



**Verified Carbon  
Standard**

# MIXED AFFORESTATION WITH NATIVE AND NON-NATIVE SPECIES IN ARGENTINA-I PROJECT



**Cambium**

<b>Project title</b>	Mixed afforestation with native and non-native species in Argentina-I
<b>Project ID</b>	4763
<b>Monitoring period</b>	01-September-2022 to 16-November-2023
<b>Crediting period</b>	01-September-2022 to 31-August-2062
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# 1 PROJECT DETAILS

## 1.1 Summary Description of the Project

This *Mixed afforestation with native and non-native species in Argentina-I Project* (hereinafter “the Project”) consists of the afforestation of 987.74 hectares with different types of pine species (68.04% of the area) and eucalyptus species (29.06% of the area), and a 2.89% of the area with a mix of native species. The project activity will be carried out in two locations owned by Garruchos S.A and managed by Cambium, in the departments of Ituzaingó and Santo Tomé, within the province of Corrientes, Argentina. No harvesting activity will be done, to maximise the CO<sub>2</sub> sequestration from the atmosphere.

The project activity converts an area, where mainly extensive livestock activity was historically carried out, into an afforestation project activity with no harvest. This activity is designed, in line with the corporate social responsibility policy and its contribution toward climate neutrality. As the goal is carbon removal, pruning activities are also not anticipated. In addition, the afforestation will contribute to minimising soil erosion, protecting, and restoring areas degraded by continuous cattle raising. Moreover, a native species domestication program will be implemented together with Misiones National University, aiming to further study native species growth demands and conditions.

This afforestation project will be carried out considering the existing guidelines of Good Forest Practices suggested by authorities as a basic tool for the implementation of environmentally sustainable forestry. In addition, it will have the FCS certificate, which ensures that the design, planting and maintenance of the forest are carried out through a sustainable forest management program avoiding negative impacts on biodiversity, local communities and water quality.

The absorption of GHGs will occur through the carbon reservoirs that will be generated through the planting of trees. These include the measured pools aboveground biomass and belowground biomass, as well as others not measured in this project (dead wood, litter and soil organic carbon). The project is estimated to remove a total amount of 801,239.22 tCO<sub>2</sub> over a 40-year period, which works out at an average reduction of 20,030.98 tCO<sub>2</sub> per year. During this first monitoring period (01/10/2022 - 16/11/2023) the net GHG emissions removals equals 1,161.94tCO<sub>2</sub>.

## 1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation/verification	01-September-2022 - 16/November-2023	VCS	AENOR	1.2 years

## 1.3 Sectoral Scope and Project Type

Sectoral scope	14, Agriculture, Forestry and Other land Uses
AFOLU project category	Afforestation, Reforestation, Revegetation (ARR)
Project activity type	-

## 1.4 Project Eligibility

### 1.4.1 General eligibility

The project is eligible under the scope of the VCS Program as the project includes AFOLU activities (project category ARR) which are supported by a CDM methodology approved under the VCS Program, CDM methodology AR-ACM0003 “Afforestation and reforestation of lands except wetlands” (version 02.0). As the project is expected to remove more than 16,000 tCO<sub>2</sub>e/year it is considered a large-scale project thus meets the condition of the mentioned methodology.

The project meets the pipeline listing deadline for AFOLU projects of 3 years since start date. Moreover, the validation deadline is expected to be met, within 8 years from start date. In relation to the methodology’s grace period deadline, the project is being registered as ‘under validation’ before December 28th, 2023.

Last, no opening meeting with the validation/verification body has taken or will take place before the project is listed on the project pipeline with a status of under validation.

### 1.4.2 AFOLU project eligibility

The standard establishes a set of specific requirements for Afforestation, Reforestation and Revegetation (ARR) projects eligibility. The project is eligible under the ARR category, as it seeks to increase carbon sequestration by establishing vegetative cover through the planting of native

and non-native woody vegetation. Although permitted by project activity eligibility conditions, the project does not include timber harvesting in their management plan.

Regarding the non-displacement of native ecosystems, no natural ecosystems have been converted, cleared, drained or degraded to generate GHG credits within 10 years of the project start date. The areas have remnants of native species but having been used for cattle breeding for more than 50 years they are highly modified and moderately degraded.

The previous project land use was extensive continuous cattle breeding, leading to grassland degradation over time. Culturally, cattle breeding activities include grasslands burning in Corrientes to control weeds<sup>1</sup>, modifying natural ecosystems. Moreover, there are registries of grassland implementation in 72.4% of the project area in Puerto Valle with more palatable species. This was done only on one occasion in different plots between years 2004 and 2012<sup>2</sup>. For this reason, it cannot be considered as an improved grassland, it is still a moderately degraded land.

Moreover, in the case of Garruchos' property, the type of vegetation present 10 years prior to the project start date is the result of many years of forest and grassland disturbances due to cattle breeding: slash-and-burn, forest plantations, roads, and other activities in the property. Through satellite images it is possible to identify an area of the farm which was planted with non-native species by the previous owner. This area of 16 hectares (1.6% of project area) had been planted around 2002 and later harvested (2010), thus, no native ecosystem has been replaced by the project. Later, prior to project start date, with the aim of improving cattle feeding, pastures were planted in part of the area, further altering the land. See further information in section 2.4.3.

Moreover, the area was not cleared of forests. This can be evidenced with satellite images for 10 years prior to project start date. The following images are from December 2010 from Puerto Valle (figure 1) and Garruchos properties (figure 2). In green, the plot of land where the project trees will be planted are shown. It is possible to see that the land within the planned project boundary has not been cleared of forest within the 10-year period to the project start date.

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<sup>1</sup> Fernández, J. A., Schroeder, M. A., Goldfarb, M. C., & Bernardis, A. C. (2011). Efecto de la frecuencia de quema prescrita sobre la composición mineral de los pastizales en el nordeste argentino. *Ecología Aplicada*, 10(1), 23-29. Available at: [http://www.scielo.org.pe/scielo.php?script=sci\\_arttext&pid=S1726-22162011000100003](http://www.scielo.org.pe/scielo.php?script=sci_arttext&pid=S1726-22162011000100003)

<sup>2</sup> Evidence on cattle paddocks implemented within project area available in shared folder "Environmental health>Grassland implementation paddocks"

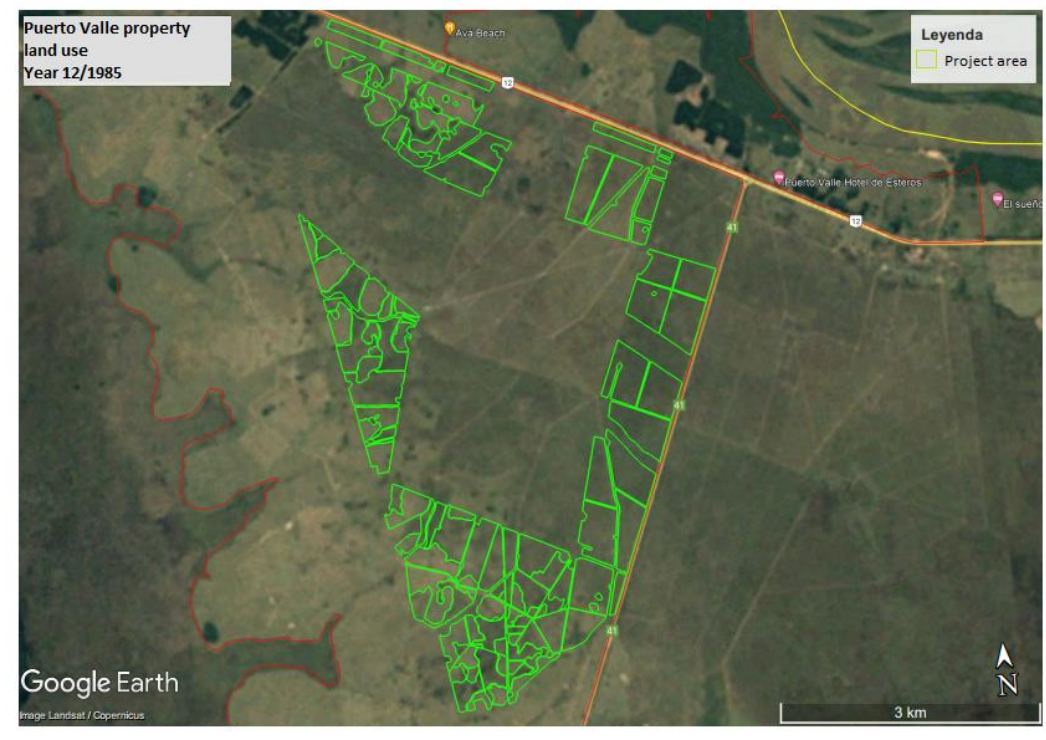


Figure 1. Puerto Valle property – plot of lands for the proposed ARR project activity are indicated in green. Date 2010

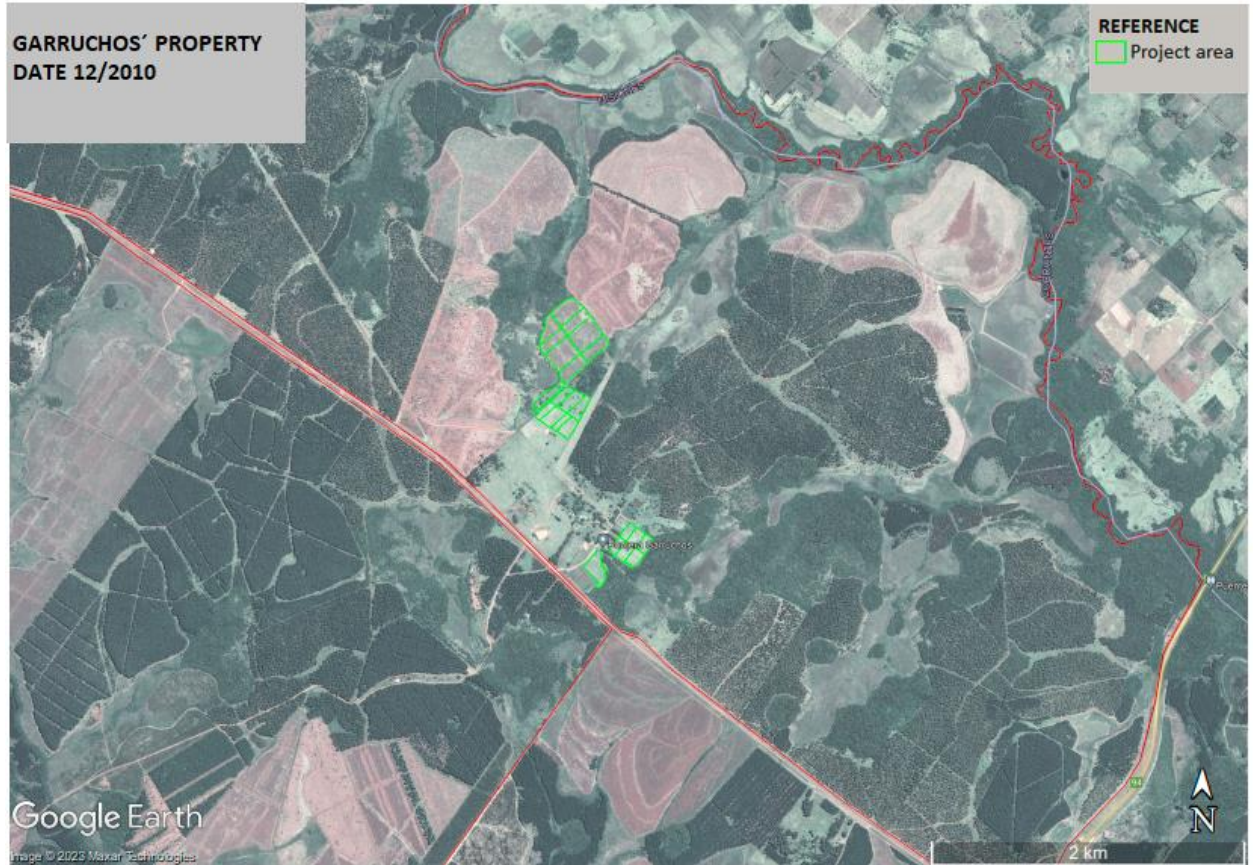


Figure 2. Garruchos ranch – plot of lands for the proposed ARR project activity are indicated in green. Date 2010

Regarding the wetland condition, it is evidenced from the National Wetland Inventory (MAyDS, 2017) in the figures below (figure 3 & 4), that the two properties are not wetlands. Although the area near to the project presents wetland conditions, the project area is not. This is particularly the case as, as part of the company's policy and FSC´s certification, HCV areas were identified by third party experts in the property, including wetland areas. These areas were excluded from the project area and no plantation took place as part of the project nor the company's commercial plantations (Figure 5). Moreover, the chosen species are not adapted to waterlogged conditions, and would not survive those conditions. Garruchos S.A with many years in the forestry sector designed the project accordingly to avoid those lowlands.

