restoration of natural systems which may have been affected by previous practices (agricultural, farming, forestry or other activities), the conservation of natural resources and values in the influence areas (flora, fauna, soils and hydric resources) and the prevention or mitigation of environmental impact caused by forestry operations.

Monitoring tasks include, in particular, regular assessments of the effects of forestry operations on the soil, pollution and ecosystems. On the other hand, studies of the fauna are being carried out with the purpose of determining the effect of these operations in the species composition and distribution in the country and the possibility of controlling harmful species such as the wild boar.

A wide range of ecosystems can be found in several parts of the country, from different types of native forests, wetlands, grasslands, stony fields, among others. Guanaré/FAS carries out a characterization of the environment in each of the facilities locations and assesses the environmental features, flora and fauna, and defines the conservation areas and the necessary measures for their protection.

In "Santa Sofía", Garao, north of Plácido Rosas, province of Cerro Largo, there are complex ecosystems composed of primary swamp forests or "capones" associated to rain forests considered rare in the country and located in patches that add 186,9 ha. Since the end of 2013, this area has been considered of High Conservation Value since it is an area with exceptional characteristics, with relictual patches of flora from Brazil and mainly due to the diversity of flora species present.

Since 2012, Guanaré/FAS has been involved in several publications related to the fauna and flora of our country. In that year the first field manual sponsored by the company was published and later new publications were added, in addition to a brief manual on the wild boar. Its last edition was jointly published with the authors Raúl Lombardi and Giancarlo Geymonat, the Ministry of Tourism, and UTE with the name "Fauna and Flora of the Forests of Uruguay".

2.3 Stakeholder Engagement

2.3.1 Stakeholder Access to Project Documents (G3.1)

The VCS Project Description and previous monitoring report has been published in the VCS website. The full CCB project documentation will be published also in VCS and CCB's website for public comments, as well as the project summary in Spanish version. Local communities and other stakeholders can easily access it from the website.

Also, the full project documentation will be published on Guanaré/FAS website for public comments.

All the Environmental Impact Assessment that Guarané/FAS presented to MVOTMA/DINAMA, are published on DINAMA's website (<http://mvotma.gub.uy/participacion-ciudadana-ambiente/manifiestos-de-ambiente>).

2.3.2 Dissemination of Summary Project Documents (G3.1)

Along with the project implementation, the project documentation will be published on VCS and CCB website for all stakeholders, so that they can obtain the detailed project information and development progress. Also, the summary of project description in local language will also be disseminated to local communities through local government, as long as the summary of monitoring reports during each verification.

Also, the full project documentation will be published on Guarané/FAS website for public comments, together with specific brochures describing the project characteristics and benefits.

2.3.3 Informational Meetings with Stakeholders (G3.1)

A group of Guarané/FAS supervisors and managers analyzed different stakeholders (localities, towns, cities), developing a complete list of stakeholders, identifying and prioritizing according to existing criteria. Based on this analysis, different actions strategies were developed. The Social Advisors, Luján Jara and Gustavo Pellerey worked in places identified with stakeholders located in Guarané/FAS area of influence.

Part of the actions taken includes the visit, once a year or as demanded, of Guarané/FAS employees to neighbors living close to the project area. During these visits, Guarané/FAS employees must complete the form shown in Figure 6.

 FORESTAL ATLÁNTICO SUR		FORMULARIO VISITA A VECINOS		Código: FOM-15 Versión: 02 Fecha: 12/2016 Página: 1 de 1	
FECHA		/ /			
PREDIO DE FAS CERCANO					
NOMBRE Y APELLIDO DEL ENTREVISTADO					
OTRAS PERSONAS (Nombres)					
Nombre del Establecimiento/ Institución/ Comercio					
DIRECCIÓN / UBICACIÓN					
LOCALIDAD / DEPARTAMENTO					
TELÉFONO/S DE CONTACTO					
DIRECCIÓN DE CORREO ELECTRÓNICO					
En relación a los predios de FAS, ¿conoce usted algún LUGAR DE ESPECIAL INTERÉS PARA SU CONSERVACIÓN, como áreas naturales o elementos de interés histórico- cultural?					
¿QUIERE UD. REALIZAR ALGUNA SUGERENCIA, RECLAMO, DENUNCIA, OBSERVACIÓN O COMENTARIO?					
INFORMACIÓN ENTREGADA					
¿Se entregan nombres y teléfonos de contacto?		SI		NO	
¿Se entrega carta/folleto presentación?		SI		NO	
Se le comunica que en el / los predios _____ cerca de su propiedad, se están realizando actividades de: <u>cosecha, carga, plantación,</u> <u>mantenimiento, otros (_____).</u> (marcar lo que corresponde) EN CASO DE CUALQUIER INCONVENIENTE O SUGERENCIA AGRADECEREMOS SE COMUNIQUE CON NOSOTROS.					
NOMBRE Y FIRMA DEL ENTREVISTADO			NOMBRE Y FIRMA DEL ENTREVISTADOR		

Figure 6. Form to be completed during visits to neighbors

Also, during these visits, stakeholders can complete the “complaints and claims form” shown in Figure 7. The information is collected, processed and recorded in Guanaré/FAS .

 FORESTAL ATLÁNTICO SUR		FORMULARIO QUEJAS / RECLAMOS		Código: FOR-16 Versión: 01 Fecha: 06/2017 Página: 1 de 1
Este es un documento administrativo a completar por la Gerencia o quien ésta designe.				
Queja # ____		Año ____		
TÍTULO DEL CONFLICTO (queja, reclamo, denuncia u otro)				
Fecha del PRIMER CONOCIMIENTO del asunto		Fecha de PRIMERA ATENCIÓN al asunto		
Descripción del ASUNTO planteado				
Descripción del TRATAMIENTO dado al asunto (incluir fechas)				
FINALIZACIÓN del Asunto (Resolución / Estado)				
Fecha de CIERRE				

Figure 7: Stakeholders and communities' complaints and claims form

2.3.4 Community Costs, Risks, and Benefits (G3.2)

Information about potential costs, risks and benefits to communities is not applicable to this project. As it is described in PD section 2.1.5. local communities in Uruguay are not entirely depending on forest, they reside in populated centers with multiple businesses. Communities are not asked to participate directly with the project. Projects' potential risks, costs and benefits are, for example, indirectly transmitted to communities through the increase of labor demand for particular activities (forest implantation). In other words, communities can perceive projects costs, risks and benefits in an indirect way, through market.

2.3.5 Information to Stakeholder on Verification Process (G3.3)

National legislation in Uruguay does not obligate to projects owners with activity in the VCS or CCB Standard to communicate about the validation or verification process to any stakeholders, not even to national or regional government.

However, the company decides to actively communicate about this process, so any stakeholder can be informed and comment about it. The description of the validation and verification process was informed in detail to all staff member of the company through internal communication.

2.3.6 Site Visit Information and Opportunities to Communicate with Auditor (G3.3)

The local stakeholders will be informed in advance of the VVB visit, regarding the validation and verification process. As long as the audit plan has been settled, the project owner will arrange a stakeholder meeting with auditor during the site visit. Invitation will be done using appropriate means of communication, all the stakeholders will be informed via phone, mail or whatsapp regarding the project process and the auditor's visit. Stakeholders shown in Table 4 will be contacted in Cerro Largo department.

Table 4. List of stakeholders to be contacted in Cerro Largo.

Institution	Department	Name	City/Town	Scope
Escuela Nº 35 Arbolito	Cerro Largo	Miriam Lago	Arbolito	Teaching center
Parador Arbolito	Cerro Largo	Lidia Da Costa	Arbolito	Commerce
Seccional 10º Arbolito	Cerro Largo	Nestor Tejera,	Arbolito	Police
Alcaldias	Cerro Largo	Luis Segui	Arbolito	Public
Municipio de Arbolito	Cerro Largo	Luis Segui	Arbolito	Public
Policlínica Municipal	Cerro Largo	Angélica Silvera	Arbolito	Clinic
Alcaldias	Cerro Largo	José Eduardo Lucas	Arévalo	Public
Escuela Arroyo Malo	Cerro Largo	Daiana Ferreira	Arroyo Malo	Teaching center
Vecino	Cerro Largo	ARTigas Luz	Arroyo malo	Neighbour
Alcaldias	Cerro Largo	Graciela Echenique	Fraile Muerto	Public
Escuela Nº 72 La Micaela	Cerro Largo	Michele Rivero	La Micaela	Teaching center
Policlínica La Micaela	Cerro Largo	Gladys Araujo	La Micaela	Clinic
Hotel Crown	Cerro Largo	Sr. Enrique López	Melo	Commerce
Oficina Municipal de Tránsito	Cerro Largo	Sandra Rivero	Melo	Public
Escuela Técnica Superior (ex UTU)	Cerro Largo	Carlos Vaz, Victoria	Melo	Public
Mano Amiga	Cerro Largo	Katerin Maubrigades	Melo	NGO
Intendencia Municipal de Cerro Largo	Cerro Largo	Ec. Luis Sergio	Melo	Public
Junta Departamental de Cerro Largo	Cerro Largo	Ary Ney Sorondo	Melo	Public
Escuela Nº Plácido Rosas	Cerro Largo	Graciela Rodriguez	Plácido Rosas	Teaching center
Policlínica Municipal	Cerro Largo	Paola Rocha	Plácido Rosas	Clinic
Seccional 13 Plácido Rosas	Cerro Largo	Fabricio Díaz	Plácido Rosas	Police
Alcaldias	Cerro Largo	Diego Fernandez	Plácido Rosas	Public
Alcaldias	Cerro Largo	Jorge Pereira, Blanca	Plácido Rosas	Public
Policlínica Rincón	Cerro Largo	Elizabeth Aristimuño	Rincón	Clinic
Seccional Nº 3 Pueblo Rincón	Cerro Largo	Cristian Duarte,	Rincón	Police
Junta Local Rincón	Cerro Largo	Pablo Manini	Rincón	Public
Escuela Nº 67	Cerro Largo	Patricia Carrero	Rincón	Teaching center
Liceo Tupambaé	Cerro Largo	Maximiliano Álvarez	Tupambaé	Teaching center
Escuela Nº 9 Tiempo Completo Tupambaé	Cerro Largo	Yelsi Olivera	Tupambaé	Teaching center
Policlínica ASSE	Cerro Largo	Josè Luis Cunha,	Tupambaé	Clinic
Almacen Don Juan	Cerro Largo	Carlos Saravia	Tupambaé	Commerce
Parador Rosil	Cerro Largo	Mario Marengo	Tupambaé	Commerce
Estacion de Servicio ANCAP	Cerro Largo	Jorge Peretti	Tupambaé	Commerce
Farmacia Santa Higinia	Cerro Largo	Danée Viera Coteló	Tupambaé	Commerce
Tupambaé Plan	Cerro Largo	Ana Maria Tisnes -	Tupambaé	NGO
Seccional 8º Tupambae	Cerro Largo	Pedro Alvarez,	Tupambaé	Police
Alcaldias	Cerro Largo	Douglas Lucas	Tupambaé	Public
As Civil Uruguay Trabaja - Tpbaé Plan	Cerro Largo	Hilda Madruga	Tupambaé	Public with
Juzgado de Paz Tupambaé	Cerro Largo	Hugo Prieto Morales	Tupambaé	Public

Stakeholders shown in

Table 5 will be contacted in Treinta y Tres department

Table 5. List of stakeholders to be contacted in Treinta y Tres department.

Institution	Department	Name	City/Town	Scope
Comisaría 4ta Sección	Treinta y Tres	Alcides Morales,	Cerros de Amaro	Police
Policlínica Municipal	Treinta y Tres	Lilian Bueno	Cerros de Amaro	Clinic
Escuela N°67	Treinta y Tres	Marisol Daer	Cerros de Amaro	Teaching center
Almacén	Treinta y Tres	Daniel Oyambure	Isla PAtrulla	Commerce
Seccional Policial 4ta	Treinta y Tres	José Luis Charquero	Isla PAtrulla	Police
Policlínica Municipal	Treinta y Tres	Graciela Martirena	Isla PAtrulla	Clinic
Escuela N°3	Treinta y Tres	Fanny García	Isla PAtrulla	Teaching center
Policlínica Municipal	Treinta y Tres	Leticia Rosas	La Calavera	Clinic
Escuela N°12	Treinta y Tres	Patricia Sasía	La Calavera	Teaching center
Sala Auxiliar ASSE	Treinta y Tres	Dra. Elisa Morales	Sta. Clara de	Clinic
Municipio	Treinta y Tres	Oscar Viera, Judith	Sta. Clara de	Public
Escuela Agraria	Treinta y Tres	Ing. Agr. Virginia	Sta. Clara de	Teaching center
Seccional Policial 8va	Treinta y Tres	Crio. Victor	Sta. Clara de	Police
Autoservice Minimar	Treinta y Tres	Angélica Ferreira	Sta. Clara de	Commerce
Liceo	Treinta y Tres	Gioconda Pérez,	Sta. Clara de	Teaching center
Escuela N°47	Treinta y Tres	José Arismendi, Ana	Sta. Clara de	Teaching center
Escuela N°19	Treinta y Tres	Sandra Gómez	Sta. Clara de	Teaching center
GEO Treinta Y Tres Grupo Eto-ecologista	Treinta y Tres	Esc. Ricardo Ramírez	Treinta y Tres	NGO
Cooperativa Agraria Quebrada de los Cuervos	Treinta y Tres	Eduardo Gonzalez	Treinta y Tres	NGO
M.V.O.T.M.A.	Treinta y Tres	Daniela Lemes	Treinta y Tres	Public
<i>Intendencia Municipal de Treinta y tres</i>	Treinta y Tres	Dr. Dardo Sánchez	Treinta y Tres	Public
Junta Departamental de Treinta y Tres	Treinta y Tres	Guzman Contreras	Treinta y Tres	Public
Cuartelillo de Bomberos Vergara	Treinta y Tres	Suf Of May Yubert	Vergara	Firefighters
Liceo Vergara	Treinta y Tres	Isabel Carrasco	Vergara	Teaching center
Liceo Vergara	Treinta y Tres	Yanet Salaberry	Vergara	Teaching center
Escuela Agraria Vergara	Treinta y Tres	Guillermo Sensian,	Vergara	Teaching center
ONG Grupo Envira	Treinta y Tres	Esc. José Luis Cuello	Vergara	NGO
Entidad Naturista Vergarenses de Investigación	Treinta y Tres	Dr. Jorge Pirez Bello	Vergara	NGO
Pizzeria Km0	Treinta y Tres	Marisol Mieres	Vergara	Commerce
Oficina Turismo	Treinta y Tres	Victoria Silvera	Vergara	Public
<i>Municipio de Vergara</i>	Treinta y Tres	Alc Fidencio	Vergara	Public
Seccional 9º Vergara	Treinta y Tres	Crio Daniel Fleitas	Vergara	Police
Escuela N° 24	Treinta y Tres	Juán Casuriaga	Villa María Albina	Teaching center
Policlínica Mpal Ma Albina	Treinta y Tres	Victoria Delgado	Villa María Albina	Clinic
Ex Almacén el Milagroso	Treinta y Tres	Carlos Barbat	Villa María Albina	Commerce
Subcomisariade Seccional nro 7	Treinta y Tres	Julio Cesar Segovia	Villa María Albina	Police
Vecina	Treinta y Tres	Jaqueline Techera	Villa María Albina	Neighbour
Vecino	Treinta y Tres	Andrés Soto	Villa María Albina	Neighbour
Vecino	Treinta y Tres	Cesar Machado	Villa María Albina	Neighbour
Est La Tapera	Treinta y Tres	Ramón Cabrera	Villa María Albina	Neighbour

2.3.7 Stakeholder Consultation (G3.4)

As it is explained above, stakeholder's participation in the project is done through formal and informal channels. There are some types of stakeholders -such as forest contractors' enterprises, beef cattle breeders or rural communities- that can be affected (positively or negatively) by the project. Forest contractors' enterprises hire personal from the surrounding areas, beef cattle breeders are sometimes previous land owners living in the area.

It has to be noted that all the forestry plantations were done based on the National Forestry (Law No. 15.939 of December, 1987). Guanaré/FAS forest plantations are done entirely on private land. An Environmental Impact Assessment is requested by public authorities before establishing the forest. These EIA's were presented in the DINAMA web page for public consultations. Any person, company or entity from the project area or not, had the opportunity to comment and influence the project design.

In addition, all the planted areas must attend local regulations on maximum size of plantations, distance to water streams, neighbors' fences, power lines, etc. established by national regulation (public sector stakeholder).

The stakeholder group that influence project design are the beef cattle breeder and rural communities. This stakeholder is normally the previous land owner that after forest implementation continues breeding cattle in the non-forested areas. The interaction between cattle and forest is so mutually beneficial that Guanaré/FAS and cattle breeders communicate about the design of projects in order to synergistically grow.

Rural communities can also influence in the project design. For example, there is a case of a rural community in Velazquez (out of the project's area of influence but where Guanaré/FAS has operations) that complained about the trucks' movements in the town, resulting from the harvesting activity in a nearby farm. The local government arranged a secondary route for that trucks but after some time other residents complained again. This time the problem was that the secondary route diminished the business activity in the Velazquez, the drivers were not stopping for meals or shopping.

Another example is a populated center in Rocha (out of the project's area of influence but where Guanaré/FAS has operations) where residents complaint about the harvesting and loading activity affecting the students in a rural school in the area. Considering such complaint, Guanaré/FAS modified its activity, concentrating activities after school time and intensifying them in holidays.

2.3.8 Continued Consultation and Adaptive Management (G3.4)

As already shown in previous chapter, there are permanently open channels to communicate with the project developer. Stakeholders can raise their comments or suggestions in the "Neighbors visit form" (**Figure 6**) and the "complaints and claims form" (**Figure 7**). The project owner will check the forms regularly and collect all the comments received.

In the "General Manual for Forest Management", which is available to all Guanaré/FAS employees, specifies the following items related to the relationship with the communities and communication:

- At all times you should try to be good neighbors, maintain fluid channels of communication and respect patterns of coexistence.
- Promote the harmonious integration of the company in the short and long term in local communities.
- Improve the level of information of local communities regarding forestry activity in general and the management of Guanaré/FAS in particular.
- Prevent or mitigate undesirable impacts of forestry activity in the social environment.

- Keep updated the lists of interested parties and contact forms. Ensure that interested parties know ways of communicating with the company.
- All communications received (complaints / claims, requests, invitations, thanks or other interested parties) must be reported to the respective management.
- It is important to take care of the deadlines between when a complaint or complaint is received, and the corresponding follow-up is given. For the first contact and / or first response should not have been more than two weeks, or less, if the case requires speed. In the following instances of the handling of the matter, one must act in a responsible manner, trying to minimize the time until the resolution of the conflict.
- The management of the company, or whoever it designates, will be responsible for the resolution of all the communications that have to be answered.
- To resolve conflicts, proceed in accordance with INS 03 -PROCEDIMIENTO DE RESOLUCIÓN DE CONFLICTOS, and completing the corresponding internal form.

2.3.9 Stakeholder Consultation Channels (G3.5)

Part of the communication with communities consist in verbal communication from the company' workers towards them. Guanáré/FAS workers are permanently present in the project area and they communicate with communities and stakeholders.

Guanaré/FAS has also implemented a mechanism to prevent complaints. It consists in analysing the impact of future actions that will be taken by Guanáré/FAS. For example, harvesting of a certain area will increase the truck passage in a public road, generating modifications to the regular activity of the zone. Guanáré/FAS staff anticipates to this situation visiting the neighbours that could be affected, explaining the activities that will be implemented and leaving a contact telephone to contact them in case of need.

2.3.10 Stakeholder Participation in Decision-Making and Implementation (G3.6)

Guanaré/FAS has open channels to enable the effective participation of all communities. The "complain form" and "visit to neighbor form" (see chapter 2.3.3) is a way for communication to communities. These channels are open to any culture and gender.

2.3.11 Anti-Discrimination Assurance (G3.7)

The project owner should obey Labor Law of the Republica Oriental del Uruguay with anti-discrimination assurance.

Guanaré/FAS has a Forest Management General Manual where it is clearly explained that discrimination attitudes are totally forbidden: "any type of discrimination must be avoided in any instance by reason of gender, race, religion, political or other orientation".

2.3.12 Grievances (G3.8)

During the lifecycle of the project, some grievances were received using the “complaint form”. Guanaré/FAS employees received the grievances and resolved them as fast as possible. The following figure lists the complaints received during the last years and how they were resolved.

FORESTAL ATLÁNTICO SUR		RESOLUCIÓN DE CONFLICTOS	Código: INS-03 Fecha: 11/2012 Versión: 05 Página: 4 de 5
Anexo: Resumen de quejas			
Fecha de actualización:	Resumen de Queja	Situación	
Año 2012-2013	Camioneros / Entendimiento de Camión	Ver informe en versión adjunta.	
Mayo 2016	Vejeada de camioneros circulando por zona escuela primaria	Contrato de alquiler de camión de camioneros.	
Junio 2016	Camioneros en mal estado - zona Camino El Ojeteño, La Colera.	A pesar de que FAS no fue reportado, zona la / camioneros / FAS.	
Agosto 2016	Queja de vecinos / Camino larra	Se realizó un levantamiento, otro	
	por la zona 15-18.	señalados como camioneros con permiso.	
Abril 2018	Permiso Apilamiento de leña	Se quita a cinco en campo	
	Barrio Negro.	con DUEÑA y empresa de	
		apilamiento.	
		Se dio por finalizada el	
		día 21/09. Aboyanle notifica	
		con TMAP.	

Figure 8. List of complaints received and resolved

2.3.13 Worker Training (G3.9)

The project owner and group of experts provided technical advice and technical training to project staff and personal from forest contractors companies. These companies usually contracts people from the surrounding areas, belonging to the neighbor communities to the project area.

All the workers are trained in order to perform the activities with adherence to the Principles & Criteria of the Forest Stewardship Council ® (FSC ®) for forest management and chain of custody.

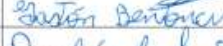
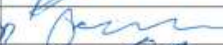
More than 360 employees (direct employees and contractors) are working in Guanaré/FAS project. All these employees are included in the company’s “Annual Capacitation Plan”, that includes the following training courses:

- Induction for new contractors: Orientation and training activities to inform and establish the Guanaré/FAS management guidelines to those responsible for the contractor companies and their health and safety services

- General induction 1: Guanaré/FAS Management Policy; Continuous improvement; FSC Principles & Criteria; Occupational Health and Safety; Care of the environment; Social Responsibility, Labor Rights and Duties.
- Safety and continuous improvement
- Legal and management requirements
- FAS Integrated Management System
- Specific training in Operative 1: Train all phytosanitary workers on how to obtain the “phytosanitary Card” (all operators of contractors and Guanaré/FAS direct employees that carry out the activity of applying chemical products).
- Specific training in Operative 2: Chainsaw documentation
- Specific training in Operative 3: Chainsaw security
- Specific training in Operative 4: Defensive Driving for vehicles 4x4
- Health and First Aid
- Investigation of incidents to Guanaré/FAS supervisors
- Ergonomics
- Fire control
- ArcGIS
- Language
- Induction to Chain of Custody

The Annual Training Plan is available for the validator in case of need.

Every training is recorded in a template, with information about the topic, date, responsible, attendants (with signature), place, etc. The following figure is just an example of the training provided by Guanaré/FAS to forest contractor companies' employees.

 FORESTAL ATLANTICO SUR		REGISTRO DE CAPACITACIÓN				Código: FOR 08 Versión: 01 Fecha: 07/2013 Página: 1 de 1
TEMA/S		FSC /MANUAL GENERAL DE GESTION/ INDUCCION EN SEGURIDAD DERECHOS Y DEBERES LABORALES				
FECHA:		28/07/2015	HORARIO (INICIO Y FIN)		14:00 – 16:00	LUGAR
RESPONSABLE/S		NICOLAS URIARTE / ROCIO GAMUNDI				
ASISTENTES A LA CAPACITACIÓN						
#	NOMBRE	CÉDULA IDENTIDAD	EMPRESA CONTRATISTA	CARGO O FUNCIÓN	FIRMA	
1	HECTOR NUÑEZ DE MORAES	4642012-0	ROQUES, P. NORTE	PROBADOR		
2	Pramires Poggi	4378725-3	Semadero Oriental	CI		
3	Bautón Bontancur	5.716374-6	SEMDERO ORIENTAL	CI		
4	Donalde de la Cruz	4.009852-8	Marco Verde	CI		
5	Carlos Fabian Rodriguez Machado	4993.198-3	Marco Verde	CI		
6	Esteban Quintana	4.674.552	Marcondado	CI		
7	Jonathan Palacios	5.5014810		CI		
8	Nelbi Borsil	486383-4	Marco Verde	CI		
9	Mora, Mary	4820574-9	MARCO VERDE	CI		
10	Abelardo	4275745-9	MARCO VERDE	CI		
11	Astrogilón Olivo Z	3567246	M. VERDE	PROBADOR		
12	Amiel Olivo Z	3575220	M. VERDE	PROBADOR		
13	Orlando		M. VERDE	PROBADOR		
14	Sara Sotelo	5256482-9	M. VERDE	PROBADOR		

 FORESTAL ATLANTICO SUR		REGISTRO DE CAPACITACIÓN				Código: FOR 08 Versión: 01 Fecha: 07/2013 Página: 2 de 1
TEMA/S		FSC /MANUAL GENERAL DE GESTION/ INDUCCION EN SEGURIDAD DERECHOS Y DEBERES LABORALES				
FECHA:		28/07/2015	HORARIO (INICIO Y FIN)		14:00 – 16:00	LUGAR
RESPONSABLE/S		NICOLAS URIARTE / ROCIO GAMUNDI				

#	NOMBRE	CÉDULA IDENTIDAD	EMPRESA CONTRATISTA	CARGO O FUNCIÓN	FIRMA
15	<i>Enrique Méndez</i>		<i>Forestal Atlántico Sur</i>	<i>Podador</i>	<i>Enrique Méndez</i>
16	<i>José Augusto Viera</i>	<i>4.625.443-1</i>	<i>POSQUE DEL NORTE</i>	<i>PODADOR</i>	<i>José Augusto Viera</i>
17	<i>Herarrio</i>	<i>3.636.791-1</i>	<i>Bos del N</i>	<i>PODADOR</i>	<i>Herarrio Pereira</i>
18	<i>ALBERTO SUAREZ</i>	<i>4452238-9</i>	<i>B.BL NORTE</i>	<i>CAPATAZ</i>	<i>Alberto Suarez</i>
19	<i>Gaston Zandbergen</i>	<i>5700227-7</i>	<i>B.N. NORTE</i>	<i>CONTADOR</i>	<i>Gaston Zandbergen</i>
20	<i>Nicolás Costa</i>	<i>4-372-888-9</i>	<i>Leandro Trujillo</i>	<i>Encargado</i>	<i>Nicolás Costa</i>
21	<i>ROBERTO ELVIS VIERA MANT.</i>	<i>4-863.774-2</i>	<i>MARCO VERDE</i>	<i>PODADOR</i>	<i>Roberto Viera</i>
22	<i>Luis Gamundi</i>	<i>5.337.656-5</i>	<i>MARCO VERDE</i>	<i>PODADOR</i>	<i>Luis Gamundi</i>
23	<i>Leandro Gamundi</i>	<i>5.337.658-7</i>	<i>MARCO VERDE</i>	<i>PODADOR</i>	<i>Leandro Gamundi</i>
24					
25					
26					
27					

The complete list of trained people in numerous topics (even biodiversity, FSC, etc.) in the last years is available for the VVB if necessary.

Guanaré/FAS employees are also trained in other topics. The following is a list of the courses taken by personal of different areas.

CAPACITACIONES INTERNAS 2018

ÁREA	PERSONA	CURSO	INSTITUTO	LUGAR	COMIENZO
COSECHA	Leandro	Inglés			ABRIL
	Alfonso	Excel			
		Inglés	ANGLO	Minas	MAYO
	Mancuello	EXCEL INTERMEDIO	CTC	MINAS	MAYO-JUNIO
	Canabé	EXCEL INTERMEDIO	CTC	MINAS	MAYO-JUNIO
	SERGIO	EXCEL INTERMEDIO	CTC MINAS		MAYO-JUNIO
ADMINISTRACIÓN	Belén O	Inglés	OXBRIDGE	MONTEVIDEO	MAYO
		Excel básico	OFICINA	MONTEVIDEO	JUNIO
	Mariana	Inglés	OXBRIDGE	MONTEVIDEO	MARZO
		PPT para presentaciones	OFICINA	MONTEVIDEO	JUNIO
	Pia	Inglés	OXBRIDGE	MONTEVIDEO	MARZO
		Excel avanzado	OFICINA	MONTEVIDEO	JUNIO
	Rocio	Inglés	OXBRIDGE	MONTEVIDEO	FEBRERO
		Word	OFICINA	MONTEVIDEO	JUNIO
		PPT para presentaciones	OFICINA	MONTEVIDEO	JUNIO
	Pablo	Excel avanzado	OFICINA	MONTEVIDEO	JUNIO
	ALEXANDRA	Inglés	OFICINA	MONTEVIDEO	ABRIL
		Excel			
	CAMILA	Inglés	OFICINA	MONTEVIDEO	ABRIL
		Excel			
		50 % Comercio Exterior			
	Mariana Villemur	Inglés	OFICINA	MONTEVIDEO	ABRIL
		Excel avanzado	OFICINA	MONTEVIDEO	JUNIO
		PPT para presentaciones	OFICINA	MONTEVIDEO	JUNIO
	Maurine	Excel intermedio	OFICINA	MONTEVIDEO	JUNIO
SILVICULTURA	NICOLÁS	INGLÉS	OXBRIDGE	MONTEVIDEO	ABRIL
MANTENIMIENTO	Hugo	PPT para presentaciones		MONTEVIDEO	JUNIO
		Word		MONTEVIDEO	JUNIO
	Ramiro Melgar	EXCEL	CTC	MINAS	MAYO-JUNIO
	Emilio Perdigón	EXCEL	CTC	MINAS	MAYO-JUNIO
	Alberto González	EXCEL	CTC	MINAS	MAYO-JUNIO
	DARIO	EXCEL		MELO	JUNIO
GESTIÓN HUMANA	Paulo	Nuevas tendencias y desafíos de Gestión Humana		MVD	
		Derazgo y Coaching Organizacional		MVD	
		PPT para presentaciones		MONTEVIDEO	JUNIO
		Word		MONTEVIDEO	JUNIO
Apoyo técnico	Capote	Inglés			ABRIL
	Ximena	INGLÉS	ANGLO	MINAS o MELO??	ABRIL
		Excel	CTC	MINAS	JUNIO
		PPT para presentaciones			JUNIO
	BELÉN	EXCEL	CTC	MINAS	JUNIO
		PPT para presentaciones			JUNIO
		INGLÉS	ANGLO	MINAS o MELO??	ABRIL

2.3.14 Community Employment Opportunities (G3.10)

The project will have impact in a big area located in the Center east region of Uruguay. All the people in the communities (including women, minorities and poor people) will be involved directly or indirectly with the project.

All people from the region will be given an equal opportunity to fill all work positions if the job requirements are met.

According to the records corresponding to the years 2017 - 2018 (available on Guarané/FAS web platform), during the implementation of the project, Guarané/FAS contracted for forestry activities (plantation, harvest, sawmills and road works), an average of 14 companies per year, which translates into a labor of around 362 workers per year. For the period 2006-2016 total number was higher and it is estimated in 400 employees per year.

From the total number of contractors working for Guarané/FAS, it is estimated than around 60% of these contractors are living in the project area of influence.

There are some forest activities where more subtle or dainty movements are needed or where more meticulous work is demanded, which is the case of the work at nurseries or the harvesting with ultra-sophisticated harvesters. In such cases, women could be better qualified for the task. It is expected that women from the community can participate in such type of activities, or others.

Since 2014, the company has a system to digitize and centralize the information of subcontracted companies, where all the data provided is available, based on the number of operators per company, which allows the documentation of the activity, as well as the training history carried out by the Operators, both by the contracting companies and by Guarané/FAS.

2.3.15 Relevant Laws and Regulations Related to Worker's Rights (G3.11)

Forestry in the country has its own regulation for labor conditions (Decree 372/99), on top of a large number of norms which affect any activity. This decree was developed with the active participation of the forest producers, and basically defines several rules for safety, health and living conditions of forest workers.

Another important regulation relates with the minimum wage regime. In Uruguay, the law promotes the appointment of sectoral three-party committees¹⁵ (government, workers and companies) to discuss worker categories and minimum wages applicable to each category. The agreements reached by these committees are mandatory for all the companies in the corresponding sector. Historically, rural activities were not included in these committees, and minimum wages were fixed by decrees. In 2005, the forest companies, the forest workers and the government reached the first ever agreement for a minimum wage regime in a rural activity.

Forest industry workers are organized in a specific union. SOIMA (Uruguay's Wood Industries Workers Union).

¹⁵ These committees are called "Consejos de Salarios" in Spanish.

As of 2014, the Union is presented as one of the strongest in the country and has negotiated significant improvements in wage conditions.

These agreements set minimum wages by category, with semiannual adjustments based on inflation and dollar variations. Employees work 48 hours a week, with a maximum of eight-hour per day, (excepting if the hours worked on Saturdays are distributed from Mondays to Fridays). In this case the hours worked per day can be extended to nine and a half hours.

There is a national legislation aimed at the enforcement of safety and health standards, which is controlled by the Ministry of Labour.

Since 2015, Guanaré/FAS implemented an integrated management system that includes a digital management system to manage Corrective Actions Requests.

The Corrective Action System (SAC) allows companies working with, and Guanaré/FAS in its internal functioning, to have a centralized control and monitoring system to improve management in all stages and activities (operational, safety, environmental, social).

The system works with each member of the team having a tablet with the SAC system installed. Each time a Non-Conformity is detected, the person must record it in the system through a form with the following information:

- -Activity Data
- -Company in charge
- -Work crew
- -Geolocation that allows user to attach a photo file or record for a certain period.
- -Description of Non-Conformity

Once the form is completed, the system automatically notifies the owner of the contractor company and the foreman by email and text message. They, in turn, must provide a solution to the issue detected (for example, spillage of hydraulic fluid in a harvesting activity) within specific periods of time, depending on the type and severity.

Once the contractor has notified the issue has been solved, a Guanaré/FAS supervisor must go to the location where the SAC was recorded, verify compliance and close the request.