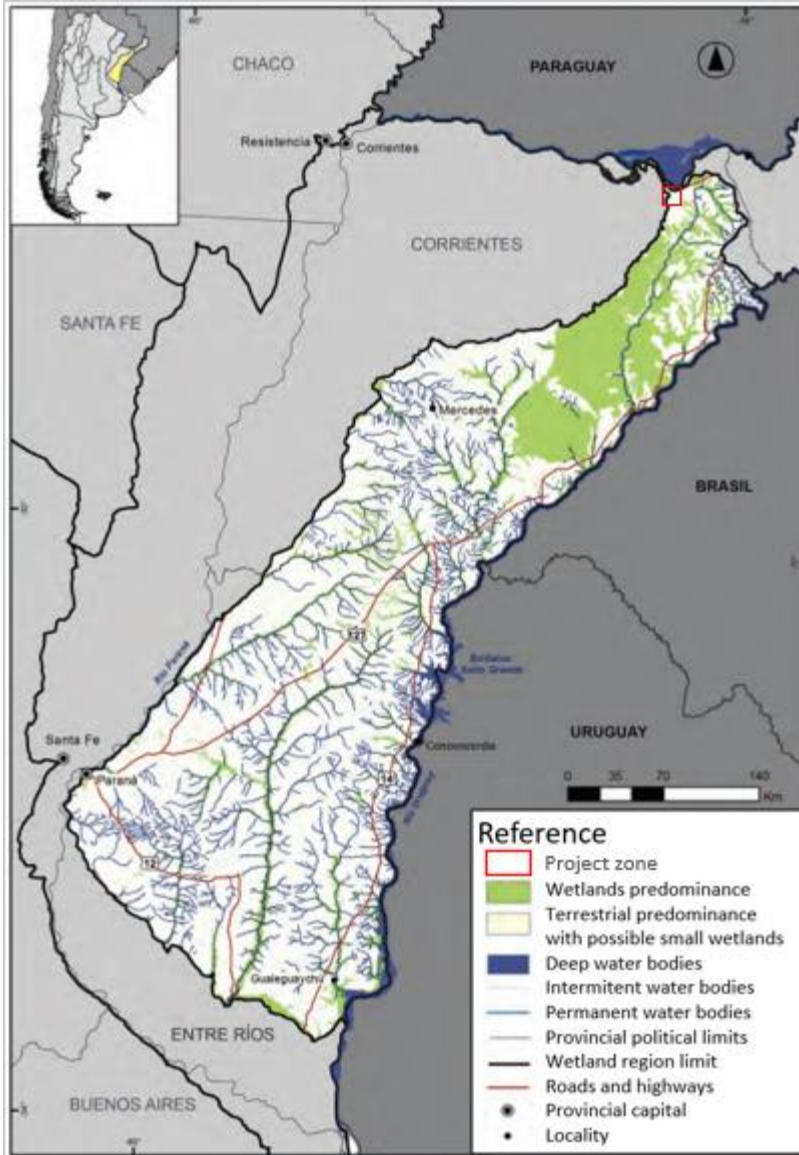


Figure 3. National Wetlands inventory for subregion in *Wetlands of the Chaco-Mesopotamian River Corridor Region* showing the area of Puerto Valle property. Adapted from MAyDS (2017)<sup>3</sup>

<sup>3</sup> Benzaquen, L., D.E. Blanco, R. Bo, P. Kandus, G. Lingua, P. Minotti y R. Quintana. (editores). 2017. *Regiones de Humedales de la Argentina*. Ministerio de Ambiente y Desarrollo Sustentable, Fundación Humedales/Wetlands International, Universidad Nacional de San Martín y Universidad de Buenos Aires

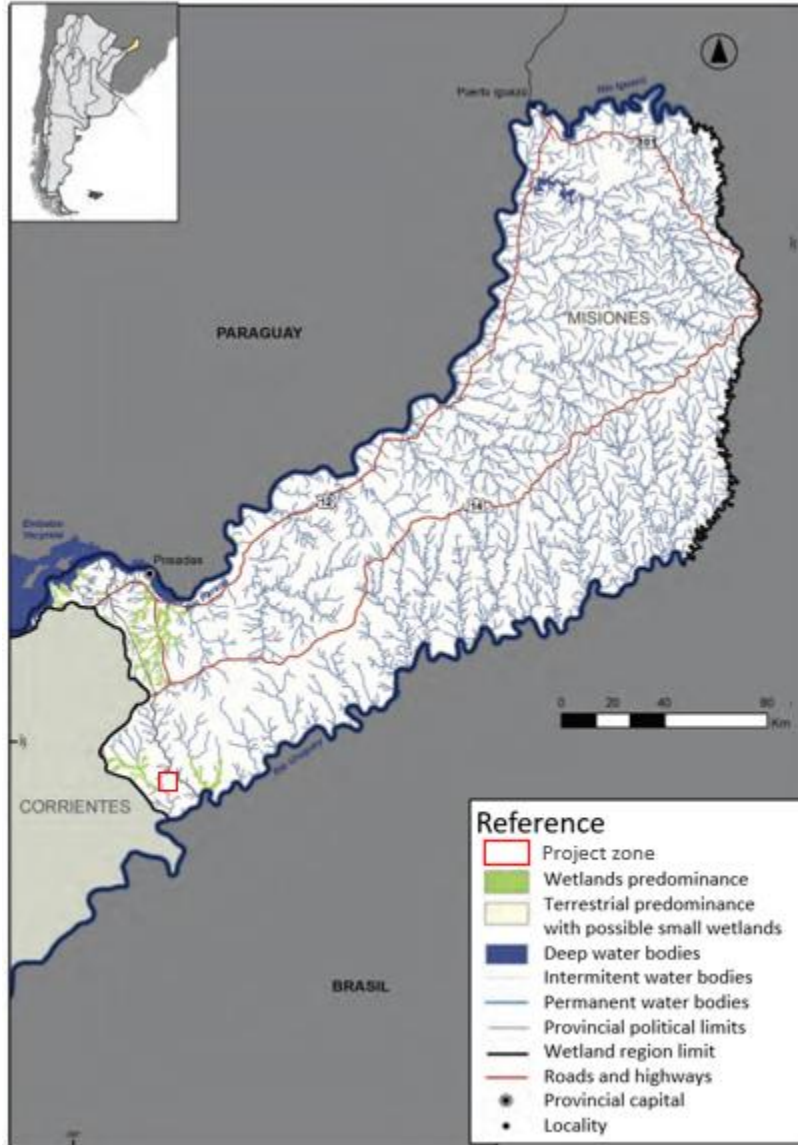


Figure 4. National Wetlands inventory for *Misioneros wetland Region* showing the area of Garruchos property. Adapted from MAyDS (2017) <sup>4</sup>

<sup>4</sup> Benzaquen, L., D.E. Blanco, R. Bo, P. Kandus, G. Lingua, P. Minotti y R. Quintana. (editores). 2017. Regiones de Humedales de la Argentina. Ministerio de Ambiente y Desarrollo Sustentable, Fundación Humedales/Wetlands International, Universidad Nacional de San Martín y Universidad de Buenos Aires

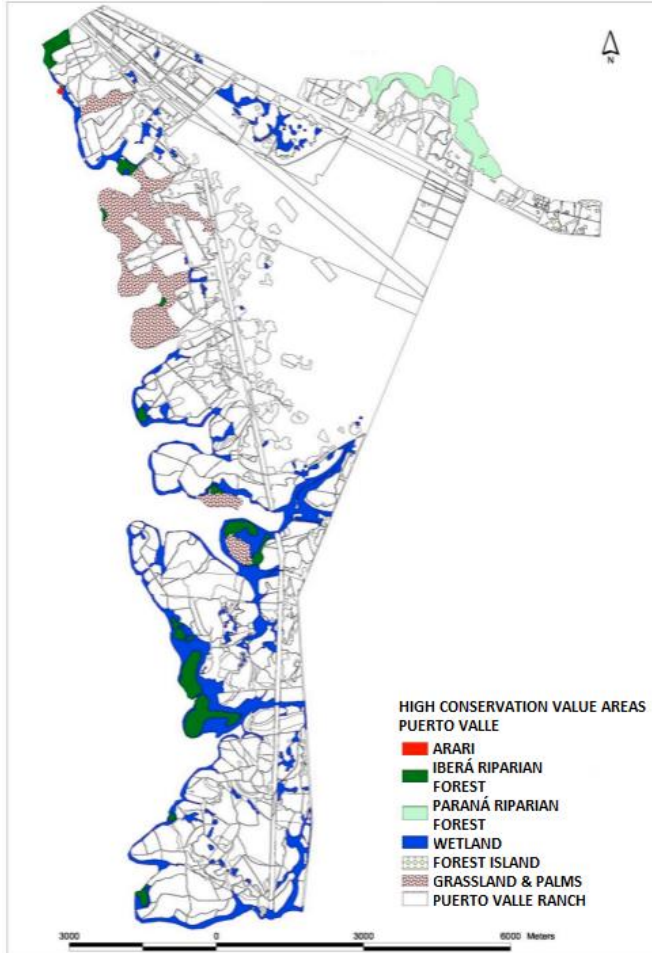


Figure 5. HCV areas within Puerto Valle, identified as wetlands and excluded from the project area. Garruchos S.A.’s Environmental Monitoring Report 2022.