If the deadline is not met by the contractor and the request is not closed, different measures will be taken, according to Guanaré/FAS management procedures.

The system has the following benefits:

- -Constant control and monitoring.
- -Minimization of accidents.

- -Improvement in communication between the parties.
- -Generation of a real-time database that allows statistical analysis.

2.3.16 Occupational Safety Assessment (G3.12)

Guanaré/FAS consider the Safety and Health of the people, and of everyone directly or indirectly related to the activities, to be of the utmost importance. The company has implemented a system, coordinated by prevention technicians, oriented to the care of occupational safety, well-being and health risks of the personnel who works in the field. The system encompasses everyone, each and every one of the employees and contractors are committed to take care of their own safety as well as their co-workers'. Safety management is treated as a continuous self-improvement process which materializes in a systematic process of risks identification, assessment and control which requires the participation of everyone, reason why it is mandatory.

According to national legislation, the employer has the obligation to register in the Social Security Bank ("Banco de Previsión Social" - BPS) and Ministry of Labor and Social Security. By this, the employee assures health assistance for every member of the family.

Safety training and dissemination

Guanaré/FAS make strong emphasis on the training and awareness rising of the personnel and the people living in the area where we develop our activities. A continuous follow-up of the work conditions and facilities is performed in all the sites where the company operates. Continuous training and teaching are done and the exchange of experience among contractors is promoted. All observations and incident records are processed systematically in order to obtain statistics which allow the detection of issues which require special attention. If there are accidents, a relevant investigation is carried out to reduce future risks. In order to improve this control, Guanaré/ Guanaré/FAS started to implement a new software for its Management System. This innovative tool allows, through the use of tablets, a better control and monitoring of the Corrective Action Requests. The company have a Continuous Training Program structured according to the detected needs. The objective is clear: self-protection; the company wants every individual involved to embrace safety measures as a VALUE. Therefore, families and communities are included in the orientations, because we believe that safety starts "at home".

The project owner implemented health and safety practices to protect workers from occupational safety and health hazards. These practices shall, proportionate to scale, intensity and risk* of management activities, meet or exceed the recommendations of the ILO Code of Practice on Safety and Health in Forestry Work

Since 2015, Guanaré/FAS implemented the Mobile Attendance System. The main objective of this application is to register the attendance of employees and/or contractors at their working places.

From a mobile device (smartphone or tablet), employees may mark their entry/exit using the QR code that appears in their personal working card or entering their identity card numbers. At the time of marking, the device takes a picture of the employee (double authentication factor) and records the date, time and geographical location.

In addition, the system automatically checks employee's documentary status –for instance, the validity of the health card, delivery of safety equipment, among others– and reports such information to the corresponding person in case the employee status is not in good standing so as to carry out their duties.

This system allows a strict control of work, rest and commuting times. It can be used as an input for payroll settlement.

Features like the Notification Manager and Your History issue proactive notices relative to the expiration of employees and vehicles documentation, as well as admission notices to the premises, late arrivals, absenteeism, etc.

The marks constitute supportive data for presenteeism.

2.4 Management Capacity

2.4.1 Required Technical Skills (G4.2)

Guanaré has a contractual agreement with Forestal Atlántico Sur (FAS) for the management of its investment. Guanaré/FAS is internally well structured, with experienced staff in the area of forest investments, forest management and trade of timber. Internal organization chart and other information are made available for the validating team.

For the development of the Project, skills and experience was required related to:

- *Experience in management of natural resources conservation projects*
- *Ability to interact with different actors and stakeholders,*
- *Development of Projects with rural populations,*
- *Experience in the development of carbon projects and environmental services*
- *Experience in the evaluation and monitoring of biodiversity*

The project owner and the experts group provide technical advice and technical training and carry out Project implementation of quality control and quality assurance at the same time.

All the workers will be train in order to perform the activities with adherence to the Principles & Criteria of the Forest Stewardship Council ® (FSC ®) for forest management and chain of custody. More than 360 employees (direct employees and contractors) are working in Guanaré/FAS project. All these employees are included in the company's "Annual Capacitation Plan".

Regarding CARBOSUR, this company was contracted by Guanare to develop and manage the carbon component of the project. Carbosur is a Uruguayan company established in 2000 to deliver specialized services to mitigate climate change. Among the key services offered by Carbosur are consulting services to governments, non-governmental organizations and private companies in several areas related to the environment and climate change. Carbosur is especially concerned with:

- *designing climate change mitigation projects under the Clean Development Mechanism of the Kyoto Protocol, the Verified Carbon Standard or any other project-based scheme, with expertise in the fields of forestry (afforestation, reforestation, revegetation, REDD and improved forest management), agriculture, raising livestock and renewable energy;*
- *compiling greenhouse gas Inventories for governments at a national and sub-national level;*
- *estimating and certifying carbon footprint for products, services and companies;*
- *manufacturing reports assessing carbon markets;*
- *trading carbon credits both in the regulated (CDM) and voluntary markets;*
- *conducting nationally appropriate mitigation activities*
- *performing low carbon development studies*

With Carbosur's assistance, several clients of the firm have had their projects registered under carbon schemes in the Center-east region of Uruguay.

Regarding Pike Consultora Forestal SRL (Pike&Co.), this company was contracted by Guarané to perform forest inventories. Pike Consultora Forestal (Pike&Co.- www.pike.com.uy) is the main Uruguayan forest consulting firm. Its core team includes experts who have had a key role in the development of the forest industry in Uruguay since the late 1980's, having vast experience in the silvicultural, wood manufacturing and wood trading areas. A group of young professionals with a wide range of skills is also part of the team.

The company operates in four main areas:

- *Forestry Projects & Forest Engineering*
- *Forest Measurement and Appraisal*
- *Energy & Environment*
- *National and Regional Studies*

One of the most active areas in the company is the estimation of commercial forest inventories and due diligence studies. Between 2007 and 2018, we have measured nearly 200,000 ha of forests.

The Forest Information System (FIS) is a proprietary GIS-based system containing relevant data for the forestry sectors of Uruguay and Eastern Argentina, including natural resources, infrastructure, socio-economic data, national statistics, and forest areas classified by species and age class. The GIS is linked to databases with extensive information on forests (owner, species, planted areas, age classes, forest management practices, productivity, etc.), wood industrial facilities and forest and forest land transactions. The system is updated permanently by remote sensing data (satellite images and aerial photographs), field surveys and other sources. The company has a wide network of contacts in, and deep knowledge of, the forestry sector in Uruguay and the region, and enjoys a very good reputation among its clients.

2.4.2 Management Team Experience (G4.2)

Guanaré/FAS has many years in management of projects of conservation of natural resources, with which it has developed capacities to interact with different types of actors, as a result of which it has established cooperation agreements with local governments, companies, producer organizations and native communities. It has also developed a system applicable to environmental projects, which has effective tools and methodologies to have effective control over the interventions carried out.

FAS manages its forest plantations integrated with other land uses, optimizing the management of natural resources responsibly according to the following policy principles:

- *An economically, environmentally and socially integrated management for the achievement of the company's productive aims in a sustainable manner and with long term horizons.*
- *Adherence to the Principles & Criteria of the Forest Stewardship Council ® (FSC ®) for forest management and chain of custody, avoiding at any circumstance the management of wood from controversial origins.*
- *Good management of forestry resources, supported by the continuous study of the scientific breakthroughs, the experience in the country and the application of the best practices.*
- *Observation of national and international regulations in force, as well as the provisions established by the certification standards adopted by the company periodically verifying such compliance through inspections and audits.*
- *Supporting our employees in what regards to their professional and personal growth as we believe them to be essential for the development of the company encouraging teamwork, personal and professional development of each member, in an environment of respect, non-discrimination, trust, commitment, transparency and ethics.*
- *Promote health, safety and welfare of all employees through a proactive, systematic and effective management based on an adequate identification, assessment and control of risks.*
- *Implement trainings workshops focused on informing, raising awareness, promoting involvement and engagement of all employees in the basics of this policy.*
- *Preservation of natural resources and values, seeking the recuperation of degraded systems, the conservation of ecosystems' functions and the protection of areas and species of special interest. Preservation of cultural values and the respect for local communities' interests.*
- *Promote positive stakeholder relations, good neighbor, open communication, transparency, dialogue, respect for the diverse interests of communities. Encourage cooperation through projects related to the local development of the communities where we interact through educational and recreational activities and prioritizing the hiring of local staff.*
- *All the employees, representatives, advisors and consultants, regardless where they are located, are prohibited by law and policy of Forestal Atlántico Sur to offer or receive, pledge, payable or receivable, directly or indirectly, money or anything else value to any person, or entity (eg.*

representatives of political parties, public and / or private companies -contractors- services institutions, other) to obtain or retain undue, own or benefits company.

People who represent Guarané/FAS have a responsibility to visibly show our commitment to this policy and any documents the develop or complement for its effective implementation.

2.4.3 Project Management Partnerships/Team Development (G4.2)

Since 2012, FAS has been involved in several publications related to the fauna and flora of our country. In that year the first field manual sponsored by the company was published and later new publications were added, in addition to a brief manual on the wild boar. Its last edition was jointly published with the authors Raúl Lombardi and Giancarlo Geymonat, the Ministry of Tourism, DINAMA and UTE with the name "Fauna and Flora of the Forests of Uruguay".

2.4.4 Financial Health of Implementing Organization(s) (G4.3)

The project developer (Guanaré SA) is legally registered company in Uruguay, and according to the public information listed in National Enterprise Credit Information Publicity System, none of them were involved in nor complicit in any form of corruption such as bribery, embezzlement, fraud, favoritism, cronyism, nepotism, extortion, and collusion.

Project has secured more than 80% of funding needed to cover the total cash out before the project reaches breakeven. This has been demonstrated in the validation and verification process under VCS in attached Excel file and Memorandum prepared by Pedro Aramendía, CFO of Guarané: total cost of purchased land and plantation costs in 2013, represented 87% over the highest level of accumulated cash out in 'Guanaré' afforestation cash flows. The most reliable and substantial demonstration are Guarané's financial statements, in which it can be seen that the company has an enormous capital in assets (land and standing trees), demonstrating that funding for Guarané project has already been secured, in other words the funding needed to implement Guarané project has already been available and has already been executed. Guanare is in good financial health.

2.4.5 Avoidance of Corruption and Other Unethical Behavior (G4.3)

As legally registered companies, the project owner and other involved entities have the obligation to comply with relevant regulations, including anti-corruption law. The annual audit by the government makes sure that it operates with full compliance with Uruguay law and regulations.

Guanaré/FAS has a Forest Management General Manual where it is clearly explained that corruption and other unethical behaviors are totally forbidden.

2.4.6 Commercially Sensitive Information (Rules 3.5.13 – 3.5.14)

None of the project documents will be considered as commercially sensitive information, and all of the documentations are available to any stakeholders.

2.5 Legal Status and Property Rights

2.5.1 Recognition of Property Rights (G5.1)

All the land is privately owned by Guarané. Since these lands are all legal forestry land, the ownership is clear, and there is no dispute over land ownership in the project site

2.5.2 Free, Prior and Informed Consent (G5.2)

Prior to the project initiation, all of the project land was owned by Guarané. To make sure the successful development of the project, the project owner which had the ownership of forest land had presented all the requested documentation to government authorities. So, the project will not encroach uninvited on private property, community property or government property

2.5.3 Property Right Protection (G5.3)

If any relocation of habitation or activities is undertaken within the terms of an agreement, demonstrate that the agreement was made with the free, prior, and informed consent of those concerned and includes provisions for just and fair compensation.

Prior to the project implementation, the project area was degraded grasslands where farmers (private owners) used these lands for extensive beef production. Private owner's voluntary sold the lands to project owner, therefore the project activities will not lead to involuntary removal or relocation of property rights holders from their lands or territories, and does no force rights holder to relocate activities important to their culture or livelihood.

Due to its history, there are no native peoples in Uruguay. Only a new stream of people who have recognized themselves as descendants of indigenous communities, but who currently reside in cities.

Roque Roldán's estimate for a paper for the Inter-American Development Bank, presented in Fortaleza in March 2002 based on ILO data, estimated its total number at only 524 (0.02% of the Uruguayan population) even though it is a subject of debate among different historians, the historical reports of the different auditing houses that certify in Uruguay indicate that there is no indigenous population according to the definitions of FSC.

2.5.4 Identification of Illegal Activity (G5.4)

The forests are nursed by project staff regularly as a result of the implementation of the project, so there will not be illegal activities or deforestation of native forests inside Guarané/FAS farms or surrounding the project boundaries. The project benefits are gained from legal activities. Therefore, the project's climate, community and biodiversity impacts will not be affected by illegal activities.

2.5.5 Ongoing Disputes (G5.5)

Because the project owner signed legal purchase agreements on all the land, the forest land was developed reasonably and legally., so there is neither ongoing or unresolved conflicts or disputes over rights to lands, territories and resources nor any disputes that were resolved and recorded during the last twenty years.

2.5.6 National and Local Laws (G5.6)

The project activity complies with the National law and binding regulations, since forest investment has been approved by the General Forestry Directorate (entity of the Ministry of Agriculture, Livestock and Fishery) and the National Environment Directorate (entity of the Ministry of Housing, Territorial Planning and the Environment). The former ensures that the project activity complies with National Law N° 15.939 and all binding decrees and decisions¹⁶, while the second granted the environmental authorization

¹⁶ <http://www.mgap.gub.uy/portal/hgxpp001.aspx?7,20,417,O,S,0,,>

3 CLIMATE

3.1 Monitoring GHG Emission Reductions and Removals

3.1.1 Data and Parameters Available at Validation

Guanaré project has recently completed its thirteenth year. First areas were planted in 2006, and the last ones in 2012. The forests had one thinning at the age of 2 years. As stated above, the second thinning started to be done at age of 7 to 10 years). Most of the second thinning were already performed at the time the second monitoring event was done. Regarding pruning procedures there were normally implemented at ages of 2, 3 and 4 years plantations (3, 5 and 7-9 meters of height, as stated above).

As has been stated in PD, the methodology requires the assessment of sources of leakage due to activity displacement (conversion from grazing land to forestry). Application of the tool “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity” led to the conclusion that this source can be neglected. The application of the “Guidelines on conditions under which increase in GHG emissions related to displacement of pre-project grazing activities in A/R CDM project activity is insignificant”, which is one of the applicability conditions of the tool, resulted in the conclusion that the project will not cause any displacement of the activity occurring before project implementation. Therefore, leakage is assumed to be zero.

The information regarding aspects related to the non permanence risks of the project, it is presented as a separate document called “Non Permanence Risk Report”.

Data Unit / Parameter:	BEF _{2,j}
Data unit:	Dimensionless
Description:	Biomass expansion factor for conversion of stem biomass to above-ground biomass for tree species or group of species j
Source of data:	IPCC default values (e.g. Table 3A.1.10 of IPCC GPG-LULUCF 2003)
Value applied:	From 1.15 to 3.4, depending on the tree age
Purpose of the data:	N/A
Any comment:	BEFs in IPCC reports and national forest inventories are usually applicable to closed canopy forests. If applied to individual trees growing in open field.

Data Unit / Parameter:	CF _j
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Data unit:	t C t ⁻¹ d.m.
Description:	Carbon fraction of tree biomass for species or group of species j
Source of data:	The IPCC default value of 0.5 t C t ⁻¹ d.m.
Value applied:	0.5
Purpose of the data:	N/A
Any comment:	N/A

Data Unit / Parameter:	D _j
Data unit:	t d.m. m ⁻³
Description:	Basic wood density for species or group of species j
Source of data:	IPCC 2003. Table 3A.1.9-1 Basic wood densities of stem wood; Technical Note N° 8
Value applied:	0.46; 0.482 and 0.44 for <i>E. grandis</i> , <i>E. dunnii</i> y <i>P. taeda</i> respectively.
Purpose of the data:	N/A
Any comment:	N/A

Data Unit / Parameter:	R _j
Data unit:	Dimensionless
Description:	Root-shoot ratio for species or group of species j
Source of data:	Tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs"
Value applied:	0.30 to 0.31 depending on an equation which used the aboveground biomass as an input (specific values are presented in the ex-post carbon estimations) $R = \frac{\exp[-1.085 + 0.9256 \times \ln(A)]}{A}$

Purpose of the data:	N/A
Any comment:	The equation used to obtain R is in chapter 5.2 of this Monitoring Report.

Data Unit / Parameter:	$V_{TREE\ j\ p\ i}$
Data unit:	m ³
Description:	Stem volume of trees of species or group of species j in plot p in stratum i
Source of data:	Local Growth Models
Value applied:	N/A
Purpose of the data:	Value used to determine the project ex – ante carbon sequestration
Any comment:	In case of ex ante calculation, growth was estimated based on average growth according to specific site conditions presented in the project site. Local growth models were used for ex-ante estimation to describe the yield curve and determine the Long-Term Average of available carbon credits. Local growth models will not be used for ex-post estimation which were based on field measurements: DBH and height.

Data Unit / Parameter:	Bark volume
Data unit:	m ³ /ha
Description:	Bark volume of trees of species
Source of data:	Methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs"
Value applied:	15% of total stem volume
Purpose of the data:	N/A
Any comment:	The bark volume is a variable used in the ex-ante calculation. During field measurement, the volume of trees is estimated with bark when diameters are measured over bark.

Data Unit / Parameter:	$f_{IN,i}$
Data unit:	Dimensionless
Description:	Relative stock change factor for baseline input regime (e.g. crop residue returns, manure) in stratum i of the areas of land
Source of data:	Tables 6 of "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM Project" activities.
Value applied:	0.7
Purpose of the data:	N/A
Any comment:	N/A

Data Unit / Parameter:	SOC _{REF}
Data unit:	t C ha ⁻¹
Description:	Reference SOC stock corresponding to the reference condition in native lands (i.e. non-degraded, unimproved lands under native vegetation normally forest) by climate region and soil type applicable to stratum i of the areas of land.
Source of data:	Table 3 of "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM Project" activities.
Value applied:	88
Purpose of the data:	N/A
Any comment:	The ex-ante calculation for SOC change is the same calculation as in the verification, corrected by the modified total areas.

Data Unit / Parameter:	$f_{MG,i}$
Data unit:	Dimensionless
Description:	Relative stock change factor for baseline management regime in stratum i of the areas of land.
Source of data:	Table 6 of "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM Project" activities.
Value applied:	0.95
Purpose of the data:	N/A
Any comment:	The ex-ante calculation for SOC change is the same calculation as in the verification, corrected by the modified total areas.

Data Unit / Parameter:	$f_{LU,i}$
Data unit:	Dimensionless
Description:	Relative stock change factor for baseline land-use in stratum i of the areas of land; dimensionless.
Source of data:	Tables 6 of "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM Project" activities.
Value applied:	1
Purpose of the data:	N/A
Any comment:	The ex-ante calculation for SOC change is the same calculation as in the verification, corrected by the modified total areas.

Parameter:	$f_{IN,i}$
Data unit:	Dimensionless
Description:	Relative stock change factor for baseline input regime (e.g. crop residue returns, manure) in stratum i of the areas of land

Source of data:	Tables 6 of "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM Project" activities.
Value applied:	0.7
Purpose of the data:	Used to estimate the carbon sequestration in soils
Any comment:	The ex-ante calculation for SOC change is the same calculation as in the verification, corrected by the modified total areas.

Data Unit / Parameter:	Dead Wood
Data unit:	t C ha ⁻¹
Description:	Conservative default factor expressing carbon stock in dead wood as a percentage of carbon stock in tree biomass
Source of data:	Tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities".
Value applied:	8% of carbon stock in trees biomass
Purpose of the data:	N/A
Any comment:	N/A

Data Unit / Parameter:	Litter
Data unit:	t C ha ⁻¹
Description:	Conservative default factor expressing carbon stock in litter as a percentage of carbon stock in tree biomass
Source of data:	Tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities"
Value applied:	4% of carbon stock in trees biomass
Purpose of the data:	N/A
Any comment:	N/A

3.1.2 Data and Parameters Monitored

Data Unit / Parameter:	A_i
Data unit:	Ha
Description:	Area of stratum i
Source of data:	Monitoring of strata and stand boundaries was done using a Geographical Information System (GIS).
Description of measurement methods and procedures to be applied:	Strata area were measured based on cartography documents, related with GIS.
Frequency of monitoring/recording	Every time the project boundaries are modified. when disturbances events take place, the project participants shall re-built the stratum and add the area of the project under disturbance in the GIS.
Value monitored:	18,576 ha
Monitoring equipment:	Garmin GPS- ArcMap
QA/QC procedures to be applied:	N/A
Calculation method:	N/A
Comments:	As stated in the PD Guanáre continuously monitors the area of the forest plantations. The value was used in equations N° 3, 12 y 24 of the Methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" (Version 03.0.0), Equations N° 7 and 13 of the Methodological tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities" (Version 02.0.0)

Data Unit / Parameter:	DBH
Data unit:	Cm
Description:	Diameter at Breast Height of tree
Source of data:	Field measurements

Description of measurement methods and procedures to be applied:	DBH is measured at 1.3 m above ground, over the bark. In case of stem deformation at this level, measurement was done over the deformation once the stem took its normal shape, with the purpose of being conservative. DBH was measured in all trees within the plots.
Frequency of monitoring/recording	Every tree within sample plots
Value monitored:	3387 values in 16 strata in 127 plots
Monitoring equipment:	This image corresponds to the used caliper, model “Mantax Blue” of Haglof, Sweden. 
QA/QC procedures to be applied:	A quality control procedure consisted in staff member periodical training. The staff members were trained to make DBH measurements without errors: using firstly a measuring tape (to determine exactly where 1, 3 meters height is located in their own bodies). Afterwards, they measured DBH in front of experts and member’s staff to achieve procedures consistency. Quality assurance of DBH measurement was done through statistical analysis with other plots (see chapter 2.2 Project Description Deviations). This is also useful to demonstrate that sample plots, on which carbon stock is measured, were not treated differently from the rest of the forests (for instance treated with irrigation or fertilizers). Instruments were checked and tested before starting the verification process. Items checked: -Correct visualization if numbers in the calliper. -The straightness of the calliper and the lack of mechanical problems. The calliper length is not a problem since it is impossible the equipment stretches.

	<i>Bark that is not stick to the stem was removed before measuring.</i> Measurement was done once per tree, in one position pointing to the center of the plot with the caliper's blade.
Calculation method:	N/A
Comments:	The trees are considered to be inside the plot if more than 50% of DBH is inside the plot. Diameters were measured by taking one measure, always pointing the instrument's shaft in direction to the middle of the plot. Parameter used indirectly in Equation N° 1 of the Methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" (Version 03.0.0); for calculation of basal area and then volume.

Data Unit / Parameter:	H
Data unit:	m
Description:	Height of trees within sample plot
Source of data:	Field measurement
Description of measurement methods and procedures to be applied:	According to the most common practices applied in biometrics, the diameters of existing trees within a sampling plot are grouped in different classes. The different classes are formed by expert judge based on results obtained from DBH measurement. Following, one tree from the largest diameter class and one tree from the lowest diameter class will be measured in height and finally 5 additional trees are also measured trying to cover uniformly all the diameter variation range between both mark tree classes. The measurement was done according to the following procedure: Identification of the individual tree to measure.

	at the same level (independently that the measuring equipment corrects the value according to the slope). The expert always tried to be situated at a certain distance to the tree equivalent to the height of the tree.
Frequency of monitoring/recording	Every tree within sample plots and 5 trees outside the plot of one plot per stratum
Value monitored:	3387 different height values
Monitoring equipment:	Clinometer. See the following figure of the type of clinometer used during the monitoring events to measure tree heights. This image represents an electronic clinometer of Haglof, Sweden. 
QA/QC procedures to be applied:	Quality assurance of height measurement was done through statistical analysis with other plots (see chapter 2.2 Project Description Deviations). This will also be useful to demonstrate that sample plots measured for carbon stocks calculations were not treated differently (for example with irrigation or fertilizers) from the rest of the forests. When referring to this electronic device, it is recommended to check the correct visualization of the display. The clinometer was always kept in safe places in order to avoid display rupture. The equipment was always full charge of batteries and back up batteries were always available in case of emergency. Make control measurements using all involved equipment (human error should be minimized at minimum with well training and cross-checked control measurement activities).
Calculation method:	N/A

Comments:	Parameter used indirectly in Equation N° 1 of the Methodological tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities” (Version 03.0.0); for volume calculation. In this project there were measured the heights of every tree, because measuring was taken into account for Continuous Forest Inventory (Inventario Forestal Continuo - IFC).
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Data Unit / Parameter:	D _n
Data unit:	Cm
Description:	Diameter of the n th piece of lying dead wood intersecting a transect line
Source of data:	N/A
Description of measurement methods and procedures to be applied:	N/A
Frequency of monitoring/recording	N/A
Value monitored:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	N/A
Calculation method:	The estimation of dead wood (standing dead wood, lying dead wood and stump) was done using a conservative default-factor method stated in the tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R DM project activities”, a percentage of carbon stock in tree biomass (8% according to the Temperate biome)
Comments:	N/A

Data Unit / Parameter:	DWR LI, p, i
Data unit:	Dimensionless
Description:	Dry-to-wet weight ratio of the litter sub-sample collected from plots
Source of data:	
Description of measurement methods and procedures to be applied:	N/A
Frequency of monitoring/recording	N/A
Value monitored:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	N/A
Calculation method:	N/A
Comments:	The variable was classified in the PD as a variable to be monitored. However, given the simplicity and costly-effective mechanism to determine dead wood based on a conservative default value, it was decided not to monitor the variable.

Data Unit / Parameter:	N
Data unit:	Dimensionless
Description:	Total number of wood pieces intersecting the transect
Source of data:	N/A
Description of measurement methods and procedures to be applied:	N/A
Frequency of monitoring/recording	N/A
Value monitored:	N/A

Monitoring equipment:	N/A
QA/QC procedures to be applied:	N/A
Calculation method:	N/A
Comments:	The variable was classified in the PD as a variable to be monitored. However, given the simplicity and costly-effective mechanism to determine dead wood based on a conservative default value, it was decided not to monitor the variable

Data Unit / Parameter:	Ap,i										
Data unit:	m ²										
Description:	Area of sampling plot										
Source of data:	Field measurement										
Description of measurement methods and procedures to be applied:	The center of the plot was marked with the assistance of a GPS. One staff member stayed at the center of the plot taking notes of the diameters and heights measured while the other expert of the team walked inside the plot measuring them. Both experts were always connected with a measuring tape, and every tree measured was previously checked in order to determine if the distance to the center was minor to the radius of the plot (12.62 m radius of a circular plot of 500m²). Size of the plots depends on the pre-estimated trees density. For this monitoring period, plot sizes were: <table border="1"> <thead> <tr> <th>Plot Size (m2)</th><th>N Plot</th></tr> </thead> <tbody> <tr> <td>250</td><td>1</td></tr> <tr> <td>500</td><td>20</td></tr> <tr> <td>1000</td><td>106</td></tr> <tr> <td>Total</td><td>127</td></tr> </tbody> </table>	Plot Size (m2)	N Plot	250	1	500	20	1000	106	Total	127
Plot Size (m2)	N Plot										
250	1										
500	20										
1000	106										
Total	127										
Frequency of monitoring/recording	Every plot measured in Guanaré, 127 in total.										
Value monitored:	N/A										

Monitoring equipment:	N/A
QA/QC procedures to be applied:	In order to avoid over and under-estimations, every tree was considered inside the plot when the radius of the plot overpassed the 50% of the diameter of every tree.
Calculation method:	Example for 500m ² plot: $500m^2 = r^2(12.62).\pi$
Comments:	Sample plots are permanent and circular. The plots were laid down in a shapefile, positioned systematically with a random start. The location of the plots within the forest plantation was done with a GPS. The area of each plot is not a variable but a fixed value, but must be measured by its radius in order to determine the variable "number of trees within the plot".

Data Unit / Parameter:	B _{LI_WET,p,i}
Data unit:	Kg
Description:	Wet weight of the composite litter sample
Source of data:	N/A
Description of measurement methods and procedures to be applied:	N/A
Frequency of monitoring/recording	N/A
Value monitored:	N/A
Monitoring equipment:	N/A
QA/QC procedures to be applied:	N/A
Calculation method:	N/A
Comments:	The variable was classified in the PD as a variable to be monitored. However, given the simplicity and costly-effective mechanism to determine litter based on a conservative default value, it was decided not to monitor the variable.

3.1.3 Monitoring Plan

The aim of the Monitoring Plan is to record and monitor a number of different parameters in order to ensure that the project followed the corresponding methodology in the validated and registered PD and that the inputs to the carbon calculations are both accurate and up-to-date.

Monitoring was done according to the consolidated methodology AR-ACM 0001 "Afforestation and reforestation of degraded lands" (version 05.2.0, EB 65). The PD was registered mentioning the version 5.1.1 of the referred methodology but the applicable version is the one stated above. Analysis of its applicability conditions have been developed in section 2.2 of the PD.

Monitoring stage comprised gathering information, performing calculations and making estimations of GHG removals. In this monitoring event, it is ensured that commonly established principles of forest inventory and management were put into practice. All data gathered as part of the monitoring plan was archived electronically and will be kept at least for two years after the end of the crediting period.

According to the methodology applied, monitoring covered carbon stock changes for living above-ground, litter and dead wood pools. Below ground biomass was estimated indirectly based on above-ground biomass measurements and litter and dead wood were also estimated as a percentage of carbon stock in tree biomass.

Monitoring events were developed in the period of time comprised between April 2018 and December 2018. The third party involved in this stage was "Pike & Co. Consultora Forestal" which is a Uruguayan consultancy and services company, specialized in forest inventories. The reason why the measuring events were done in such extended period of time was that they were made at the same time that the continuous forest inventory: "Inventario Forestal Continuo" (IFC), that this company performed yearly to Guarané.

Pike & Co.'s staff was compound by 8 persons during the monitoring events. They worked divided by project zones in two groups: 4 members were assigned to Cerro Largo zone and another 4 were assigned to Treinta y Tres zone. Besides, those groups were sub-divided, resulting in two teams composed by 2 persons each. During this work the locomotion consisted of two trucks and four motorbikes.

Sampling design and stratification

Project boundaries were defined at the beginning of project activity and will be updated along the crediting period, since boundaries may vary or new strata may be created after disturbances effects (pests, droughts, fire) or by updated high resolution satellite images that became available. Geographic coordinates are established, recorded and archived. A Geographic Information System was implemented for the validation and is updated for verification. All the geographical information will be available for the verification team.

With the purpose of developing the monitoring plan, Guarané was stratified into 16 strata. Stratification was done considering region; age class (plantation date); and species planted (*E. dunnii*, *E. grandis*, *E. tereticornis* and *P. taeda*).

Permanent sampling plots are selected, since these are considered to be more efficient for estimating changes in carbon stocks by filtering out any variance due to plot effect. The plots allocation is registered in a GIS and can always be located. The plots were established at the field with a stick painted in white at the center of the plot and are highly probable to be found after two or more years.

The location of the plots followed the guidance given by the corresponding methodological tool, as well as IPCC Good Practice Guidance for LULUCF (2002), chapter 4.3. An Arc-Map software (NAPA) developed by Pike & Co. was used to randomly locate the permanent sampling plots (location is systematic, with

random start). This software has a feature to enable the location of all plots on forest areas (i.e., it avoids plots from being located in firebreaks and other non-planted areas). The map with the location of the sampling plots was loaded on the GPS receptors used by forest inventory crews, so that they can reach the plots accurately. An example of the software output for two contiguous strata is shown in Fig. 6.

The following table shows the number of plots calculated ex-ante and ex-post by strata.

Table 6. Number of plots per stratum.

Stratum	Stratum	Species	N°plots per stratum estimated in PD	Measured Field Plots
7	Las cañas 2011 grandis	<i>E. grandis</i>	1	2
8	Las cañas 2009 grandis	<i>E. grandis</i>	2	2
9	Las cañas 2008 grandis	<i>E. grandis</i>	30	29
10	Las cañas 2007 grandis	<i>E. grandis</i>	24	31
11	R/G 2007 taeda	<i>P. taeda</i>	1	2
12	R/G 2009 taeda	<i>P. taeda</i>	1	3
13	R/G 2009 tereticornis	<i>E. tereticornis</i>	1	1
14	R/G 2006 grandis	<i>E. grandis</i>	2	4
15	R/G 2007 grandis	<i>E. grandis</i>	4	5
16	R/G 2011 grandis	<i>E. grandis</i>	2	3
17	R/G 2008 grandis	<i>E. grandis</i>	5	5
18	R/G 2009 grandis	<i>E. grandis</i>	17	19
19	Tup 2009 grandis	<i>E. grandis</i>	4	5
20	Tup 2011 grandis	<i>E. grandis</i>	1	2
21	Tup 2008 grandis	<i>E. grandis</i>	2	2
22	Tup 2007 grandis	<i>E. grandis</i>	10	12
TOTAL			109	127

As shown in Table 6, the number of plots finally measured during the field work was higher than the number calculated ex-ante. The reason of this increment was:

- If the ex-ante calculated number of plots per strata was 1, an additional plot was included.
- Due to an initial wrong ex-ante estimation, more than the requested number of plots were measured in some strata (example stratum 10)
- During ex-ante calculations, Guanaré was planning to install *E. grandis* plantations on year 2010 in Las Cañas region (Stratum 6). Finally, this plantation was cancelled.



Figure 9. Example of location of permanent sampling plots.

Each carbon pool was measured following the methodology procedures and IPCC Good Practice Guidance for LULUCF (2003). Carbon stocks in above and below ground biomass of trees are estimated by applying the BEF method, which calculates the biomass of trees of each species per unit area in each stratum at a given point of time, based on the following three dimensions: diameter, basal area and height, obtained from field measurements. By applying BEF method, volume equations are used to convert tree dimensions to stem volume of trees based on DBH and height measurement in each plot. Stem volume of trees is then converted to above-ground and below-ground tree biomass using basic wood density (D), biomass expansion factor (BEF) and root-to-shoot ratio (R). Default carbon fraction (CF) value was used in order to estimate the carbon stock.

Prior to the start of the inventory, all equipment used during the field work should be checked and calibrated.

To collect field data, Pike & Co.'s staff used tablets with the Optimber Forest Mobile Software (<https://optimber.com.br/forest-mobile/>).

The project will manage the sampling uncertainties evaluating and trying to reduce the type of errors.