### 1.4.3 Transfer project eligibility

Not applicable for the project

### 1.5 Project Design

- Single location or installation
- Multiple locations or project activity instances (but not a grouped project)
- Grouped project

#### Grouped Project Design

Not applicable

## 1.6 Project Proponent

<b>Organization name</b>	Cambium Earth S.L. (Cambium)
<b>Contact person</b>	Juan Murillo
<b>Title</b>	Head of Product Development
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<b>Telephone</b>	+34 608 350 706
<b>Email</b>	juan.murillo@cambium.earth

## 1.7 Other Entities Involved in the Project

<b>Organization name</b>	Garruchos S.A.
<b>Role in the project</b>	Implementing partner - land owner and forest manager
<b>Contact person</b>	Gumercindo Irala
<b>Title</b>	Forestry Manager Pomera Maderas (Garruchos S.A)
<b>Address</b>	Ruta Nac 12 Rotonda Km 1339/40
<b>Telephone</b>	+54 9 376 4695385
<b>Email</b>	gira@PomeraMaderas.com

<b>Organization name</b>	ProSustentia
<b>Role in the project</b>	VCS-CCB Certification Consultant
<b>Contact person</b>	Federico Moyano
<b>Title</b>	Director
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<b>Email</b>	fmoyano@prosustentia.com

## 1.8 Ownership

Cambium (hereafter “the Project proponent”) has the legal right for the project activity. The project is operated and administered by the project proponent on private property owned by Garruchos S.A<sup>5</sup> the implementing partner, in charge of management, and monitoring of the project, over the project crediting period. The ownership for the project is evidenced by the commercial agreement<sup>6</sup> signed between Cambium S.L. and Garruchos S.A. where Cambium appears as project developer with complete authority over the carbon credits to be generated, and Garruchos SA acts both as landowner and forest manager.

It’s important to mention that Garruchos S.A. is the legal name of the company and that the fantasy name (brand name) is POMERA MADERAS. As POMERA MADERAS brand is well known, the official web page<sup>7</sup> is under this name. Despite that, throughout this document the legal name Garruchos S.A. will be used as implementation partner and Cambium as project proponent.

## 1.9 Project Start Date

<b>Project start date</b>	01-September-2022
<b>Justification</b>	It is the date when the activities that lead to the generation of GHG emission removals (soil preparation) <sup>8</sup> were first implemented.

## 1.10 Project Crediting Period

<b>Crediting period</b>	<input type="checkbox"/> Seven years, twice renewable <input type="checkbox"/> Ten years, fixed <input checked="" type="checkbox"/> Other. ARR project with a 40-year crediting period
<b>Start and end date of first or fixed crediting period</b>	01-September-2022 to 31-August-2062

<sup>5</sup> Documentation available at validation and verification in shared folder “Ownership”

<sup>6</sup> Documentation available at validation and verification in shared folder “Ownership”

<sup>7</sup> Pomera´s web page available at: <https://pomeramaderas.com/corporativo/>

<sup>8</sup> Evidence of soil preparation with invoice and work order available in shared folder “Project start date”

## 1.11 Project Scale and Estimated GHG Emission Reductions or Removals

- < 300,000 tCO<sub>2</sub>e/year (project)
- ≥ 300,000 tCO<sub>2</sub>e/year (large project)

Calendar year of crediting period	Estimated GHG emission reductions or removals (tCO <sub>2</sub> e)
01-September-2022 to 31-December-2022	0
01-January-2023 to 31-December-2023	686.66
01-January-2024 to 31-December-2024	10,654.80
01-January-2025 to 31-December-2025	21,492.39
01-January-2026 to 31-December-2026	29,231.93
01-January-2027 to 31-December-2027	35,227.64
01-January-2028 to 31-December-2028	39,117.62
01-January-2029 to 31-December-2029	40,768.61
01-January-2030 to 31-December-2030	40,715.94
01-January-2031 to 31-December-2031	39,604.49
01-January-2032 to 31-December-2032	37,866.03
01-January-2033 to 31-December-2033	35,851.17
01-January-2034 to 31-December-2034	33,729.71
01-January-2035 to 31-December-2035	31,599.30
01-January-2036 to 31-December-2036	29,618.18
01-January-2037 to 31-December-2037	27,660.90
01-January-2038 to 31-December-2038	25,933.62
01-January-2039 to 31-December-2039	24,218.25
01-January-2040 to 31-December-2040	22,609.72
01-January-2041 to 31-December-2041	21,079.38
01-January-2042 to 31-December-2042	20,182.54
01-January-2043 to 31-December-2043	18,766.87
01-January-2044 to 31-December-2044	17,488.27
01-January-2045 to 31-December-2045	16,566.83

01-January-2046 to 31-December-2046	15,632.20
01-January-2047 to 31-December-2047	15,041.72
01-January-2048 to 31-December-2048	13,907.95
01-January-2049 to 31-December-2049	13,276.54
01-January-2050 to 31-December-2050	12,347.78
01-January-2051 to 31-December-2051	12,121.11
01-January-2052 to 31-December-2052	11,544.11
01-January-2053 to 31-December-2053	10,452.16
01-January-2054 to 31-December-2054	9,874.98
01-January-2055 to 31-December-2055	9,538.24
01-January-2056 to 31-December-2056	9,028.46
01-January-2057 to 31-December-2057	8,761.66
01-January-2058 to 31-December-2058	8,525.66
01-January-2059 to 31-December-2059	8,102.38
01-January-2060 to 31-December-2060	7,701.07
01-January-2061 to 31-December-2061	7,536.59
01-January-2062 to 31-August-2062	7,175.73
<b>Total estimated ERRs during the first or fixed crediting period</b>	<b>801,239.22</b>
<b>Total number of years</b>	<b>40</b>
<b>Average annual ERRs</b>	<b>20,030.98</b>

## 1.12 Description of the Project Activity

This *Mixed afforestation with native and non-native species in Argentina-I Project* (hereinafter “the Project”) consists of the afforestation of 987.74 hectares with different types of pine and eucalyptus species and a 3% of the area with a mix of native species. The project activity will be carried out in two locations owned by Garruchos S.A and managed by Cambium, in the

departments of Ituzaingó and Santo Tomé, within the province of Corrientes, Argentina. No harvesting activity will be done, to maximise the CO<sub>2</sub> removal from the atmosphere.

The total project area was planted between 2022 and 2023: 494.49 hectares were planted in the last quarter of 2022 and 493.25 hectares of Pinus were planted in the first quarter of 2023. The project includes both native and non-native woody species: 287.08 hectares of *Eucalyptus grandis*, 596.91 hectares of *Pinus hybrid (elliottii x caribaea)*, 60.82 hectares of *Pinus tadea*, 14.35 hectares of *Pinus elliottii* and 28.58 hectares of a mix of diverse native species (see complete list in section 2.4.2). There will be no harvesting activity in this ARR project. The sole objective is to mitigate climate change by capturing CO<sub>2</sub> from the atmosphere, contributing toward carbon neutrality.

It's important to point out that Garruchos S.A silvicultural activities have been certified under the Forest Stewardship Council (FSC) since 2006, which shows the long-term commitment towards responsible forest management<sup>9</sup>. The design, planting and maintenance of the forest will be carried out by means of a sustainable forest management program as well. The program seeks to avoid any negative impact over the biodiversity, local communities, and hydro balance of the basins or on the landscape.

Furthermore, the project will also be carried out considering the guidelines on good forestry management suggested as a basic tool for implementation of sustainable environmental forestry by the National Department of Agriculture, Fishing, Livestock and Food (SAGPyA)<sup>10</sup>, the Guideline of Good Practices for the province of Corrientes<sup>11</sup>, as well as Principles and Criteria for Forest Stewardship of the FSC.

At the same time, research activities will take place together with Misiones National University and INTA to generate further information on native species growth needs. In this sense, it must be noted that in native species plots, Eucalyptus species will be planted to provide a shelter service to native species during the first 2 years. These exotic individuals will be then harvested; for this reason, they will not be monitored or included within the project's carbon sequestration estimations.

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<sup>9</sup> Certification evidence available to VVB during validation/verification Available at: <https://app.powerbi.com/view?r=eyJrIjoib2U3NGMyNWVtZTAxNS00MzVhLWVhNmMtOTThZjdiYjQ4MWNkIiwidCI6IjE5NGU2OWRiLWVhNmNjU0tNDk2Yi05NmE5LTVkNTZiZWxZDI5MSIsImMiOiJl9>

<sup>10</sup> SAGPyA Manual on Good Forestry Practice. Available at: [https://www.magyp.gob.ar/sitio/areas/desarrollo-foresto-industrial/buenas\\_practicas/](https://www.magyp.gob.ar/sitio/areas/desarrollo-foresto-industrial/buenas_practicas/)

<sup>11</sup> Manual of Good Practices of the Province of Corrientes. Available at: [https://www.magyp.gob.ar/sitio/areas/desarrollo-foresto-industrial/buenas\\_practicas/\\_archivos/000001\\_Provincia%20de%20Corrientes.pdf](https://www.magyp.gob.ar/sitio/areas/desarrollo-foresto-industrial/buenas_practicas/_archivos/000001_Provincia%20de%20Corrientes.pdf)

Moreover, the plantations are expected to contribute to minimising further soil erosion and compaction by providing tree cover to the areas thereby protecting and restoring the degraded areas. The project activities also provide additional co-benefits, through the creation of employment opportunities for local stakeholders, restoration of lands with native species, as well as others.

#### Site preparation

Soil preparation creates optimal conditions for the establishment of the plantation, with adequate levels of aeration, humidity and temperature. Efficient contact between the seedling roots and the soil is sought to achieve a good establishment rate. Soil protection is the main consideration, considering rainfall, soil texture, slope and drainage. Soil is subsoiled and harrowed. Subsoiling is done only on the planting line to minimise movement and disturbance, and perpendicular to the slope to prevent erosion. Harrowing reduces the size of clods and improves the contact of soil particles with the roots. The harrow passes over the subsoil. Weed control is then carried out.

Puerto Valle:

Pine areas: A first pass was made with a heavy harrow (Fiat AD14 bulldozer), and finally a ridging machine was used because the soil is low (Figure 6).

Eucalyptus areas: In these areas a heavy harrow (Valtra 190 HP) was used for one pass, followed by a second pass with a light harrow (New Holland 110KP) and finally a subsoiler with 3 tines to decompactify the soil (Valtra 190) (Figure 7).



Figure 6. Soil preparation in Puerto Valle (September 2022)



Figure 7. Soil preparation in Puerto Valle for Eucalyptus plantation (November 2022)

Garruchos:

Native areas: On the hectares planted with native species in Garruchos, the first pass was made with a heavy harrow, followed by a light harrow and finally a subsoiler with 3 tines to break up the compaction (Figure 8).



Figure 8. Site preparation in Garruchos Ranch for the plantation of native species (September 2022)

Nursery for plantations

The nursery is in Puerto Valle property and has an annual production capacity of approximately 4,000,000 seedlings (Figure 9). It is mainly oriented towards the production of pine and native species from seeds, while eucalyptus is reproduced through vegetative propagation. The production of clonal eucalyptus in plastic tubers was replaced by biodegradable, cellulose based, FSC® certified tubers. This improves seedling quality, reduces the volume of plastic waste, and lowers the risk of potential alteration. All seedlings are of high genetic quality, certified by INASE (National Seed Institute) <sup>12</sup> and SENASA (National Agri-food Health and Quality Service) <sup>13 14</sup>.