Managing data quality

A Quality Control System will be implemented for routinely checking for data consistency, correctness and completeness; for identifying and correcting errors and omissions; and for properly documenting and archiving data and documentation related with the monitoring activities. Quality Assurance measures will be implemented, in order to verify that data quality objectives are met, and in general, to support the effectiveness of the QC system.

QA/QC plan includes a number of activities aiming at achieving accuracy and precision of data, and transparency of procedures, such as:

- -development of Standard Operating Procedures for field measurements, clearly defining all staff responsibilities and raising awareness about the importance of each tasks for producing reliable results;
- -proper training of field measuring teams;
- -periodical check and maintenance of measuring instruments; all mechanical, optical and electronic instruments will be periodically checked by qualified personnel. In addition, consistency on field data will be permanently monitored, in order to detect any malfunctioning.
- -perform area measurements using different methods (e.g., aerial photograph, cadastral data, satellite images, ground measurements), and check for accuracy and consistency.
- To collect field data, Pike & Co.'s staff used tablets with the Optimber Forest Mobile Software
- -development of electronic worksheets for data processing; special software may be designed for the monitoring process, with graphical capabilities and data consistency checking functions.
- -fully document and archive field and processed data, as well as all procedures used; to ensure data preservation, all relevant data, data analyses, static factors, photos, images, GIS output and other data shall be stored in electronic and paper format.
- -establish procedures for eliminating inconsistent or erroneous field data; perform random checks of field measurements in order to detect measurement errors or systematic biases; some of such measures are: 1) use field computers and automatic data loggers (e.g., electronic recording caliper), and hire independent workers for transferring field data to digital media. (IPCC GPG 5.3.6.1); 2) Quality assurance of DBH and height measurement was done through statistical analysis with other plots (see chapter 2.2 Project Description Deviations);
- -establish procedures to ensure representativeness of PSPs (i.e., to avoid biased estimates due to differential management of PSPs); The allocation of samples in the field will be systematic with random start, so, the differences between population and sample mean and variance will tend to be neutralized, as the sample fraction is wide enough; identification of plots in the field should be coded and apparent only to the monitoring team; periodical checks will be performed on simple measurements (e.g., DBH) outside PSPs, in order to correlate these values with plot measurements;
- -development of allometric equations and emission/C-stock-change factors; project-specific equations and stock change factors would minimize errors, as compared to the use of default factors.
- -check project data with benchmarks; this will help detecting possible inconsistencies in data collection or processing.

Operational and management structure

The monitoring was coordinated by the property manager and implemented by a qualified contractor. One staff member of Guarané was identified as the focal point.

Entity applying monitoring plan

Company: 'Guanaré S.A.'
Address: Gabriel Otero 6559
City: Montevideo
Zip code: 11.000
Country: Uruguay
Phone: (00598) 26061430

Monitoring events and initial data processing were developed by the consultant Pike & Co.

Entity applying monitoring event in 2012-2012 and in 2013-2018:

Company: 'Pike & Co. Consultora Forestal'
Phone: +598 2 6056234

www.pikeconsultora.com.uy



Figure 10: Measuring events on Guanaré's plantations.

3.1.4 Dissemination of Monitoring Plan and Results (CL4.2)

Along with the project implementation, the project documentation will be published on VCS and CCB website for all stakeholders, so that they can obtain the detailed project information and development progress. Also, the summary of project description in local language will also be disseminated to local communities through local government, as long as the summary of monitoring reports during each verification.

Also, the full project documentation will be published on Guanaré/FAS website for public comments, together with specific brochures describing the project characteristics and benefits.

3.2 Quantification of GHG Emission Reductions and Removals

3.2.1 Baseline Emissions

Since continuation of an activity that has been applied without changes for more than 20 years has been selected as the baseline scenario, it is assumed, in agreement with IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry (2003) that the net GHG removals by sinks in the baseline equals zero.

3.2.2 Project Emissions

Guanaré project activity does not have GHG emissions. However, this chapter refers to the removals of GHG performed by this project activity.

Net anthropogenic GHG removals by sinks is estimated as the actual net GHG removals by sinks minus the baseline net GHG removals, minus leakage. The following general formula described in the methodology is used to calculate the net anthropogenic GHG removals by sinks of an A/R project activity, in t CO₂-e:

$$C_{AR-CDM} = \Delta C_{ACTUAL} - \Delta C_{BSL} - LK$$

Where:

C_{AR-CDM} Net anthropogenic GHG removals by sinks; t CO₂-e.

ΔC_{ACTUAL} Actual net GHG removals by sinks; t CO₂-e.

ΔC_{BSL} Baseline net GHG removals by sinks; t CO₂-e.

LK Total GHG emissions due to leakage; t CO₂-e.

The actual net greenhouse gas removals by sinks were estimated using the following equation described in the methodology:

$$\Delta C_{ACTUAL} = \Delta C_P - GHG_E$$

Where:

ΔC_{ACTUAL} Actual net greenhouse gas removals by sinks; t CO₂-e.

ΔC_P Sum of the changes in above-ground and below-ground tree biomass, dead wood, litter and soil organic carbon stocks in the project scenario; t CO₂-e.

GHG_E Increase in GHG emissions as a result of the implementation of the proposed A/R CDM project activity within the project boundary; t CO₂-e.

The following formula described in the methodology is used in order to estimate GHG emission:

$$GHG_E = \sum_{t=1}^{t^*} GHG_{E,t}$$

Where:

GHG_E Increase in GHG emissions as a result of the implementation of the proposed A/R CDM project activity within the project boundary; t CO₂-e.

$GHG_{E,t}$ Increase in non-CO₂ emissions due to biomass burning of existing vegetation as part of site preparation in year t; t CO₂-e.

t 1,2,3,.....,t* years elapsed since the start of the A/R CDM project activity.

The tool for “Estimation of non-CO₂ GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity” has been considered. The use of fire for site preparation and/or to clear the land of harvest residue prior to replanting is specifically excluded from the project management and therefore project emissions are estimated as zero.

Carbon stock changes

ΔC_P is the sum of the changes in above-ground and below-ground tree biomass, dead wood, litter and soil organic carbon stocks in the project scenario. For ex-ante estimation, all pools were accounted. Following is presented the equation for the estimation of ΔC_P . Calculations are described below.

$$\Delta C_P = \Delta C_{TREE} + \Delta C_{DW} + \Delta C_{LI} + \Delta C_{SOC}$$

Where:

ΔC_P Change in carbon stock in all selected carbon pools in the project scenario, t CO₂-e.

ΔC_{TREE} Change in carbon stock in tree biomass in project, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”; t CO₂-e.

ΔC_{DW} Change in carbon stock in dead wood biomass in project, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities”; t CO₂-e.

ΔC_{LI} Change in carbon stock in litter biomass in project, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities”; t CO₂-e.

ΔC_{SOC} Change in carbon stock in SOC in project, in areas of land meeting the applicability conditions of the tool “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities”, as estimated in the same tool; t CO₂-e.

Biomass carbon pools

Above and below ground biomass have been estimated according to the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity”. Carbon estimations in trees are based on field measurements of monitored parameters, chapter 3.2 of the Monitoring Report. Estimations are archived as part of the project verification and will be available for the verification team.

The aboveground biomass corresponds to tree biomass, no shrubs are considered for estimation. The method used for estimating change in carbon stock in trees is the “stock change method”. Change in carbon stock in trees in two successive points in time is calculated as the difference between the two estimated stocks. As this is the first monitoring report the carbon values in every pool is the final result, the starting point of the crediting period is zero carbon.

As in ex-ante estimations, the following equations were used in order to estimate above and below ground biomass ex-post measurements:

$$B_{TREEj,p,i,t} = V_{TREEj,p,i,t} * D_j * BEF_{2,j} * (1 + R_j)$$

Where:

$B_{TREEj,p,i,t}$ Biomass of trees of species j in sample plot p of stratum i at late 2012 – early 2013.
 $V_{TREEj,p,i,t}$ Stem volume of tree species using field measurements of tree parameters (DBH and height), default values (tree shape factor) and complemented with worksheets data processing (interpolation of not-measured heights); m³.

The applied equation for volume estimation is no other formula than the cylinder volume equation corrected by a taper value:

$$V_{TREE} = \text{Basal area} \times \text{height} \times \text{TSF}$$

Where:

$$\text{Basal area} = \frac{\pi \times DBH^2}{4}$$

Being DBH Diameter at Breast Height and TSF the tree shape factor value.

According to the methodology, for ex-post estimation, the volume equation used must be demonstrated to be appropriate for the purpose of estimation of tree biomass by applying the tool “Demonstrating appropriateness of volume equations for estimation of aboveground tree biomass in A/R CDM project activities”. The appropriateness of the equations is demonstrated through the satisfaction of the following conditions, in the sense that the formula is very generic and applicable in any case:

- The equation is used both in the national forestry inventory and the national GHG inventory of Uruguay, and
- The equation has been used in commercial forestry sector in Uruguay for 10 years or more.

The tree shape factor (TSF) used is 0.5 (the same generic value for all species that the project comprises) and the appropriateness of it was demonstrated during validation, it is a parameter available at validation and is not monitored. It is neither mentioned in the methodology as a monitored parameter.

However, it is preferred to demonstrate the appropriateness of this value with some other documents that support it¹⁷.

D_j Basic wood density of tree species j. The species j corresponds to the species used in this project: *Pinus taeda*, with a basic density of 44 t.d.m./m³; *Eucalyptus grandis* with a basic density of 46 t.d.m./m³; *Eucalyptus dunnii* with a basic density of 482 t.d.m./m³ and *E. tereticornis* with a basic density of 560 t.d.m./m³. This parameter was established as "available at validation" in the Project Design, thus it was not measured or monitored. The value was obtained and corresponds to default value for *Pinus pinaster* in IPCC LULUCF Good Practice Guidance (2003), Table 3A.1.9-1 (http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/Chp3/Anx_3A_1_Data_Tables.pdf).

As also established in the validation report, the applied value is also mid range in values for loblolly pine wood density published by Oregon State.

$BEF_{2,j}$ Biomass expansion factor for conversion of stem biomass to above-ground tree biomass, for tree species j (*Pinus taeda*, *Eucalyptus grandis*, *Eucalyptus tereticornis* and *Eucalyptus dunnii*); dimensionless. The BEF2 is to be used in connection to growing stock biomass data and not with increment data, as described in chapter 3.2 of the GPG for LULUCF (2003)). The value was also available at validation and not monitored, it ranged from 3.4 (for young forest) to 1.15 (mature forests) and the exact values applied for different plantation dates are reported in the final worksheet for carbon stock calculation.

R_j Root-shoot ratio for tree species j; dimensionless. The values applied were taken from the suggested equation from the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs":

$$R = \frac{\exp[-1.085 + 0.9256 \times \ln(A)]}{A}$$

Where A is aboveground biomass content (t.d.m./ha). The aboveground biomass was calculated per year of plantation and different values were obtained. See Table 7 with the results of the estimation.

Table 7. Aboveground biomass and R values estimated by year of plantation for *Pinus taeda*.

Year of plantation	Aboveground biomass (t.d.m/ha)	R estimated based on the aboveground biomass measurement (dimensionless)
2007	148,30	0,233
2009	73,14	0,246

Table 8. Aboveground biomass and R values estimated by year of plantation for *E. grandis*.

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¹⁷ "Proyecto Regional de alternativas para la inversión forestal", Cap. VI, cuadro 6.7 (<http://www.oas.org/dsd/publications/Unit/oea20s/ch08.htm>)

Year of plantation	Aboveground biomass (t.dm/ha)	R estimated based on the aboveground biomass measurement (dimensionless)
2006	180,35	0,230
2007	183,87	0,229
2008	195,12	0,228
2009	184,93	0,229
2011	156,40	0,232

Table 9. Aboveground biomass and R values estimated by year of plantation for E. dunnii.

Year of plantation	Aboveground biomass (t.dm/ha)	R estimated based on the aboveground biomass measurement (dimensionless)
2006	180,35	0.230

Table 10. Aboveground biomass and R values estimated by year of plantation for E. tereticornis.

Year of plantation	Aboveground biomass (t.dm/ha)	R estimated based on the aboveground biomass measurement (dimensionless)
2009	180,35	0.230

Finally, the carbon stock in tree biomass within the project boundary is estimated as follows:

$$C_{TREE} = \frac{44}{12} * B_{TREE} * CF_{TREE}$$

Where:

- C_{TREE} Carbon stock in tree biomass within the project boundary; t CO₂-e.
 B_{TREE} Biomass of trees within the project boundaries.
 CF_{TREE} Carbon fraction of tree biomass; 0.5 t C td.m-3.

Soil organic carbon

Estimations of soil organic carbon (SOC) stocks were done in accordance to the “Tool for the estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activity”. As suggested by the tool, it is assumed that the implementation of the project activity increases the SOC content of the lands from the pre-project level to the level that is equal to the steady-state SOC content under native vegetation. The increase in SOC content in the project scenario takes place at a constant rate over a period of 20 years from the year of planting. The project meets the applicability conditions of this tool -as demonstrated in validation- since the areas of land to which the tool is applied do not fall into wetland category, do not contain organic soils and are not subject to any of the land management practices and application of inputs listed in the tool.

Litter remains on site and is not removed and soil disturbance is in accordance with appropriate conservation practices, limited to site preparation and not repeated within 20 years.

Table 11: Parameters used for estimation of Soil Organic Carbon (SOC).

Parameter	Symbol	Value	Source (SOC estimation tool, V01.1.0)
Reference SOC (tC/ha)	$SOC_{REF,i}$	88	Table 3 HAC soils, warm temperate
Land use factor	$f_{LU,i}$	1	Table 6 All permanent grassland
Management factor	$f_{MG,i}$	0.95	Table 6 Moderately degraded grassland Overgrazed or moderately degraded grassland, with somewhat reduced productivity (relative to the native or nominally managed grassland) and receiving no management inputs.
Input factor	$f_{IN,i}$	1	Table 6 Grassland without input of fertilizer

SOC at the beginning of the project ($SOC_{INITIAL,i}$) is estimated by multiplying the factors in Table 11 by the reference SOC. As per the tool, a loss in SOC ($SOC_{LOSS,i}$) is applied in the case that soil disturbance occurs on more than 10 per cent of the land area, which is the case of Guanáre project. The following methodological formula is used for calculating the annual change in SOC stock:

$$dSOC_{t,i} = \frac{SOC_{REF,i} - (SOC_{INITIAL,i} - SOC_{LOSS,i})}{20}$$

Where:

$dSOC_{t,i}$ The rate of change in SOC stock in stratum i of the area of land, in year t; t C/ha/yr.

$SOC_{REF,i}$ Reference SOC stock corresponding to the reference condition in native lands by climate region and soil types applicable to stratum i of the area of land; tC/ha.

$SOC_{INITIAL,i}$ SOC stock at the beginning of the A/R CDM project activity in stratum i of the areas of land.

$SOC_{LOSS,i}$ Loss of SOC caused by soil disturbance attributable to the A/R CDM project activity, in stratum i of the areas of land; tC/ha.

From the project start day there has passed 2.190 days and the correspondent carbon sequestration is presented to the verification team in the calculation worksheet.

Litter and Dead Wood

Estimations were done in accordance with the tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities” using a default and conservative value of 8% and 4% of carbon stock in tree biomass for dead wood and litter respectively.

3.2.3 Leakage

As it has been stated in PD document, the methodology requires the assessment of sources of leakage due to activity displacement (conversion from grazing land to forestry). Application of the tool “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity” led to the conclusion that this source can be neglected. The application of the “Guidelines on conditions under which increase in GHG emissions related to displacement of pre-project grazing activities in A/R CDM project activity is insignificant”, which is one of the applicability conditions of the tool, resulted in the conclusion that the project will not cause any displacement of the activity occurring before project implementation. The project accomplishes the following conditions:

(a) The total area expected to be displaced is more than 5% of the entire A/R CDM project activity or more than 50 ha, and the $n - a$ ha (where “n” is the area in ha expected to be displaced and “a” is 5% of the total project area or 50 ha) are displaced to:

- i. Areas of land that can be identified as degraded or degrading.
- ii. Existing grasslands with the carrying capacity that allows for accommodation of the displaced animals during the entire period of displacement.

(b) The total area to be displaced corresponds to the total area of the project 20.284 ha, meaning that the grazing area displaced is 100% and also more than 50 ha, then the value $n - a$ is $20.284 - (5\% \text{ of } 20.284 = 1.014) = 19.269$ ha. This area, used for grazing cattle, can be identified as degraded.

(i) The grazing cattle displaced by Guanaré project will be to neighbor areas. One of the main explanations are that the project areas are not located in only one farm but in 6 different areas (as seen in figure 1. It was already demonstrated that the project areas are degraded or degrading, and because the grazing animals are moved to neighbor zones (to control during on-site validation visit), the same conditions applies to this specific soil.

(ii) Moreover, the animals will be displaced only for 1 to 2 years and lately returned to the same site. The silvicultural management practice does not permit the animals to be grazing at the same time with the small trees, to avoid any physical damages. When the trees are big enough 1 or 2 years, the animals are reintroduced. During the period when the animals are displaced, the grasslands to where they go have the carrying capacity, and the majority of farms in the project area (64%) are dedicated to beef cattle production. In Uruguay 80% of the land is dedicated to grazing animals.

(c) The total number of animals expected to be displaced is more than 40 LSU, and the $n - 40$ LSU (where “n” is the total number of animals, expressed in LSU, which are expected to be displaced) are displaced to:

- i. Areas of land that can identify as degraded or degrading
- ii. Existing grasslands with the carrying capacity that allows for accommodation of the displaced animals during the entire period of displacement
- iii. Slaughterhouses

Option (i) and (ii) were already demonstrated above. Option (iii) is also valid for the case of Guarané project. This is a common practice in the cattle beef production in Uruguay.

Most of the supporting evidence for the above paragraph demonstration can be obtained through the observation of the Uruguayan farms and it’s cattle production system during on-site validation.

Beyond all, we believe the application of the tool “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity” is not necessary. The application of the “Guidelines on conditions under which increase in GHG emissions related to displacement of pre-project grazing activities in A/R CDM project activity is insignificant”, which was superseded by the previously mentioned tool, resulted in the conclusion that the project will not cause any displacement of the activity occurring before project implementation.

Beef cattle breeding (cow-calf) was the dominant activity in the pre-project land (Eastern hilly areas of Uruguay). Cattle were based on a breeding herd where heifers are mostly placed with bulls at the age of 3 years. Sales include culling cows to be fattened, surplus heifers, and calves (at weaning). Average production is 33 kg per ha per year¹⁹.

Considering the area subject to be afforested represents only 45-50% of the total area owned by the project participant (lowlands, biological corridors, roads, rocky areas, settlements, among others, complete the rest of the land use), the displacement of grazing activity can be considered neglected because:

- Uruguayan grazing activity is completely associated with forestry. A larger amount of cattle, more than what is usual, is put within the project area during some months to substantially reduce the amount of above ground biomass minimizing the use of glyphosate (herbicides for site preparation) during site preparation for the forest establishment
- During site preparation and for a maximum of two years after forest establishment, cattle is put apart in similar areas (commonly in neighbors farms) to prevent cattle from harming the small trees. During the period in which cattle loss the winger part of leather, it is very common the animal uses fences or trees to scratch. After these two years cattle is reintroduced and managed in a silvopastoral system with trees (both activities complement each other). The impact of cattle displacement is reduced to two years over thirty-year rotation.
- The total area under project activity was not afforested in the same year. The impact of this staggered plantation plan substantially reduces the eventual grazing displacement, cattle that has to be moved to other areas can be put in farms that were not afforested or in areas that has more than two years with forestry owned by Guarané.

- Silvopastoral production is conducted during twenty-eight years of the thirty year rotation period. Silvopasture combines trees with forage and livestock production. The trees are managed for high-value sawlogs and, at the same time, provide shade and shelter for livestock and forage, reducing stress and increasing forage production



Figure 11. Silvopastoral system in Uruguay.

- During one and a half year –maximum two –cattle is put in existing grasslands with the carrying capacity that allows for accommodation of the displaced animals during this period of displacement. These are areas with no forest (80% of Uruguayan surface is pasture) meaning that deforestation never occurs when introducing cattle in farms. And these areas can be identified as degraded.

Existing cattle in the pre-project situation may either stay within project boundaries or in an area controlled by project participant, or be sold to the market (calves and surplus heifers are normally sold in the market for fattening on other grazing areas, while cows, heifers and a reduced number of bulls are sold to slaughterhouses). It is Guanaré's policy that land owners can continue with their activities for a certain period after the purchase of the land, so that they have time to reduce the population of their cattle. In some cases, they may even stay in the land.

3.2.4 Net GHG Emission Reductions and Removals

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2013	0	1.382.754	0	1.382.754
2014	0	1.469.820	0	1.469.820
2015	0	1.162.199	0	1.162.199
2016	0	784.071	0	784.071
2017	0	679.375	0	679.375
2018	0	720.181	0	720.181
Total	0	6.198.401	0	6.198.401

As informed in section 2.2.3 of this MR, on July 2018, Guanaré sold 1.707 hectares of forest plantations (the total area of the Cerro Chato/Valentines stratum). This area is not included in this monitoring report and in the net GHG emission reductions and removals calculations. However, removals were claimed on this land in the preceding monitoring period (2006-Dic 2012). The total removals of this area for the period 2006-Dic2012 were 156.165 tCO₂e (excel file with these calculations was delivered to VVB). Also, a detailed Loss-Event report was also delivered to VVB

Per vintage, these 156.165 tCO₂e are distributed in the following way:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2006	0	130	0	130
2007	0	389	0	389
2008	0	15.176	0	15.176
2009	0	10.740	0	10.740
2010	0	30.801	0	30.801
2011	0	28.322		28.322
2012	0	70.607	0	70.607
Total	0	156.165	0	156.165

Losses due to sold land should be deducted from net GHG ERRs in the current monitoring report. Because this land has issued VCUs, they should be counted as a loss event in the project emissions of the monitoring report. The following table shows the Net GHG Emission Reductions and Removals for the monitoring period 2013-2018, deducting the GHG ERRs of the sold land.

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals previous to Loss Event (tCO ₂ e)	% per Vintage	GHG ERRs lost because Loss Event (tCO ₂ e)	Net GHG emission reductions or removals post Loss Event (tCO ₂ e)
2013	0	1.382.754	0	1.382.754	22%	34.838	1.347.916
2014	0	1.469.820	0	1.469.820	24%	37.031	1.432.789
2015	0	1.162.199	0	1.162.199	19%	29.281	1.132.918
2016	0	784.071	0	784.071	13%	19.754	764.317
2017	0	679.375	0	679.375	11%	17.116	662.259
2018	0	720.181	0	720.181	12%	18.145	702.036
Total	0	6.198.401	0	6.198.401	100%	156.165	6.042.236

3.3 Optional Criterion: Climate Change Adaptation Benefits

N/A

3.3.1 Activities and/or processes implemented for Adaptation (GL1.3)

N/A

4 COMMUNITY

4.1 Net Positive Community Impacts

4.1.1 Community Impacts (CM2.1)

Creation of employment is one of the main social benefits of the project. Typically, an extensive livestock production system employs 1.4 persons every 1,000 ha. Guanaré/FAS project is expected to multiply that figure by more than 10.

Beyond an increased number of jobs, the project is expected to contribute to the development of the region and the country pursuant the priorities defined by Uruguayan government (promotion of small family businesses, increase in exports, eradication of rural poverty, incorporation of technology, increased nationally added value, development of new productive chains and geographic decentralization of development) as follows:

- Promotion of small family businesses and creation of several job opportunities

As it was mentioned above, 'Guanaré/FAS' project activity will generate several job opportunities, creating nearly 700 job positions when the sustainable production be reached. The vast majority of employees will be hired by contractors. The majority of the outsourced contractor companies currently working with Guanaré/FAS, are registered in Uruguay as "PYMES" (small and medium sized enterprises - SME), mostly family companies.

- Internationally tradable products

The entire production of Guanaré/FAS project (wood and carbon credits) will have the national and international market as the final destination. Livestock meat is produced within Guanaré/FAS property by local cattle breeders and their product is also internationally tradable.

Cattle breeding is an activity conducted by third-party companies, that rents the land not being used for forestry within Guanare's property. This activity generate synergy with forest and is not displaced out of the area. Guanare has a policy to prioritize former cattle breeders in the area to rent their land. By this mean, cattle farmers that have sold the land has not the necessity to move other places. This has an enormous social impact to communities.

- Eradication of rural poverty

The main contribution of Guanaré/FAS project activity to the eradication of rural poverty will be through the generation of high quality and stable employment, in a region of Uruguay with elevated levels of poverty. A study by Carámbula and Piñeiro (2006), demonstrate that forestry projects oriented to the production of high value timber, generates high positive impacts in the eradication of poverty in rural areas and reverting the process of internal migration to big cities.

As it is mentioned in the previous paragraph, generation of job is not only for the forestry part, but also for livestock production within Guanare project site. At the moment of this report, 362 indirect job positions have been created and 64 direct jobs.

- Incorporation of technology

The project incorporates the best available and affordable technology for optimizing wood productivity and quality through the selection of seeds, site preparation, plantation, weed and pest control, forest management and wood harvesting and logistics, and achieving sustainability objectives. Guanaré/FAS has a program for applied research, continuously testing various practices in order to achieve continuous improvement over time and collaborates with other companies and public institutions in this regard.

The technology is incorporated to the company by the people who is working in it. All forestry workers in Guanare project are incorporating the use of technology (silvicultural technology, GPS, drones, vehicules, tools), increasing their working capacity beyond this project.

- Increased nationally added value to forestry products

Guanaré/FAS project will produce timber that can be used for high-value products. As discussed above, currently there are no wood industries located within a reachable distance from the project site. However, the presence of Guanaré/FAS and of other similar initiatives in the area are also seeking carbon finance (GFP, Weyerhaeuser and others) may induce in the future the establishment of industries in the region. And even in the case that no industries are developed, the saw logs and veneer logs produced by Guanaré/FAS could be exported through Montevideo harbor at prices which will be higher than those that could be obtained by selling pulpwood, which is the traditional wood product exported from Uruguay.

In addition, the forest management adopted by Guanaré/FAS would increase the amount of carbon sequestered by trees, thus increasing the carbon embedded value in wood products.

- Development of new productive chains

Guanaré/FAS has no plans to not invest in the industry sector. Nevertheless, as mentioned above, Guanaré/FAS forest plantation may contribute to promote the establishment of industrial investments in the area.

In 2018, the government of Uruguay has signed a contract with a foreign company to establish the third pulp-mill in Uruguay. If all conditions are complied, the plant will be established in the center zone of Uruguay, closer to Guanaré/FAS project area. This new plant could be installed given the development of the forest sector in that region of the country. E. grandis has been established and managed for high-quality timber, and the reasonable market destination could be Rivera/Tacuarembó (sawmill) or Montevideo (harbor).

- Geographic decentralization of development

As it was mentioned above, Guanaré/FAS project will bring about a number of socio-economic benefits that will mostly impact on its surrounding area, which is currently one of the less developed ones in the country. This would create a development pole away from Montevideo and other areas which concentrate most of the economic activity in the country

- Improve of local community's well-being.

Guanaré/FAS has implemented a program to support and assist local communities, public schools, public entities (firefighters, police) or any stakeholders with problematics solvable by Guanaré/FAS, with donations of various types. From materials goods (firewood, tools, school supplies) to staff time (educational presentations in schools) and sometimes cash, Guanaré/FAS is committed to promote and enhance the well-being of the community. A complete and detailed list of donations is available for VVB during validation.

4.1.2 Negative Community Impact Mitigation (CM2.2)

There is no negative impact identified related to communities. In the Project Area there are high conservation area values related to the community, but with no interference with Guanaré/FAS project. Please, see complaint registry in Guanare in Figure 7.

The lack of negative community impact can be demonstrated with the list of complaints from the communities. During the last years, complains are not related to the project design itself but to the satellite activities around forestry. The passage of loaded trucks through rural communities sometimes deteriorates the quality of the road, which in general terms and in the without-project scenario is in very poor conditions. Sometimes the passage of trucks generates noise or dust blasting and people complain. In such cases Guanaré/FAS corroborates the existence of the problem and in case of necessity modifies its conduct to favor the communities.

There was a case of complaint from a rural school because the noise of machinery during harvesting activities. In that case, Guanare decided to concentrate their activity out of the school time and also intensifying harvesting during summer holidays. There was another case of complains from citizens in Vergara. All the trucks movement through the town was a problem to some people. Together with the local government, Guanaré/FAS decided to use a different route. Notwithstanding, some days later the citizens claimed that the business activity in the town declined and requested Guanaré/FAS to return to the previous route, through the center of the city.

4.1.3 Net Positive Community Well-Being (CM2.3, GL1.4)

The main source of income for communities associated with the agriculture in the project area is beef cattle breeding (cow-calves). The production methods have been applied for the last 300 years (extensive production) and is affected by natural disasters such as droughts, floods. Overall , agricultural production is low. The project will benefit communities economically and socially.

- 1) Income improvement: during the project period, the net income generated by the project includes generation of employment and increasing labor income
- 2) Job creation: The project will provide permanent, temporary, direct and indirect employment opportunities. Most of the work will belong to local farmers involved in the project.
- 3) Enhance social cohesion: project developer will form a closer interaction channel, which will strengthen communication between communities, local/national governments and forestry contractors' companies.
- 4) Technical training: people from communities hired to develop forest activities will be technically trained .
- 5) After the project is implemented, it will contribute with the beauty landscape.

The net positive community well-being can be corroborate by VVB during the verification site visit.

4.1.4 Protection of High Conservation Values (CM2.4)

None of the HCV related to community well-being will be negatively affected by the project because almost all HCV are not located in the rural areas, but in towns, negligible being affected by the project activity. There is only one HCV, “Quebrada de los Cuervos” that is part of the National System for Conservation Areas (SNAP) with strict conservationist rules for the protected area and buffer zone. Guanáré/FAS project is not affected or affecting “Quebrada de los Cuervos”.

Santa Sofía farm is part of the project area, and is also a private HCV defined by Guanáré/FAS and approved by local communities (with public consultation in 2011). FSC standard has a standardized procedure that needs to be followed in order to categorize an area as HCV. The procedure includes doing a public consultation, inviting all potential affected communities. The area was successfully categorized as HCV in 2013 and permanent biodiversity monitoring is conducted in the site. See biodiversity section of this report. The report “Characterization of habitats and wildlife monitoring” for the AAVC Santa Sofía farm conclude over the last years, that there are no changes in the HCV, which is in a good state of preservation, as well as their buffer zones. The state of conservation, the presence of natural regeneration and the absence of traces of cattle were verified. Studies of the same characteristics were carried out in Isla Patrulla, Horizonte, Agrocampo, and no negative changes were observed with respect to previous monitoring. The study included a list of flora and fauna species (amphibians, mammals, birds). according to international conservation lists (IUCN, CITES) and according to the database of biological invasions in Uruguay (InBUy). The categories were aligned in accordance with the categorization of IUCN and CITES. The SNAP species (priority species for the conservation of the SNAP-Sistema Nacional de Areas Protegidas) were taken into account. Specialists are hired to survey and monitor flora and fauna in the project sites. Those environments/species of interest for conservation and representative areas are selected, as is the case of native forest. Social advisors in their interviews with local social actors are consulted about potential sites of value for conservation. The answers are evaluated by the technicians of the company for their consideration. It was verified in the revised documentation “Sites of high conservation value” according to interviewees - Zone influence Arbolito, Placido Rosas, La Micaela, Depto. Cerro Largo November 2016 - August 2018.

4.2 Other Stakeholder Impacts

4.2.1 Mitigation of Negative Impacts on Other Stakeholders (CM3.2)

No negative impacts have been identified on other stakeholders.

4.2.2 Net Impacts on Other Stakeholders (CM3.3)

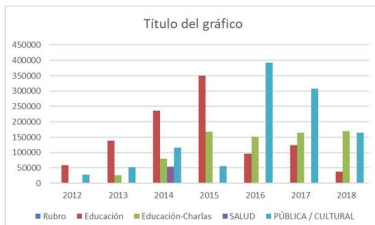
As there has not been identified negative impacts, there is no need to anticipate to their results.

4.3 Community Impact Monitoring

4.3.1 Community Monitoring Plan (CM4.1, CM4.2, GL1.4, GL2.2, GL2.3, GL2.5)

The indicators presented in the monitoring plan will be evaluated periodically. The monitoring purpose is to identify the areas for improvement, where the level of compliance is not being achieved and for the development of new strategies to accomplish the objective.

Assumption	Indicator	Monitoring frequency	Goal	Monitored value 2018
Improve of livelihood of communities and stakeholders	Number of direct employees living in the area of influence	Annual	At least 10% of the employees should be residing in the area of influence	8 people, which is 12.5% of direct employees
	Number of indirect employees living in the area of influence	Annual	At least 50% of the employees should be residing in the area of influence	60%
Improvement of technical capacities of communities and stakeholders	Number of trained people in forestry-related areas	Annual	100% of forestry contracted companies should be trained every year	100%. All forestry contracted company is trained in safety conditions, fire prevention, and several other topics
Improvement of communities' well-being	Number of complaints resolved	Annual	100% of complaints should be answered in maximum two weeks and resolved as soon as possible	100%. All complaints have been resolved. No open complaints exists.
	Contribution of project developer to communities in material assistance (donations)	Annual	Contribute with communities with what is possible	The following graph is showing the amount of donation done by Guarané/FAS since 2012. Note that donations are rarely given in cash, all the material goods and other tipo of donations (not material) have been valued in Uruguayans pesos, in order to

				have a comparative measure for all years. 
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As it is specified in the PD, semi-directed interviews with local stakeholders will be conducted during periodic social monitoring visits to the areas of influence. Positive and negative impacts of forestry activity will be questioned.

This will allow the company to understand how the activity contributes or interferes with satisfying the priority needs of the community for its development, according to the opinion of qualified informants who live or work in the area for a long time.

The opinions of the interviewees in areas of influence in reference to the positive and negative impacts of forestry activity will be recorded in a table. This information allows will allow Guanare to select and define the socio-environmental indicators that can be followed up in the coming periods in order to verify the contribution to the development of the communities, as well as the impact on natural ecosystems.

In this last approach of the year 2018, all the opinions issued during the year by local referents are taken into account, a total of 212 people, of legal age and aware of the reality of the areas of influence grouping their responses in different categories.