<sup>12</sup> INASE web page available at: <https://www.argentina.gob.ar/inase>

<sup>13</sup> SENASA web page available at: <https://www.argentina.gob.ar/senasa>

<sup>14</sup> Seedling certification available to VVB in shared folder "Environmental health>Seedlings certificate"



Figure 9. Nursery in Puerto Valle

#### Weed Control

To improve conditions for plant development and ensure plant establishment and survival, weed control is carried out. In this way, competition for water, light and nutrients is reduced. The weed control programs currently applied by Garruchos S.A uses a combination of chemical, manual and/or mechanical control practices. Priority is given to minimising the use of agrochemicals and reducing the area of application. The handling, storage, application, and final disposal of phytosanitary products is carried out under strict safety standards for the operator and the environment, in accordance with the "Programa de Manejo Responsable de Agroquímicos"<sup>15</sup> (Program for the Responsible Management of Agrochemicals) from INTA (Nation Institute for Agriculture Technology).

#### Pest control

The main pest is the cutter ant, and pre- and post-planting populations that may persist are controlled, as well as other pests if necessary. The control strategy is based on a set of integrated measures to keep damage levels below economically sustainable levels. The measures are intended to have a low impact on the environment and represent a low risk to forest operators and neighbouring local communities. Controls are carried out using permitted phytosanitary products. The handling, storage, application, and final disposal of phytosanitary products are carried out in accordance with the "Programa de Manejo Responsable de Agroquímicos"<sup>16</sup>

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<sup>15</sup> INTA. Instituto Nacional de Tecnología Agropecuaria. Programa de Manejo Responsable de Agroquímicos: <https://inta.gob.ar/sites/default/files/inta-manual-uso-agroquimicos-frutihorticola.pdf>

<sup>16</sup> <https://inta.gob.ar/sites/default/files/inta-manual-uso-agroquimicos-frutihorticola.pdf>

(Responsible Agrochemical Management Program). To reduce the use of phytosanitary products, all controls are directed at the anthill.

In all cases, pre-planting ant control was carried out with Formidor (fipronil<sup>17</sup>), which consists of granulated baits. Between 2 and 3 kg per hectare was used. After planting, checks were made to ensure that no ant mounds were reactivated.

Plantation per plot

Planting was done manually with a shovel. In the case of native species planted in Garruchos, the plants were provided with planting gel to avoid water stress. Planting density varies between 625 to 1250 plants/ha depending on the species and the genetic material used (clones/seeds) (see Table 1 for more details). The destination of the plantation is not commercial, therefore the density that optimises the highest possible carbon removal is sought, based on the quality of the site, and the species or genetic material. The seedlings come from the company's own nursery in biodegradable tubes. Eucalyptus plantations are fertilised with nitrogen, phosphorus and potassium NPK+ micronutrients in a targeted way to the plant and with granulated products. This procedure only occurs once at the time of the planting of this species. Planting is carried out at two times of the year, spring and autumn, when climatic conditions are favourable for plant development.



Figure 10. Plantation of native species in Garruchos (October-December 2022)

The planting scheme for the project will be as follows:

<sup>17</sup> [https://www.casadeinsecticidas.com.ar/imgprod/Formidor\\_control\\_hormigas.pdf](https://www.casadeinsecticidas.com.ar/imgprod/Formidor_control_hormigas.pdf)

Table 1. Planting scheme for the project activity

Stratum	Line spacing and trees spacing (meters)	Gender	Species	Tree density	Area (ha)	YOP
1	4X3	<i>Pinus</i>	<i>hybrid (elliottii x caribaea)</i>	833 plants/ha	473,82	Q2 2023
2	4x2	<i>Pinus</i>	<i>hybrid (elliottii x caribaea)</i>	1250 plants/ha	123,09	Q4 2022
3	4x2	<i>Pinus</i>	<i>taeda</i>	1250 plants/ha	41,39	Q4 2022
4	4x3	<i>Pinus</i>	<i>taeda</i>	833 plants/ha	19,43	Q2 2023
5	4x2	<i>Pinus</i>	<i>elliottii</i>	1250 plants/ha	14,35	Q4 2022
6	4x4	<i>Eucalyptus</i>	<i>grandis</i>	625 plants/ha	129,83	Q4 2022
7	4x2	<i>Eucalyptus</i>	<i>grandis</i>	1250 plants/ha	157,25	Q4 2022
8	4x4	Native mix + Eucalyptus		625 plants/ha	5,76	Q4 2022
9	4x2	Native mix + Eucalyptus		1250 plants/ha	6,29	Q4 2022
10	4x4	Native mix		625 plants/ha	9,62	Q4 2022
11	4x2	Native mix		1250 plants/ha	6,91	Q4 2022
Total					<b>987,74</b>	

The project is not located within a jurisdiction covered by a jurisdictional REDD+ program.

### 1.13 Project Location

The project consists of 987.74 hectares of native and non-native species planted in two private properties owned by Garruchos S.A. Puerto Valle farm is in the Mesopotamian region, northeastern Argentina (latitude 27° 36' 33.01" S; longitude 56° 26' 11.60" O), on National Route No. 12 Km 1282, in the Department of Ituzaingó, Province of Corrientes. The nearest towns are Santa Tecla (4 km), Ituzaingó (28 km) and Gobernador Virasoro (92 km), and further away is the capital, Corrientes City (246 km). Regarding the province of Misiones, the establishment is located 65 km from the city of Posadas (Figure 11).

Garruchos farm is also located in the Mesopotamian region, northeast of Argentina (Latitude 28° 5' 21.15" S; longitude 55° 44' 50.65" O), on the Provincial Ruta N° 7 km 79 in the Department of Santo Tomé, Province of Corrientes. The nearest towns are Colonia Garabí and Garruchos in the province of Corrientes, and Azara in the Province of Misiones. This property is located 104 km from the city of Posadas and 384 km from Corrientes City (Figure 12).

The location of the planted plots in the respective properties are detailed in shared KML file.

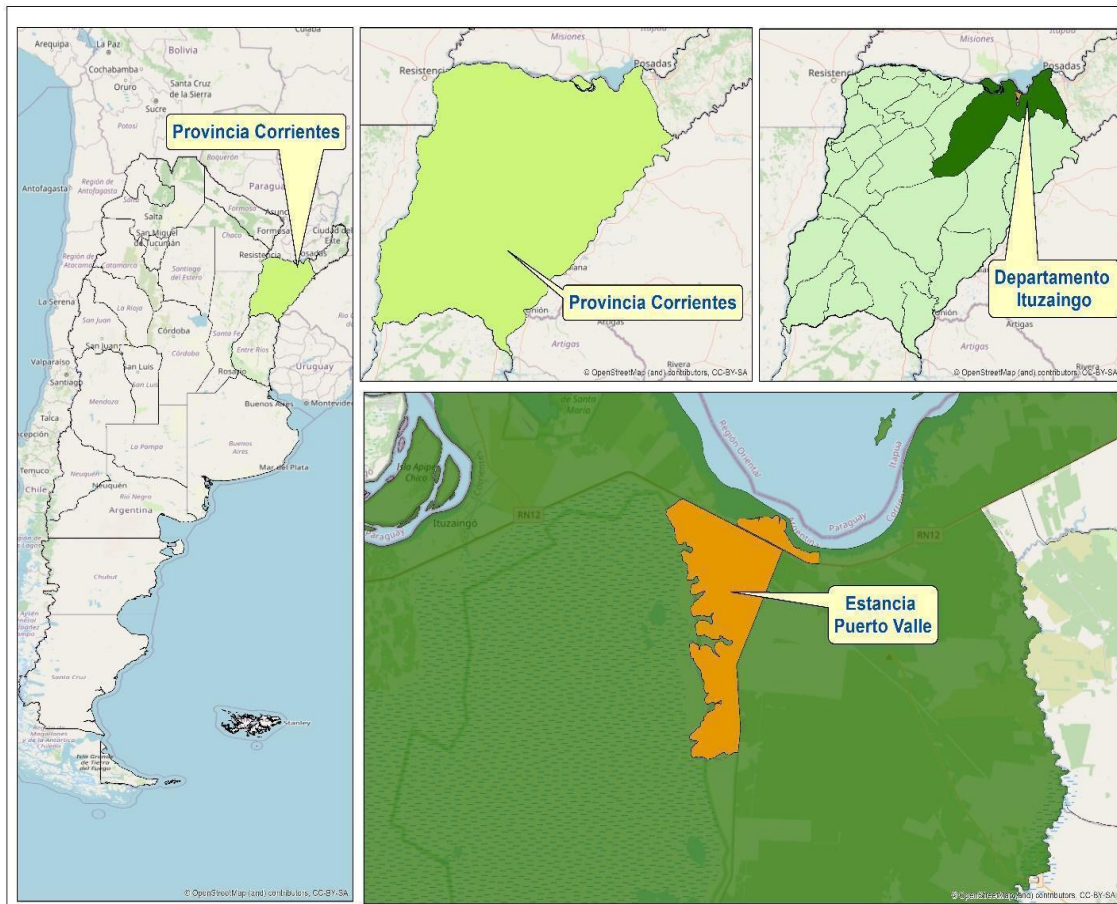


Figure 11. Puerto Valle property Location

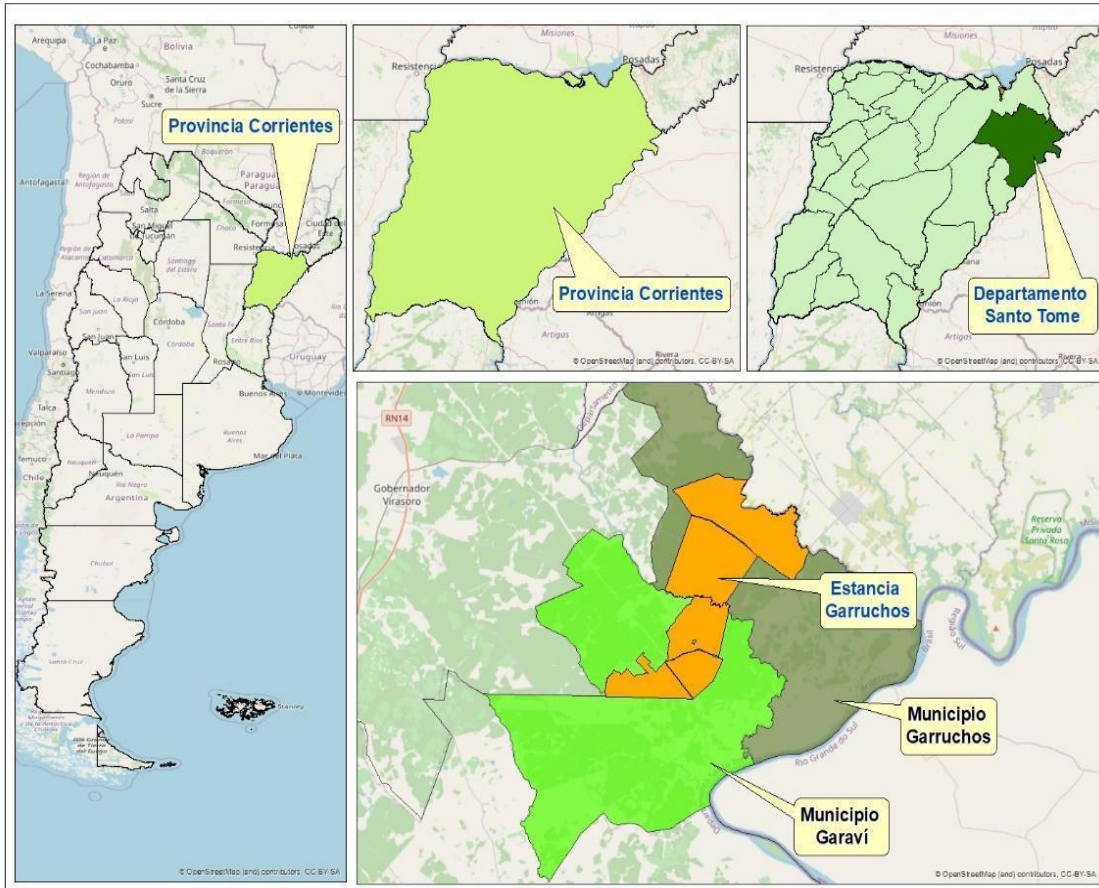


Figure 12. Garruchos property Location

### 1.14 Conditions Prior to Project Initiation

The conditions existing prior to the project initiation are the same as those described as the baseline scenario in Section 3.4: continuous extensive cattle raising.

The ecosystem of the province of Corrientes is humid subtropical. It is characterised by a warm and humid climate with abundant rainfall throughout the year. The activity in the project area has been continuous extensive cattle ranching for decades, including an area of forest planted around year 2002 (16ha, 1.6% of project area), later harvested around 2010. Cattle raising is the most suitable agricultural activity due to the conditions of the land, an activity widely spread in the region representing almost 40% of the agriculture sector in the province<sup>18</sup>.

<sup>18</sup> "Informe Expoagro 2021" in La Nación 14/10/21, available at: [https://www.lanacion.com.ar/economia/campo/radiografia-de-la-ganaderia-en-corrientes-como-esta-la-actividad-y-cual-es-su-norte-nid14102021/?utm\\_source=google&utm\\_medium=cpc\\_verticales&utm\\_campaign=campo&utm\\_content=dsa&gad\\_so](https://www.lanacion.com.ar/economia/campo/radiografia-de-la-ganaderia-en-corrientes-como-esta-la-actividad-y-cual-es-su-norte-nid14102021/?utm_source=google&utm_medium=cpc_verticales&utm_campaign=campo&utm_content=dsa&gad_so)

This project activity is implemented within the Argentinean Ecoregions of “Campos y Malezales” and the northeast limit of “Esteros del Iberá”<sup>19</sup>. The first is distinguished from the neighbouring ecoregions by its plant cover, of vast plain grasslands, barely interrupted by small, wooded patches. The second, mostly known for its wetlands, consists of 3,900,000 hectares of low depth, due to the passage of the Paraná River some 8,000 years ago.

In the higher lands of “Esteros del Iberá” Ecoregion there is usually a predominance of dense herbaceous strata in which palms (*Copernicia alba*) and isolated trees are scattered. The species associations of the herbaceous stratum depend on the soil moisture gradient some of the native species include yellow thatch (*Sorghastrum setosum*), bobo (*Paspalum intermedium*), slender threeawn (*Aristida jubata*) and *Paspalum rufum*.

To the north of “Campos y Malezales” ecoregion, grasslands composed of herbaceous communities prevail, whose specific physiognomy and composition depends on their location on hills, slopes or bottom of hollows. They constitute the formation called "Campos", which due to its subtropical and humid condition is home to a great wealth of herbaceous species. The grasslands are interrupted by thin strips of river gallery forest and by small islets of native forest (composed of the same species used in the project) locally called “capons” or “mogotes”. Towards the south, almost pure and very uniform grasslands predominate due to the persistence of waterlogging in the soils with limitations due to poor drainage. This sector is known as "Malezales".

According to Koppen climate classification, Corrientes Province is climatically classified as “Caf” (see figure below) which bears the following features:

- Mild and humid; type “C”
- Temperature in the warmest month over 22 °C; type “a”
- Precipitation throughout the whole year; type “f”

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<sup>19</sup> Matteucci, S., Rodriguez, A., Silva, M., & de Haro, C. (2012). Ecorregiones y complejos ecosistémicos argentinos. Buenos Aires, Orientación Gráfica Editora, 309-348.

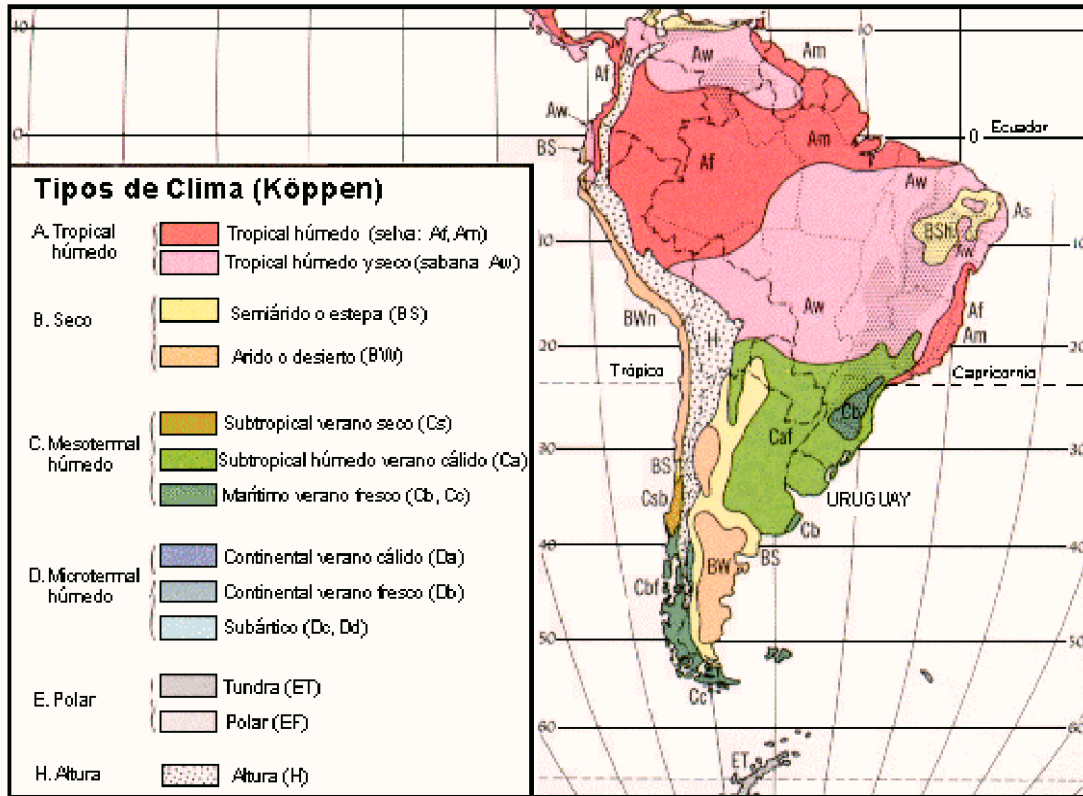


Figure 13. Types of Climates South America Köppen<sup>20</sup>

The climate is humid subtropical, very warm throughout the summer but with frost in winter, without a dry season; with abundant rainfall decreasing from northeast to southwest. In the area where Puerto Valle and Garruchos property are located, rainfall is frequent and exceeds 1,500 mm per year in the NE, gradually descending to less than 1,000 mm in the SW angle. The maximum precipitations are registered in autumn and spring, periods where water excesses are frequent. In summer moderate deficiencies can be registered and in August the absolute minimum values, with a monthly average for the last 8 years of 53.8mm.

<sup>20</sup> <http://campos.caldeyro.com/uruguay-clima.php>

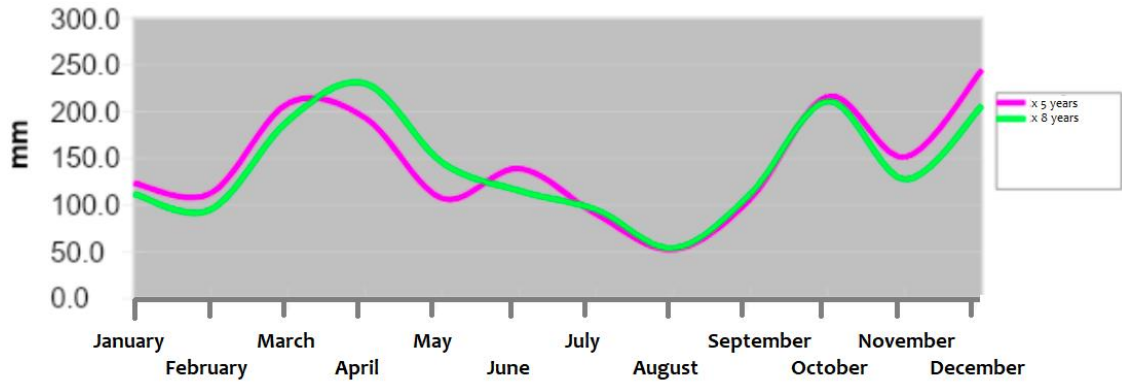


Figure 14. Historical Rainfall –Puerto Valle Ranch and Garruchos Ranch

In terms of temperatures, there is a decrease in annual averages from north to south, with average values of over 22°C in the north, to 19.5°C in the southern sector. Maximum temperatures can reach 44 °C, while minimum can reach -2 °C.

In order to summarise the characteristic climatic values of the region, the following table is presented. It contains historical average meteorological data on temperatures (maximum, minimum and average), relative humidity, rain, rainy days and hours of sunshine for the region.

Table 2. Meteorological Information INTA Mercedes. Historical Average - Last 40 years<sup>21</sup>

Historic average (last 40 years)							
Month	Temperature (°C)			Relative Humidity	Precipitation (mm)	Days with rain	Sun hours
	Max	Min	Mean				
January	32.1	20.1	26.2	66	145.5	8	274.1
February	31.2	19.7	25.3	68	177.3	7	239.3
March	29.0	17.9	23.2	73	183.9	8	231.4
April	25.4	14.2	19.4	76	170.6	7	223.7
May	22.7	11.8	16.9	80	103.9	8	194.7
June	19.5	9.2	13.8	82	74.5	7	164.8
July	19.6	8.8	13.6	78	60.4	6	179.5
August	20.8	9.4	14.8	74	57.4	7	197.8
September	22.6	11.2	16.6	74	98.0	8	213.2
October	25.1	14.0	19.5	73	140.6	9	241.9
November	28.0	16.3	22.3	67	147.0	7	276.1
December	31.2	18.6	24.9	63	125.8	7	288.8
<b>Average and totals</b>	<b>25.6</b>	<b>14.3</b>	<b>19.7</b>	<b>72.8</b>	<b>1484.9</b>	<b>89</b>	<b>2725.3</b>