The universe of responses obtained, a total of 369, belongs to 212 people, 114 women (53.7%) and 98 men (46.3%). They belong to relevant public and private institutions linked to health, educational, security and administrative services, and in the case of neighbours they are relevant people because of their knowledge and roots in the place. In general terms people has attended secondary studies and in only two cases of neighbors have only primary studies carried out. The following table show the groups of people interviewed by gender.

Table 12. Number of people and institutions to which they belong that expressed their opinion about impacts

	Hombres (men)	Mujeres (women)	Total
UTU (Education center)	2	1	3
Liceos (Education center)	4	8	12
Escuelas Agrarias (Education center)	5	3	8
Escuelas (Education center)	6	59	65
Bomberos (fire fighters)	4		4

Salud (Health center)	2	25	27
Policía (police)	28	6	34
ONGS (NGOs)	6	5	11
OCS	11	12	23
Comercios (business center)	8	5	13
Vecinos (neighbours)	7	5	12
Total	83	129	212

Table 13. Number of answers provided for each defined indicator

Empleo (employment)	112
Apoyo a comunidad (community support)	49
Cambio ecosistemas (ecosystem modification)	43
Producción y consume (production and consumption)	41
Seguridad (security)	58
Dinamización local (local dynamization)	44
Acceso a beneficios del bosque (Access to forest benefits)	6
Migración (migration)	16
Total de respuestas (total answers)	369

The complete monitoring report results are available for VVB team during validation and/or verification.

4.3.2 Monitoring Plan Dissemination (CM4.3)

The monitoring plan and results of every verification will be published on Guanaré/FAS website which can be consulted by stakeholders. Also, a contact person with phone numbers will be published.

4.4 Optional Criterion: Exceptional Community Benefits

4.4.1 Short-term and Long-term Community Benefits (GL2.2)

N/A

4.4.2 Marginalized and/or Vulnerable Community Groups (GL2.4)

N/A

4.4.3 Net Impacts on Women (GL2.5)

N/A

4.4.4 Benefit Sharing Mechanisms (GL2.6)

N/A

4.4.5 Governance and Implementation Structures (GL2.8)

N/A

4.4.6 Smallholders/Community Members Capacity Development (GL2.9)

N/A

5 BIODIVERSITY

5.1 Net Positive Biodiversity Impacts

5.1.1 Biodiversity Changes (B2.1)

After the afforestation project is fully launched, there will be an increase in flora and fauna species, and the project will implement afforestation activities through scientific and rational allocation methods, without burning and cutting or harvesting native forests.

Ecotones and buffer areas are very important areas from the point of view of biodiversity and its conservation. In them, the biggest number of fauna species are registered in relation inside each farm. At the same time, they act as biological corridors, avoiding isolation or genetic drift. The implementation and maintenance of buffer zones between forest plantations and native forests of more than 20 meters, allow the development and, in some cases, the improvement of pastures. These pastures are habitat and biological corridors for many RAE fauna species.

In all the wildlife studies conducted by Guanaré, strict pasture species have been detected in forest lands, coinciding with the forest plantation lands that present protected areas and buffer areas correctly established and managed.

5.1.2 Mitigation Actions (B2.3)

Negative Offsite Impact	Mitigation Measure(s)
Livestock enters protected natural areas or CAVL cabling or the exclusion of livestock in those areas.	Build fences or exclusion of livestock in those areas.
High density of cattle - degradation of grasslands and native forest, by shift of livestock from plantation to said natural areas	Proper management. Livestock density control (units per ha). Livestock management plan. Evaluation of pastures within afforestation.
The advance of the native forest towards the plantation, eliminates the buffer areas	Buffer zones are established or re-established between forest plantation and native forests. This grasslands buffers zones must be equal or bigger than 20 meters

5.1.3 Net Positive Biodiversity Impacts (B2.2, GL1.4)

First, due to long-term farming, ecological structure of most project sites was relatively homogenous, with low biodiversity. Guanaré/FAS implemented afforestation activities with scientific and reasonable configuration method, with no burning and slash. The row site preparation will protect the existing vegetation as much as possible. Therefore, the implementation of this project will not decrease biodiversity of project sites.

Second, because ecotones and buffer areas are very important areas from the point of view of biodiversity and its conservation, Guanaré/FAS focused special studies in those areas. In them, the biggest number of fauna species are registered in relation inside each farm. At the same time, they act as biological corridors, avoiding isolation or genetic drift. The implementation and maintenance of buffer zones between forest plantations and native forests of more than 20 meters, allow the development and, in some cases, the improvement of pastures. These pastures are habitat and biological corridors for many RAE fauna species.

In all the wildlife studies conducted by Guanaré, strict pasture species have been detected in forest lands.

Third, scientific and rational afforestation projects can adjust the hydrological cycle, reduce drought and flood risk; promote soil nutrient cycle, improve local micro-climate and others ecological environments

5.1.4 High Conservation Values Protected (B2.4)

A wide range of ecosystems can be found in several parts of the project area, from different types of native forests, wetlands, grasslands, stony fields, among others. Guanaré/FAS carries out a characterization of the environment in each of the facilities locations and assesses the environmental features, flora and fauna, and defines the conservation areas and the necessary measures for their protection.

In "Santa Sofía", Garao, north of Plácido Rosas, province of Cerro Largo, there are complex ecosystems composed of primary swamp forests or "capones" associated to rain forests considered rare in the country and located in patches that add 186,9 ha. Since the end of 2013, this area has been considered of High Conservation Value since it is an area with exceptional characteristics, with relictual patches of flora from Brazil and mainly due to the diversity of flora species present.

As an example, Figure 12 shows the HCV areas located in Santa Sofia fram.

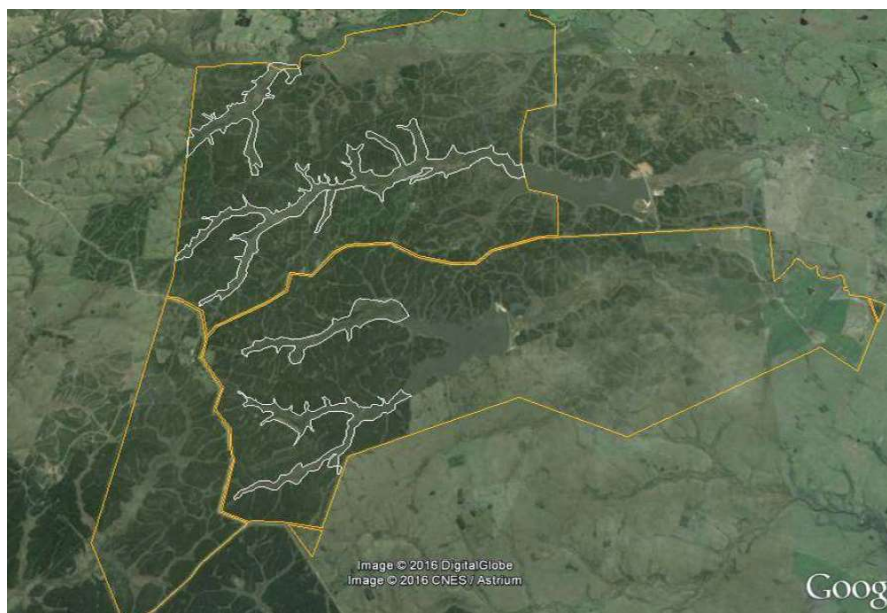


Figure 12: HCV areas located in Santa Sofia farm

5.1.5 Invasive Species (B2.5)

N/A

5.1.6 Impacts of Non-native Species (B2.6)

Species	Eucalyptus grandis
Justification of Use	They ensure an adequate productivity level and a market access for the products to be obtained, which would not be possible if other species were used. The project will produce high quality wood suitable for plywood and saw wood production. To produce these type of logs, intensive silvicultural management is implemented (pruning up to 9 meters and thinning), which means intensive and specialized workforce
Adverse Effect	As a general measure, the project will voluntarily adopt the application of the National Code of Good Forest Practices. Likewise, an environmental management system will be implemented with a focus on continuous improvement, following the FSC (Forest Stewardship Council) standard. Based on the environmental impact studies carried out, negative environmental impact was not expected as a consequence of the implementation of the project activities and the use of E. grandis. The project is classified in Category A in DINAMA (lower impact). Natural regeneration (mainly in buffer zones and lowlands) was controlled. After pruning and thinning, drainage zones were controlled, and no pruning/thinning residues are allowed in these areas

Species	Eucalyptus dunnii
Justification of Use	This specie was be planted in lower areas where E. grandis can be affected by frost damage Similarly to E. grandis, E. dunnii ensure an adequate productivity level and a market access for the products to be obtained, which would not be possible if other species were used. The project will produce high quality wood suitable for plywood and saw wood production. To produce these type of logs, intensive silvicultural management is implemented (pruning up to 9 meters and thinning), which means intensive and specialized workforce
Adverse Effect	As a general measure, the project will voluntarily adopt the application of the National Code of Good Forest Practices. Likewise,

	an environmental management system will be implemented with a focus on continuous improvement, following the FSC (Forest Stewardship Council) standard. Based on the environmental impact studies carried out, negative environmental impact was not expected as a consequence of the implementation of the project activities and the use of E. dunnii. The project is classified in Category A in DINAMA (lower impact). Natural regeneration (mainly in buffer zones and lowlands) was controlled. After pruning and thinning, drainage zones were controlled, and no pruning/thinning residues are allowed in these areas
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Regarding Pine plantations, a very small area of this genus was planted. Natural regeneration is permanently controlled.

5.1.7 GMO Exclusion (B2.7)

Guarantee that no GMOs have been used to generate GHG emissions reductions or removals.

Guanaré/FAS Project is FSC certified so it has a commitment with FSC values. One of them is the prohibition of introduction of genetically modified organisms in forestry operations. The use of GMO's is annual control during the FSC annual audits.

5.1.8 Inputs Justification (B2.8)

Guanaré/Fas has implemented a Continuous Training Program addressed both to direct employees and contractors. Members of other forestry companies or of the communities located in the company's area of influence are also welcome to take part.

Topics range over many topics including among others: computing updating and information processing; forestry certification; hygiene and work safety; first aid training; ophidism; fire prevention and fighting; chain saw operation; chemicals handling.

Training is given by expert companies, permanent FAS consultants or professionals hired for the purpose, and the events are held in the form of courses, workshops or instructions given on the sites

The chemical products that are used in the plantation (herbicides and hormiguicides) are selected according to their efficacy proven by previous experiences for the type of control required. Only products that are permitted in accordance with current national regulations and the chemicals policy of the FSC® (Forest Stewardship Council®) are used.

The handling of chemical products highlights that:

- It is carried out only during the previous period and the first year or year and half of life of the plantation and it is not repeated until the next cycle (minimum 8 or 10 years later).

- Products with the lowest possible toxicity are used according to the objective.
- They are applied whenever possible in a localized way, taking into account the best practices related to the environment and personnel safety.
- Optimization is sought in the application form of chemical products.
- Whenever possible, prior and subsequent grazing to the plantation is used in order to reduce the use of herbicides, which is limited to the plantation row, reducing the amount of herbicide necessary to maintain the plantation by 20% to 30%. free of competition. For this purpose, the type, endowment and categories of livestock are taken into account.

All the available information regarding management of chemical products which are strictly controlled by FSC will be available during the auditor's site visit. Based on the way that fertilizers and chemical pesticides are used, no adverse effects were detected on the region's environment and / or communities.

Table 14: Fertilizers and chemical pesticides used in Guanáré/Fas operations.

Name	Reason for Use	Quantity (kg/ha or l/ha)	Frequency
Aceite S-OIL	control de rebrotes/ exóticas /control de malezas	1,6	☐ uso permanente ☒ uso ocasional
Aceite Tradition (aceite mineral)	control de rebrotes/ exóticas /control de malezas	4,4	☐ uso permanente ☒ uso ocasional
Aceite up take (aceite vegetal)	control de rebrotes/ exóticas /control de malezas	1,3	☐ uso permanente ☒ uso ocasional
Basacote (fertilizante)	Fertilización	13,9	☐ uso permanente ☒ uso ocasional
Boydal (diflufenican)	control malezas preemergentes	0,1	☐ uso permanente ☒ uso ocasional
Chana (acetoclor)	control malezas preemergentes	0,8	☐ uso permanente ☒ uso ocasional
Condor (isoxaflutole)	control malezas preemergentes	0,2	☐ uso permanente ☒ uso ocasional
Coral (sulfentrazone)	control malezas preemergentes	0,4	☐ uso permanente ☒ uso ocasional
Fertilizante 11-49-49-0-5b	Fertilización	140,0	☐ uso permanente ☒ uso ocasional
Gamina (2-4D dimetilamina)	control de rebrotes/ exóticas /malezas	0,8	☐ uso permanente ☒ uso ocasional
Garlon (triclopir)	control de rebrotes/ exóticas /malezas	0,7	☐ uso permanente ☒ uso ocasional

Gliserb (glifosato)	control de rebrotes/ exóticas /malezas	2,6	☐ uso permanente ☒ uso ocasional
Irvix (haloxifop p metil)	control selectivo de malezas	0,6	☐ uso permanente ☒ uso ocasional
Lampo (fipronil)	Control de hormigas	3,0	☐ uso permanente ☒ uso ocasional
Lid xtra (clorpiralid)	control selectivo de malezas	0,7	☐ uso permanente ☒ uso ocasional
Maxipir (fluroxipir)	control de rebrotes/ exóticas /malezas	0,9	☐ uso permanente ☒ uso ocasional
Nativo (trifloxistr-bin + tebuconazole)	fungicida	1,2	☐ uso permanente ☒ uso ocasional
Panzer gold (glifosato)	control de rebrotes/ exóticas /malezas	1,3	☐ uso permanente ☒ uso ocasional
Pauker (glifosato)	control de rebrotes/ exóticas /malezas	2,7	☐ uso permanente ☒ uso ocasional
Rizospray extremo (aceite vegetal)	fungicida	0,3	☐ uso permanente ☒ uso ocasional
Round up (glifosato)	control de rebrotes/ exóticas /malezas	2,8	☐ uso permanente ☒ uso ocasional
Sheriff (haloxifop p metil)	control selectivo de malezas	0,4	☐ uso permanente ☒ uso ocasional
Sunflower (aceto-clor)	control malezas preemergen-tes	1,5	☐ uso permanente ☒ uso ocasional
Trident (triclopir)	control de rebrotes/ exóticas /malezas	0,1	☐ uso permanente ☒ uso ocasional
Versatil (flumioxazin)	control malezas preemergen-tes	0,2	☐ uso permanente ☒ uso ocasional
Zethin (isoxaflutole)	control malezas preemergen-tes	0,2	☐ uso permanente ☒ uso ocasional
Pampa max (glifosato)	control de exóticas	2,2	☐ uso permanente ☒ uso ocasional

5.2 Offsite Biodiversity Impacts

5.2.1 Negative Offsite Biodiversity Impacts (B3.1) and Mitigation Actions (B3.2)

Negative Offsite Impact	Mitigation Measure(s)
Livestock enters protected natural areas or CAVL cabling or the exclusion of livestock in those areas.	Build fences or exclusion of livestock in those areas.
High density of cattle - degradation of grasslands and native forest, by shift of livestock from plantation to said natural areas	Proper management. Livestock density control (units per ha). Livestock management plan. Evaluation of pastures within afforestation.
The advance of the native forest towards the plantation, eliminates the buffer areas	Buffer zones are established or re-established between forest plantation and native forests. This grasslands buffers zones must be equal or bigger than 20 meters

5.2.2 Net Offsite Biodiversity Benefits (B3.3)

The project comprises a total area of 18,576 ha with a long history of grazing by beef cattle, activity that have caused soil erosion and land degradation. In Guarané/FAS project, forest plantations for obtaining pulp and saw wood and removing carbon dioxide from the atmosphere are being established since 2006, decreasing significantly soil erosion and soil degradation.

Before the implementation of the Guarané/FAS project, native fauna or flora studies in the area were never conducted. Extensive beef production companies did not have the habit nor the obligation to carry out this kind of studies, since traditionally the extensive cattle is not certified by international standards (for example, FSC or similar), nor is it controlled by the Ministry of the Environment (DINAMA). After the Guarané/FAS project was implemented, new HCVs areas were defined and native forests were strictly controlled.

5.3 Biodiversity Impact Monitoring

5.3.1 Biodiversity Monitoring Plan (B4.1, B4.2, GL1.4, GL3.4)

Criteria for the categorization of representative FAS properties for the conservation of biodiversity

The following criteria will be used for the categorization of forest properties in Guanare/Fas, pointing to the greater efficiency in the application of conservation measures and considering human and economic resources availability for their management and monitoring.

- 1) Presence of SNAP (National System of Protected Areas) or high value areas for HCVA conservation according to the definition originally developed by the FSC for High Conservation Value Forests (BAVCs) in the certification of forest ecosystems.
- 2) Biogeographic representativeness
- 3) Representativeness of watersheds.
- 4) Presence of threatened species of flora or fauna at the international or regional level according to the International Union for the Conservation of Nature.
- 5) Presence of endangered species of flora or fauna at the international or regional level according to the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES).
- 6) Connectivity of the areas.
- 7) Estimated wealth (Chao 1)
- 8) Special landscape value
- 9) Effective total area of natural areas
- 10) If there are still conflicts in the categorization of the areas after the application of these criteria, indexes of similarity between communities can be applied (Greig-Smith)

Based on the aforementioned criteria, the properties selected as representative are surveyed (monitored) in greater depth to clearly determine its habitats values with precise identification of their attributes in order to define conservation plans.