<sup>21</sup> <https://www.argentina.gob.ar/inta/sedes#82-eea-mercedes>

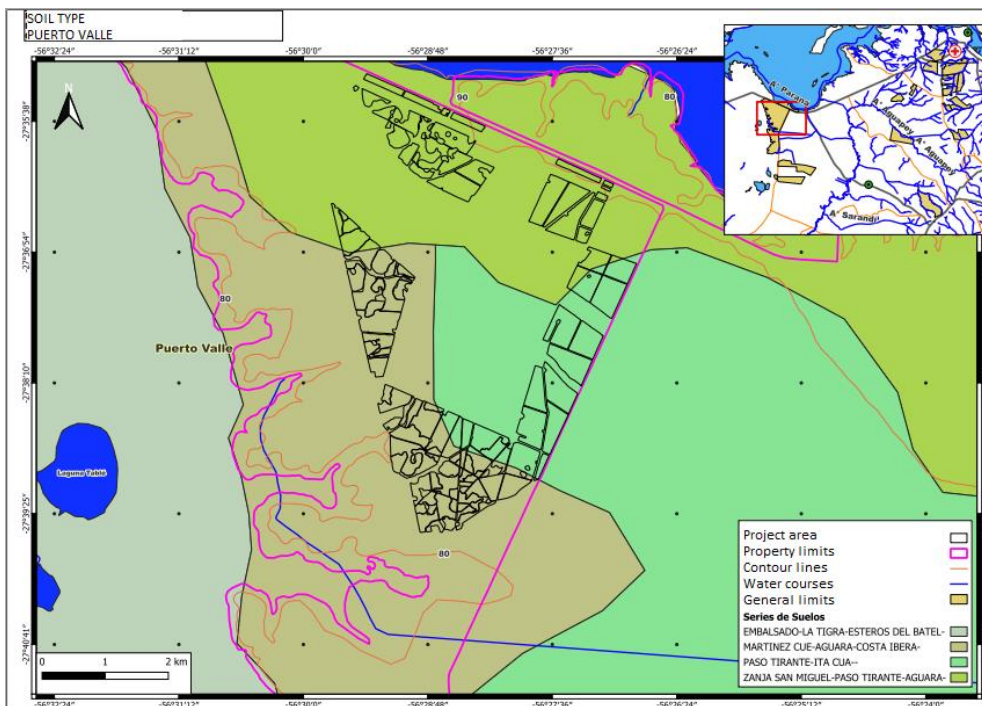
### Geology and geomorphology

According to the Soil Map of the Province of Corrientes (INTA, 1996<sup>22</sup>), the soils included in Puerto Valle belong to Cartographic Unit No. 51 (Martinez Cué Series, Aguará, Costa Iberá), Cartographic Unit No. 66 (Paso Tirante Series, Ita Cuá) and Cartographic Unit 99 (Zanja San Miguel, Paso Tirante and Aguará Series). Figure 15 shows the topographic map and soil types of Puerto Valle.

Cartographic Unit 51 is an association of fine and thick loam with susceptibility to water erosion, low natural fertility and poor drainage. It corresponds to a landscape of inserted hills in the central part of the Rincón de Santa María, delineating the eastern margin of the Esteros del Iberá, in the form of pseudo-albardones, with grassland vegetation on the planes and meadows on the elevations.

Cartographic Unit 66 contains fine loam, characterised by poor drainage and susceptibility to waterlogging. It corresponds to a landscape of extensive plain and scrubby environment with a plant cover of humid meadows and grasslands.

Cartographic Unit 99 is an association of fine loam, mixed with susceptibility to water erosion, low natural fertility and poor drainage. It corresponds to a gently undulating to undulating plain landscape, in a bulwark position on the coast of the Paraná River, NE sector, from Rincón de Santa María and Rincón de Ombú.



<sup>22</sup> INTA (1996) Mapa de suelos de la provincia de Corrientes 1:500.00

Figure 15. Topographic map for Puerto Valle, with project area delimited in black.

Regarding Garruchos property, according to the Soil Map of the Province of Corrientes (1996), the soils included in the project area belong to Cartographic Unit No 38 (Series: Diaz de Vivar, Arroyo Itaembé y Sosa Cué).

Cartographic Unit 38 is an association of very fine clay with susceptibility to water erosion and low fertility. It corresponds to a landscape of dome-shaped hills, with relatively wide valleys, forming a high energy relief, accompanied by a dense dendritic drainage network.

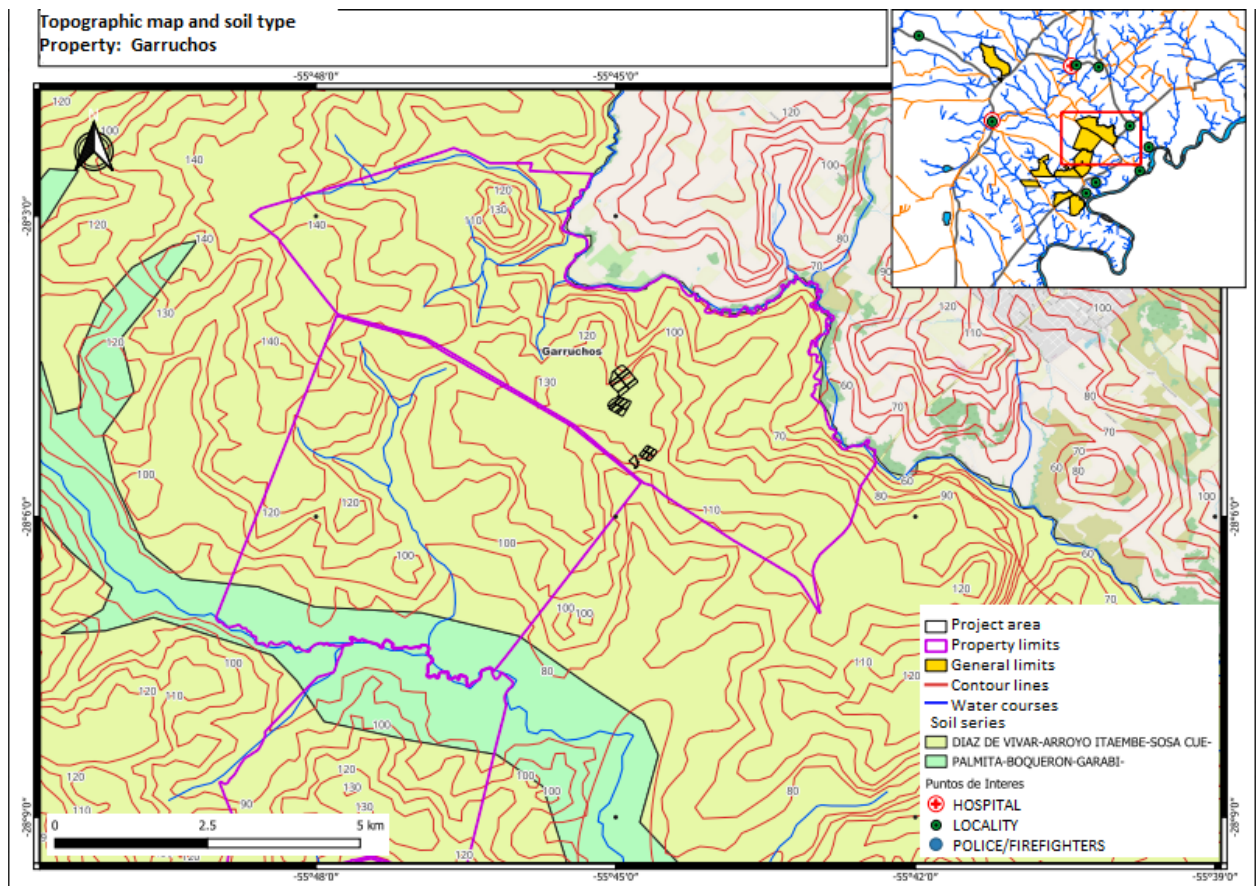


Figure 16. Topographic map for Garruchos´ property, with project area delimited in black.

### Hydrology and Hydrogeology

In the territory of Corrientes there are approximately 600 bodies of water made up of rivers, streams, lagoons, estuaries, and wetlands. Most of the Puerto Valle ranch is included within the Central Hydrographic Basin in the Esteros del Iberá Region, basin of the Corrientes River, a tributary of the Paraná River. Inside, the area is depressed to flat, with a very gentle NE-SW

general slope, but in relation to the surrounding river valleys, it presents a greater relative height. It's feeding is of pluvial origin. In the middle part of the property there is an artificial ditch, with a permanent flow, which communicates to the east with the Santa Tecla ditch, outside the limits of the property. The property is located within the wetland subregion scrublands, sandbanks and coastal streams, but the project area is not located on wetland. This can be evidenced in the National Wetland Inventory<sup>23</sup> and the description included in section 1.4.

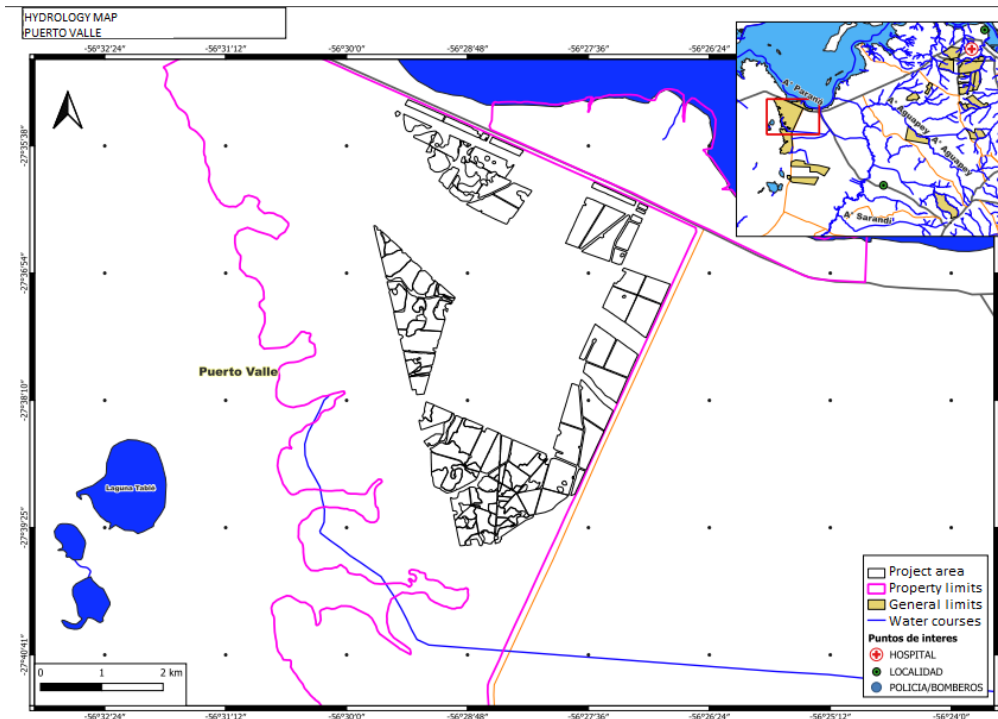


Figure 17. Hydrographic map Puerto Valle Ranch. The plots included in the project activity within the property are delimited in black

In the case of Garruchos farm, it is included within the minor basins of the Chimiray creek, Garabí and Ciriaco. The first is the provincial limit, and also constitutes the northern limit of the property for a length of 14.5 km. The Garabí stream crosses the property in a NW - SE direction. The Ciriaco stream marks the southwestern end of the property.

<sup>23</sup> Benzaquen, L. et al. (2017). Regiones de Humedales de la Argentina. Ministerio de Ambiente y Desarrollo Sustentable, Fundación Humedales/Wetlands International, Universidad Nacional de San Martín y Universidad de Buenos Aires. p. 150

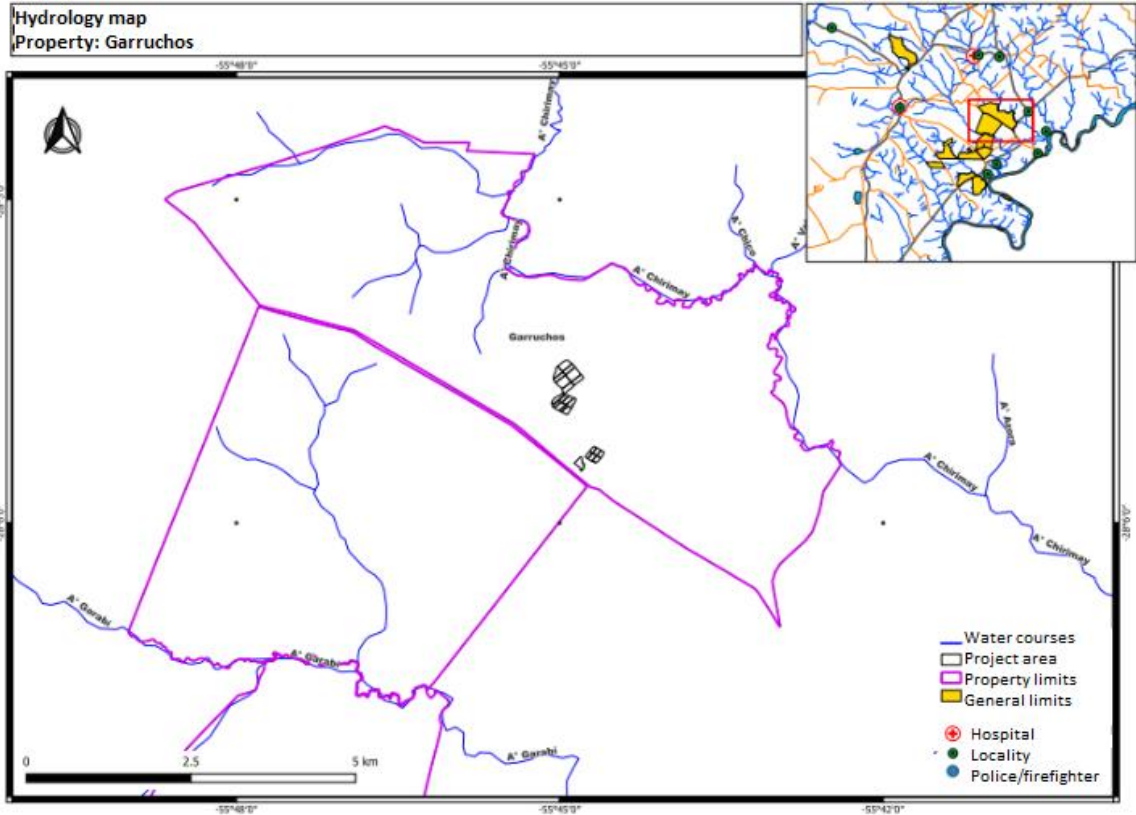


Figure 18. Hydrographic map Garruchos Ranch. The project area included in the project activity within the ranch are delimited in black

### 1.15 Compliance with Laws, Statutes and Other Regulatory Frameworks

Garruchos S.A, the implementing partner, is an industrial forestry company; therefore, afforestation’s activities are part of its bylaws. Furthermore, the project activity is not mandatory for the project proponent in any circumstance. Its activities comply with national law and regulations, since the management plan has been approved by Corrientes´ Water and Environment Institute (ICAA, for its Spanish acronym) <sup>24</sup>, as well as the Law 26,331 on Minimum Budgets for Environmental Protection of Native Forests. The first, regulates development activities under good sustainability practices and within local regulations. The second law limits the type of activities that can be carried out on native forest lands depending on their conservation category.

<sup>24</sup> ICAA file number and project approval available during validation/verification within shared folder “Authorizations>ICAA”

Evidence of local law compliance can be found in FSC public summary reports<sup>25</sup> available during validation.

- *Law No 26,331<sup>26</sup>- Minimum Budget for the Environmental Protection of Native Forest:*

The objective of the Law, defined in Art 3, are the promotion of the conservation by means of the Territorial Organization of Native Forest and the regulation of the expansion of the farming frontier and of any other change of land use"; the regulation and control of a reduction in existing forests, in pursuit of sustainability of the forests; improvement and maintenance of ecologic and cultural processes in native forests; making precautionary and preventive principles prevail in the preservation of native forests, without affecting known or unknown benefits they may provide and the encouragement of activities related to the enrichment, conservation, restoration, improvement and to the sustainable management of native forests.

The law, which delegates the Territorial Organization of Native Forests to the provinces, creates three categories according to conservation value. Whether the transformation is allowed or not depends on conservation.

*Category 1 - RED:* represents forest sectors with a great conservation value which must not be transformed. The category includes areas which, due to relative position to reserve, connectivity value, presence of outstanding biological values and/or basins that they protect, merit perpetual persistence as forest, including importance to indigenous communities and the subject of a scientific investigation.

*Category 2 - YELLOW:* forest sectors with a medium conservation value which, although they may be degraded, may (to the jurisdictional authority´s discretion) acquire a great conservation value implementing restoration activities. These sectors may be subjected to different uses: sustainable exploitation, tourism, scientific collection and research.

*Category 3 - GREEN:* forest sectors with a low conservation value which may be partly or wholly transformed.

In the following figures, the Territorial Planning of Native Forests categories can be appreciated, according to the national law and the location of the properties. The project area has no category assigned as it has no native forest.

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<sup>25</sup> Reports for the company available in shared folder "FSC certification" to VVB during validation/verification

<sup>26</sup> <https://www.argentina.gob.ar/normativa/nacional/ley-26331-136125>

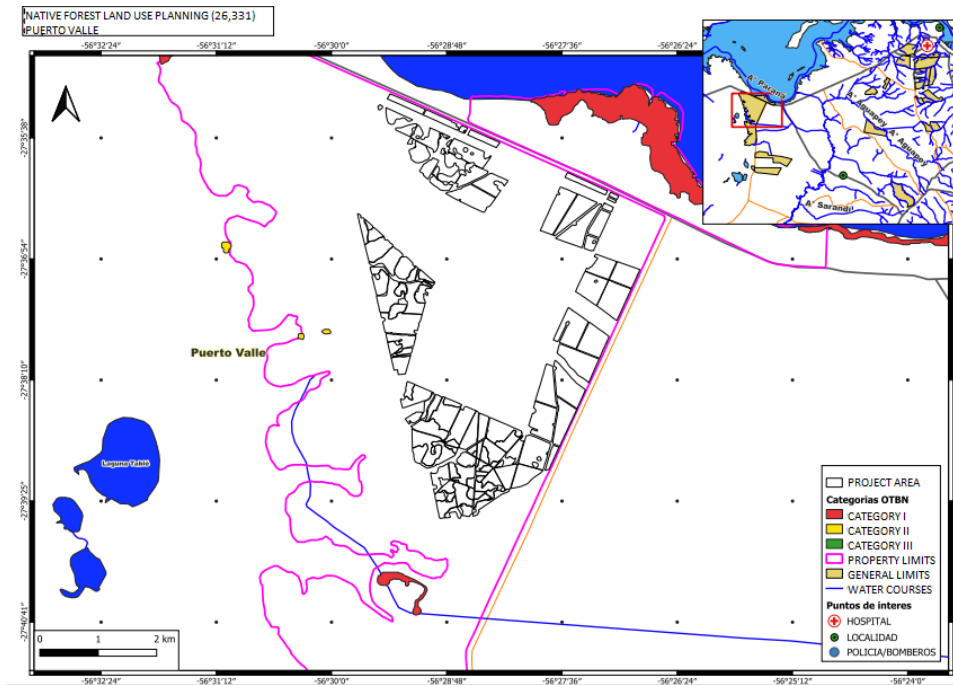


Figure 19. Native Forest Land Use Planning in Puerto Valle property. The project area within the property is delimited in black.

As it can be seen in the figure above, Puerto Valle property contains native forest formations included in Category I (red): sectors of very high conservation value that should not be transformed, located in the gallery forest of the streams; and forests in Category II (yellow): sectors of medium conservation value, which allow sustainable use, tourism, collection and scientific research, located in different sectors of the property. In these areas, the provisions of this regulation are respected.

As for Garruchos property, it can be seen that it contains native forest formations included in Category I (red): sectors of very high conservation value that should not be transformed, located in the gallery forest of the Chimiray and Garabí streams; and forests in Category II (yellow): sectors of medium conservation value, which allows use with sustainable use, tourism, collection and scientific research, located in different sectors of the property.

All categorised areas regulated by Law 26,331 are respected in full. On top of this, there are also more areas containing native forest along the riverbank or in mogotes, which the company intends for protection purposes, although they are not included by the category scales established by Law 26,331, they are included as part of the identified HCV areas.

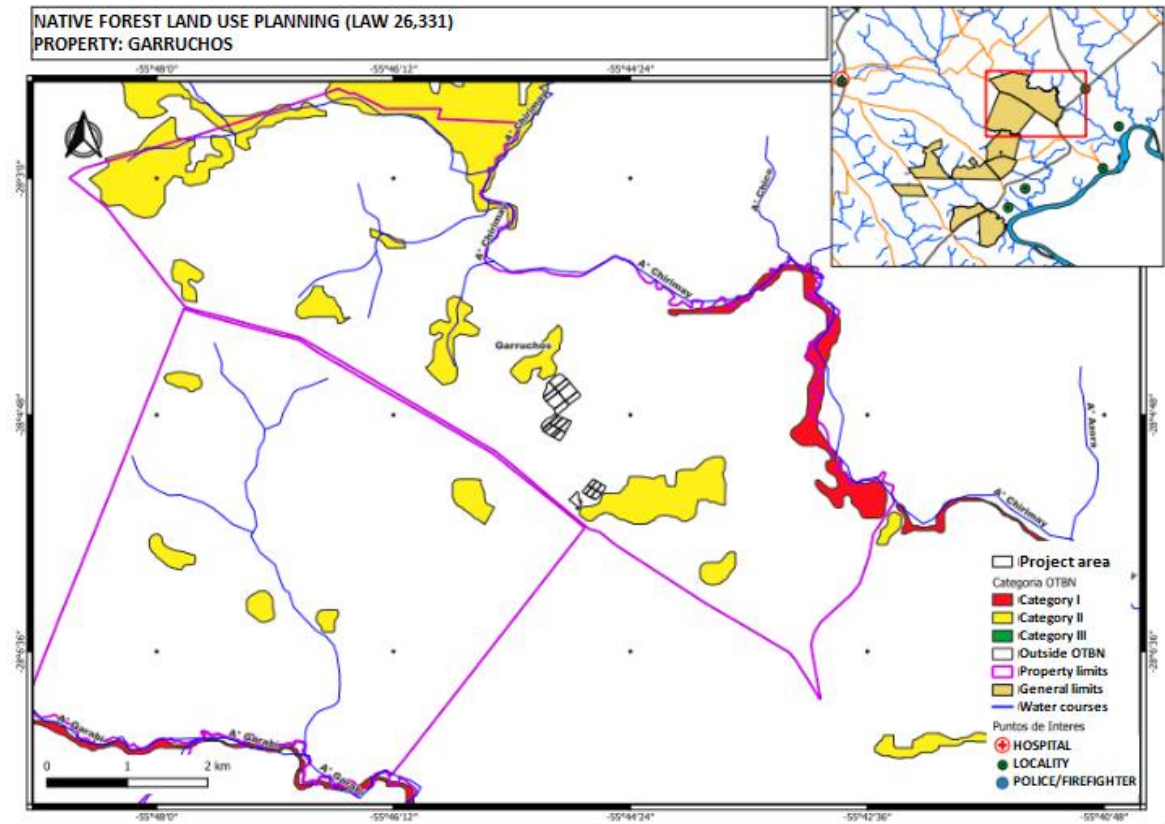


Figure 20. Native Forest Land Use Planning for Garruchos' property (delimited in violet). The project area within the property is delimited in black.