The monitoring studies would be applied over farms with HCVF or HCFF, presence of natural environments or species of particular study interest or farms with high species richness values. These studies involve annual surveys, calculation of diversity indexes, spatial distribution, indicator species, wealth estimation, etc.

The follow-up studies would be applied to the rest of the representative farms. These studies involve biennial or triennial surveys, calculation of species richness, distribution of species and indicator species.

The categorizations made are subject to changes due to the entry of higher priority properties (more representative) or changes in management or anthropogenic activity that may change their condition.

Activities taken to perform the flora and fauna monitoring studies:

1) Prior to the fieldwork, surveys over satellite images (Google Earth) and over available historical information are made. Based on this information, areas of interest, access to them and other logistical aspects are defined.

2) In situ, ground survey (surface data) according to vegetation physiognomy was carried out, with the main landscape zones initially registered by distance photography with a drone.

Subsequently, walking and vehicle trips were made by transects in the natural environments present in the property. The vegetation was characterized by recording the dominant species of each zone, through observation, collection and registration.

In relation to the fauna, walking tours were carried out in the main landscape units, recording the richness and abundance of the tetrapod fauna species. Photographs were taken with digital cameras and Cannon sx50is, Nikon Coolpix L110, of the most representative species.

For the bird survey, binocular 12X25 was also used for walking tours. For the group of birds, we recorded the number of species (richness) and the number of individuals of each (abundance) based on direct sightings and the identification of vocalizations.

For the amphibian survey, surveys were carried out with estimation of abundance by sound record of vocalizations and by active search of individuals. For reptiles, an active search was made under stones, trunks and other cryptozoic shelters.

For mammals, trap cameras were placed, traces, traces and caves were surveyed, and

For the survey of aquatic fauna, the sampling units were distributed based on the results of habitat characterization (landscape ecology) in the study area and the subsequent definition of areas of interest and watershed representativeness. Samples were carried out with emphasis on the geographical sectors of interest that have been previously identified. Each station was located by GPS.

The processing of the data included the elaboration of a list of species and categorization of them according to international conservation lists (IUCN, CITES) and according to the database of biological invasions for Uruguay (InBUy).

Categories were applied in accordance with the categorization of the International Union for the Conservation of Nature (IUCN) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Based on the field information surveyed, the studies corresponding to environmental indicators (indexes and indicator species) were carried out.

Fauna Monitoring Plan

Fauna biodiversity plans are performed in most representative farms belonging to Guarané/FAS by using Environmental indicators that describe the impact on the environment.

According to Canter L.W. 1998, environmental indices are useful for:

- summarize existing environmental data
- report on the quality of the affected environment
- assess the vulnerability or susceptibility to contamination of a certain environmental category
- selectively focus on key environmental factors
- serve as a basis to predict the impact.

The specific biological diversity of a site depends on the number of species present (Wealth of species) and the number of individuals that make up each of the species (relative abundance).

Margalef's biodiversity index is an estimate of the biodiversity of a community and considers the number of species present (richness) and the number of individuals (abundance). It takes as a base the numerical distribution of the individuals of the different species using the number of existing individuals in the sample analyzed.

The index of Shannon, Shannon-Weaver or Shannon-Wiener is used to measure specific biodiversity. Express uniformity of importance values across all species in the sample. The index reflects the heterogeneity of a community based on two factors: the number of species present and their relative abundance. Conceptually, it is a measure of the degree of uncertainty associated with the random selection of an individual in the community. It measures the average degree of uncertainty by predicting which species an individual chosen at random from a collection will belong to. Their values vary between 0.5 and 5, although their normal value is between 2 and 3. Values below 2 are considered low in diversity and higher than 3 are high in species diversity. It has no upper limit or, in any case, it is given by the logarithm base that is used.

Bearing in mind that the most surprising transformation caused by man is the simplification of natural environments and the reduction of biodiversity, biological diversity indexes (Margalef and Shannon) are used to determine the degree of environmental impact.

As an arbitrary measure of the research team, the values of the Margalef index, higher or equal to 15.0, correspond to a high biological diversity.

Figure 13 shows Margalef indexes results obtained from Guanare/Fas monitoring process from three representative farms/regions.

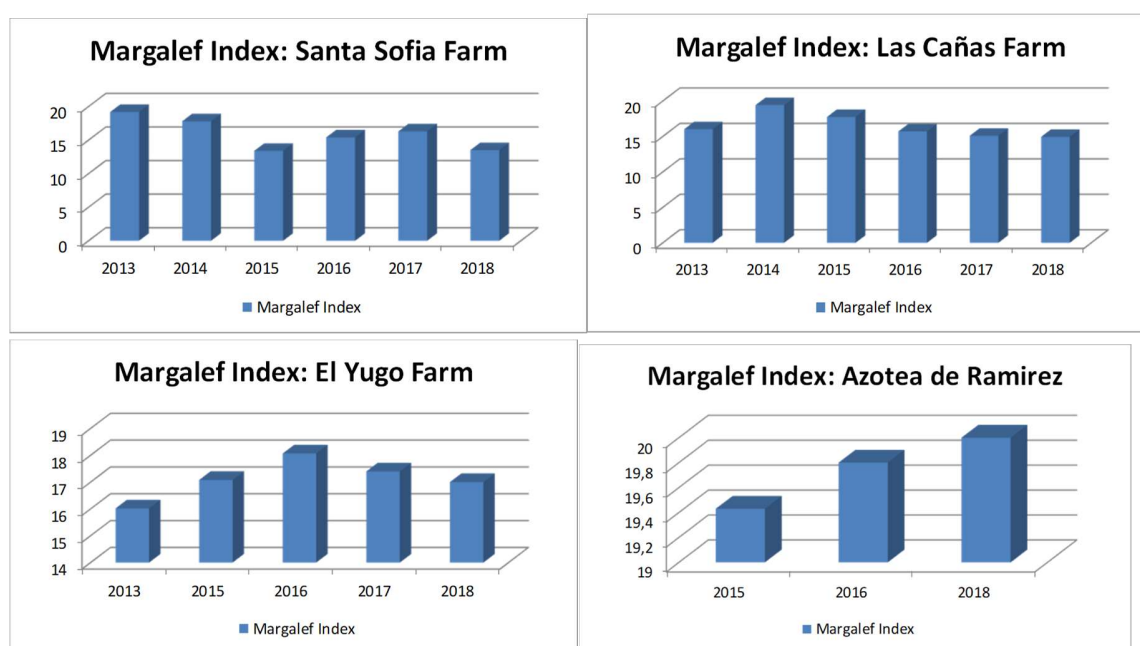


Figure 13: Margalef Indexes results obtained from Guanare/Fas monitoring process

The values, below the average in these indices, may be due to:

- Disturbances due to harvesting activities (noise, traffic of vehicles and people, exposure to atmospheric agents, etc.)
- Lack of buffer zones between planted forests and natural environments.
- Lack of connection or biological corridors in natural areas.
- Lack of natural environments that act as feeding or reproduction areas.
- Barrier effect for the movement of species, mainly because of height of planted trees (final stage of forestry before harvest).

Species richness indexes (Chao) are also used to evaluate the real number of species present in each farm studied. Chao 1 is a nonparametric estimator of the number of species in a community based on the number of rare species present in the sample.

The richness of the species distributed in a non-homogeneous way, between the different environments inside the area, would indicate a certain human affectation in the area that would be increasing the number of some particularly sensitive species.

In turn, the distribution of the species is estimated taking into account the levels of specific richness and relative abundance detected in the main landscape units.

So far, in the monitored farms, the structure of the different species present in the area tends to be fairly homogeneous (it is not clearly dominated by any species). That is, all the species observed have a similar high abundance, which indicates a low degree of imbalance. The population differences are not enough for these species to affect the rest of the community. In some properties, high or very high values have been recorded in the biodiversity indexes.

Criteria for the selection of species to determine the biological diversity of a given site:

At the global level, both invertebrate and vertebrate species are used for studies of biological diversity.

In the case of the research team, the Bird Class was chosen, subfilum Vertebrata (Vertebrates) due to:

- Easy direct and / or indirect registration
- Important number of species in our country
- Specific conservation status defined in most species, whether at the national, regional and global levels (DINAMA, IUCN, CITES).
- Can apply as RAE species for international forest standards

Selection of species as indicators ("Indicator species")

An indicator organism is a species selected for its sensitivity or tolerance to the various types of contamination and their effects. In addition, the use of indicator species is useful for diagnosing environmental quality because they have some important characteristics:

- Provide valuable information quickly to take conservation measures in a minimum time available.
- Animals, plants and their quantitative and qualitative relationships are modified to different types of environmental degradation even when they are produced sporadically or discontinuously over time.
- Many species, due to their mobility, absorb and indicate environmental actions of broad or specific foci in a natural area.
- The biological indicators are compatible and can complement with analysis and physical-chemical indicators

Selection criteria

To select indicator species, the role they play in the ecosystem will be taken into account, especially considering those species known to be sensitive to specific actions of the use of resources related to the project in question, species that play a basic role in a given community and species that represent a certain group of species (associations). Taking into account the variety of environments involved in the different farms to be studied, the species to be selected will also depend on the specific ecosystems affected and the degree and type of affectation.

The analysis of the relative abundances of some species will be useful for the purpose of evaluating changes in the habitat that determine high or low levels in the populations and are manifestations of impacts on a larger scale

For example, some bird species that are not very specialized, find food resources in modified environments, where some specific plant species that provided food to other species of birds specialized in them have disappeared. These last ones (specialists), will see reduced their populations in these areas, while those (generalists) will see them increased sensibly due to lack of competence in the availability of other resources (shelters, water, etc.).

Species populations with reduced margins (stenoic) and broad (eurioic) tolerance for limiting environmental factors (food, shelter, pH and water transparency, etc.) are especially taken into consideration here.

The degree of singularity or isolation is also taken into account, specifically considering those species with low dispersion capacity and low mobility. It is also important the real or potential value from the aesthetic, scientific or economic point of view, its survival expectation and its rarity at the local and global level.

In this sense, the presence of species with the following international status (IUCN) is especially taken into account:

- "Extinct"
- "Extinct in the wild",
- "In critical danger"
- "In danger"
- "Vulnerable"
- "Threatened"

In addition, species with the following status for Uruguay are also considered (Olmos, A. 2009), categorized by:

- "Rare"
- "Scarce"

- "Not Common"

Special consideration is given to those species that DINAMA (National Directorate of the Environment) recommended its inclusion in the list of priority species for conservation.

Other species, that are water quality bioindicators are also taken into account. In this sense, the Fish Class is a group that turns out to be a good tool to determine water quality because:

- their communities generally comprise a wide variety of species which represent different trophic levels,
- are well-known organisms of aquatic habitats and
- are present in small water bodies.

Finally, for the selected species, a habitat assessment can be carried out according to the "Habitat Assessment Procedure" (HEP) proposed by the US Fish and Natural Resources Service, which evaluates the quality and quantity of habitat available for said species.

Table 15 shows the "indicator species" selected by Guanare/FAS biologists during the monitoring process

Table 15: Indicator Species selected by Guanare/FAS biologists.

Indicator Species	Indicator Area
Stephanophorus diadematus	natural environment conserved and slightly modified
Phylloscartes ventralis	natural environment conserved and slightly modified
Emberizoides ypiranganus	slightly modified environment quality
Bryconamericus iheringii	indicator of water quality, species intolerant to contaminated or modified natural environments
Syndactyla rufosuperciliata	natural environment conserved and slightly modified
Chyanocharax alburnus	natural environment conserved and slightly modified
Sittasomus griseicapillus	natural environment conserved and slightly modified

The fauna monitoring reports are done once a year in FAS/Guanaré representative farms, where biologists delivers detailed reports like the one shown in **Figure 14**. All this information regarding biodiversity reports will be available during auditor's field visit.

**CARACTERIZACIÓN DE HÁBITATS Y
MONITOREO DE FAUNA
PREDIOS "Santa Sofía" FORESTAL ATLÁNTICO SUR**

(Depto. Cerro Largo)



AGOSTO 2018

RESPONSABLES

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Figure 14. Example of fauna monitoring report

Since 2012, FAS has been involved in several publications related to the fauna and flora of our country. In that year the first field manual sponsored by the company was published and later new publications were added, in addition to a brief manual on the wild boar. Figure 15 shows front page of these publications:



Figure 15. Example of fauna and flora manuals

Table 16 different species that were observed by biologists during the monitoring process and that are included in groups like “rare specie”, IUCN Global Vulnerable or Near Threatened, IUCN Regional Vulnerable or Near Threatened or inside the “CITE” group, appendix 1.

Table 16: Outstanding species that were observed by biologists during the monitoring process

RARE	Species Category		
	IUCN GLOBAL Vulnerable or Near Threatened	IUCN Regional Vulnerable or Near Threatened	CITES Appendix 1
<i>Phacellodomus ferrugineigula</i>	<i>Picumnus nebulosus</i>	<i>Certhiaxis cinnamomeus</i>	<i>Leopardus geoffroyi</i>
<i>Megascops santaecatarinae</i>	<i>Limnortites rectirostris</i>	<i>Phacellodomus ferrugineigula</i>	<i>Leopardus wiedii</i>
	<i>Dasyus hybridus</i>	<i>Limnortites rectirostris</i>	<i>Pteronura brasiliensis</i>
	<i>Rhea americana</i>	<i>Emberizoides ypiranganus</i>	
	<i>Xolmis dominicanus</i>	<i>Speotyta cunicularia</i>	
	<i>Xanthopsar flavus</i>	<i>Geranoaetus melanoleucus</i>	
		<i>Xolmis dominicanus</i>	
		<i>Cistothorus platensis</i>	
		<i>Sphiggurus spinosus</i>	
		<i>Circus cinereus</i>	
		<i>Sittasomus griseicapillus</i>	
		<i>Limnortites curvirostris</i>	
		<i>Megascops santaecatarinae</i>	
		<i>Amblyramphus holosericeus</i>	
		<i>Taeniophallus poecilopogon</i>	
		<i>Xanthopsar flavus</i>	

Flora Monitoring Plan

The works allowed to increase considerably the knowledge on flora and fauna of the country and especially of the northeast region.

The national herbarium collections of vascular plants were enriched thanks to numerous new collections, fruit of the surveys, samples that were deposited in the Herbarium of the Museum and Botanical Garden, identified internationally with the acronym MVJB, with the scientific transcendence that it has, including publications in refereed journals.

Biologists identified and georeferenced populations of priority species for conservation, SNAP, some of them new for Uruguayan flora.

The conservation of these species has been possible thanks to the control work done on the environments where they live, through an adequate rational management of them, with a rigorous permanent monitoring.

According to the surveys and subsequent monitoring carried out, properties that have particular attributes stand out and are classified as follows:

a) Farms with AREAS OF HIGH VALUE OF CONSERVATION (AVC): "Santa Sofía "(Cerro Largo) by the presence of capons (swamp forests), sites that are characteristic and representative of those in the area - (AAVC1 due to the diversity of flora species).

b) Farms with areas of SPECIAL INTEREST FOR CONSERVATION: Native forest of "Las Cañas" and "El Yugo" (Cerro Largo), small capons and stony fields of "La Micaela", "Mederos", "Derley González", "Dellepiane", "Tacuarí", "Azotea de Ramírez" and " L.Barros ".

5.3.2 Biodiversity Monitoring Plan Dissemination (B4.3)

Along with the project implementation, the project documentation will be published on VCS and CCB website for all stakeholders, so that they can obtain the detailed project information and development progress. Also, the summary of project description in local language will also be disseminated to local communities through local government, as long as the summary of monitoring reports during each verification.

Also, the full project documentation will be published on Guarané/FAS website for public comments, together with specific brochures describing the project characteristics and benefits.

5.4 Optional Criterion: Exceptional Biodiversity Benefits

N/A

5.4.1 Trigger Species Population Trends (GL3.3)

N/A

6 ADDITIONAL PROJECT IMPLEMENTATION INFORMATION

Guarané/FAS monitoring report is elaborated at the same time as the Project Description (PD). The project proponent decided to validate and verify the project activity at the same time. This mean that project description is showing the reality of the project implementation. Besides this, the project implementation was done according to how it was initially proposed, previous to starting date.

7 ADDITIONAL PROJECT IMPACT INFORMATION

N/A

APPENDICIES

The following appendices may be used if appropriate. Delete the instruction and heading if not used.

1.1 Appendix 1: New Project Areas and Stakeholders

Use this appendix, if necessary, to identify new project areas and stakeholders and fulfil the requirements of Sections 2.2.5 above. Modify the table, if necessary, to suit the project activities, or delete if not used.

Stakeholder <i>Identify communities and any community groups within them, any cross-cutting community groups, and list other stakeholders.</i>	Rights, interest, and overall relevance to the project	Demonstrate how they meet the eligibility criteria (G1.14)	Demonstrate how their inclusion does not violate the scalability limits (G1.15)

1.2 Appendix 2: Project Risks Table

Use this appendix, if necessary, to identify project risks and fulfill the requirements of Section 2.2.6 above. Modify the table, if necessary, to suit the project activities, or delete if not used.

Identify Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed to mitigate the risk

1.3 Appendix 3: Additional Information

Use appendices for supporting information. Delete this appendix (title and instructions) where no appendix is required.