- **Law No 27,487<sup>27</sup> - Investments in Cultivated Forests:** This law is an extension of the law 25,080<sup>28</sup> (which is no longer in force). It maintains the main aspects of the law 25,080 but adds some changes like the promotion of forest planting, management, timber management and industrialization of wood when they are part of an integrated forestry enterprise. This law introduces a regime to promote investments *in new forest enterprises and in the expansion of existing forests*.

This law introduces a regime to promote activities related to planting, maintenance, management, irrigation, protection and harvesting of cultivated forests mainly for business and industrial purposes. Benefits include exemptions or tax reductions, tax stability for 30 years, regime of amortisation of income tax and a non-refundable financial help: a scaled<sup>29</sup> fixed

<sup>27</sup> <http://servicios.infoleg.gob.ar/infolegInternet/verNorma.do?id=318459>

<sup>28</sup> Law 25,080: Investment law for cultivated forests. Available at: <http://servicios.infoleg.gob.ar/infolegInternet/verNorma.do?id=55596>

<sup>29</sup> Scales for the region where the Project activity takes place: a) between 1 and 300 hectares (up to an 80% of planting costs) and b) between 301 and 500 hectares (up to 20% of planting costs)

amount per hectare which varies according to zone, species and forest activity, as determined by competent authority. It is also possible to request up to a 70% of the costs of forest treatments (pruning/thinning) discounted any income received. The regulation indicates that subsidies must be paid within two years of the plantation certification. This benefit is lower as the surface planted grows. If the surface is over 300 hectares the benefit does not apply.

Garruchos S.A.'s commercial plantations are part of this program. However, due to the lack of adequate budgeting, average payment exceeds by far the 2-year period established by the law<sup>30</sup>. In addition, due to the high inflation rates (for instance the inflation rate of 2022 was 95%<sup>31</sup>), and the lack of adjustments for inflation these subsidies fail as an incentive. Furthermore, all these benefits only apply when the destination of the harvest wood is for the generation of energy or wood. Carbon credits are not considered by the law thus the proposed project will be exempt from these benefits.

Other laws related to the proposed project include:

- Law No 13,273 - Forest Defence, Improvement and Enlargement<sup>32</sup>: This law, known as Defense of Forest Wealth, regulates natural forests and it declares that the protection, improvement and enlargement of forests are of public interest. At provincial level, Law No 1,643 declares adherence to the National Law above by means of Decree No 1501/51.
- Law No 25,675 - National Environmental Policy<sup>33</sup>: It's a minimum budget law which's aim is to achieve a sustainable and suitable administration of the environment, the preservation and protection of biological diversity and the implementation of sustainable development. At provincial level, Law No 5,067 -modified by law No 5,517 (Environmental impact assessment Act) constitutes the legislation in force and it defines the enforcing authority.

The proponent of this project has fulfilled this requirement, and the approval of the Environmental Impact Assessment is evidenced<sup>34</sup>.

- Law No 22,421 (Fauna Conservation Act)<sup>35</sup>: approved and promulgated by the Argentine President on March 5, 1981. It regulates care relating to indigenous fauna.

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<sup>30</sup> News from the newspaper La Nación: "Forestry industry complains about non-payment of subsidies". Available at: <https://www.lanacion.com.ar/economia/reclamo-de-la-industria-forestal-por-la-falta-de-pago-de-subsidios-nid712055/>

<sup>31</sup> INDEC (2023) Índices de precios. Vol. 7, n° 1. Índice de precios al consumidor. Cobertura nacional Diciembre de 2022. Available at: [https://www.indec.gob.ar/uploads/informesdeprensa/ipc\\_01\\_23891D383E4F.pdf](https://www.indec.gob.ar/uploads/informesdeprensa/ipc_01_23891D383E4F.pdf)

<sup>32</sup> <http://servicios.infoleg.gob.ar/infolegInternet/verNorma.do?id=30713>

<sup>33</sup> <http://servicios.infoleg.gob.ar/infolegInternet/verNorma.do?id=79980>

<sup>34</sup> ICAA's authorization available to VVB during validation/verification in shared folder *Authorizations*

<sup>35</sup> <http://servicios.infoleg.gob.ar/infolegInternet/verNorma.do?id=38116>

- Law No 19,587 (Hygiene and Safety at Work Act)<sup>36</sup>: It establishes the conditions of hygiene and safety at work which will, in the whole country, adjust to the clauses of the current law and of its regulation. Its provisions apply to all establishments and exploitations with profitable or non-profitable objectives, indistinctly of the economic nature and location of the activity performed, the features of the working canters and jobs and the type of machinery, elements, devices or procedures adopted.

Regarding water resources the province of Corrientes has established the following regulations:

- Decree Law No 191/01 "Code of Waters"<sup>37</sup>: is among the water resource rules regulating the correct use of waters within provincial jurisdiction.
- Resolution No 250/06<sup>38</sup>: determines fines and sanctions in case of non-compliance with the Code of Waters.
- Resolution No 282/07<sup>39</sup>: relating to the Registry of Exploitation and Drillings of Groundwater.
- Provincial Decree No. 1140/09<sup>40</sup>: promotes the adoption of manuals of good practices for the sustainable development of the different productive activities, establishes the requirements for permitted agricultural and forestry activities, and establishes the content of the EIAs of projects to be carried out within the Natural Reserve Iberá.
- Decree 1440/09<sup>41</sup> : Defines the creation of the Natural Reserve Iberá.

Regarding working conditions:

- Law 20,744 of Work Contracts<sup>42</sup>: This law governs all matters relating to the validity, rights and obligations of the parties in a job contract regardless of their nationality. The program for monitoring compliance with social contributions, training, ART, insurance, S&H, is carried out monthly by means of a documentary control system<sup>43</sup>.

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<sup>36</sup> <http://servicios.infoleg.gob.ar/infolegInternet/anexos/15000-19999/17612/norma.htm>

<sup>37</sup> <https://hcdcorrientes.gov.ar/leyes-diputados/Ley191-2001.pdf>

<sup>38</sup> <http://www.hcdcorrientes.gov.ar/RECOPIACIONES/Listadodeleyes-23-6251.pdf>

<sup>39</sup> <http://www.hcdcorrientes.gov.ar/digesto-ambiental1.html>

<sup>40</sup> Provincial Decree No. 1140/09

<sup>41</sup> [https://www.magyp.gob.ar/sitio/areas/producciones\\_sostenibles/legislacion/provincial/\\_archivos/000005-Legislaci%C3%B3n%20Ambiental%20General/000007-Corrientes/144009-Decreto%201440-09.doc](https://www.magyp.gob.ar/sitio/areas/producciones_sostenibles/legislacion/provincial/_archivos/000005-Legislaci%C3%B3n%20Ambiental%20General/000007-Corrientes/144009-Decreto%201440-09.doc)

<sup>42</sup> <https://servicios.infoleg.gob.ar/infolegInternet/anexos/25000-29999/25552/norma.htm>

<sup>43</sup> System to be shown during validation/verification to VVB

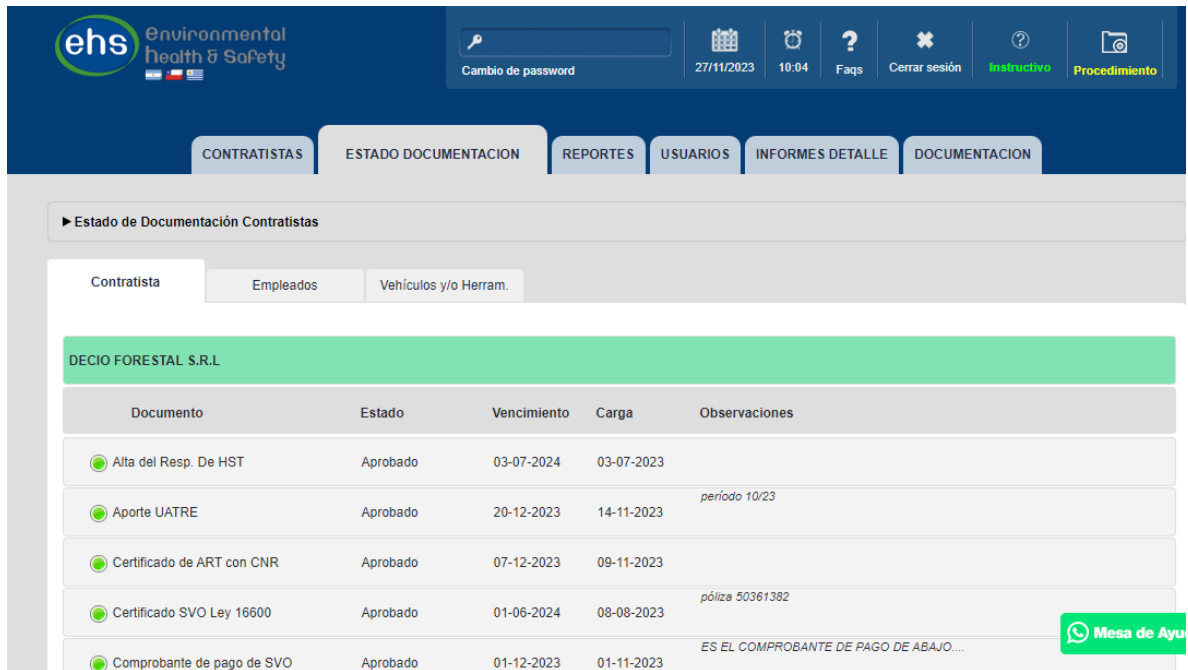


Figure 21. Print screen of EHS, the documentary control system in place for Garruchos SA. contractors and own personnel.

- Law 24,557 on occupational hazards<sup>44</sup>: States the conditions for the prevention of risks and compensation of work-related damages
- Law 26,390<sup>45</sup>: states the minimum age for admission to employment and the corresponding conditions.

The Project proponent will, during all the stages of the Project, comply with all the legislation applicable within the framework of the project activity.

## 1.16 Double Counting and Participation under Other GHG Programs

### 1.16.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

Yes  No

### 1.16.2 Registration in Other GHG Programs

Is the project registered or seeking registration under any other GHG programs?

<sup>44</sup> <https://www.argentina.gob.ar/normativa/nacional/27971/actualizacion>

<sup>45</sup> <https://servicios.infoleg.gob.ar/infolegInternet/anexos/140000-144999/141792/norma.htm>

Yes  No

### 1.16.3 Projects Rejected by Other GHG Programs

Has the project been rejected by any other GHG programs?

Yes  No

## 1.17 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

### 1.17.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

Yes  No

### 1.17.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

Yes  No

### 1.17.3 Supply Chain (Scope 3) Emissions

*Do the project activities specified in Section 1.12 affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?*

Yes  No

## 1.18 Sustainable Development Contributions

### 1.18.1 Sustainable Development Contributions Activity Description

Argentina, along with other 192 countries, adopted the 2030 Agenda for Sustainable Development, including the Sustainable Development Goals (SDGs). Different governmental institutions including the National Council for the Coordination of Social Policies, the National Statistics and Census Institute (INDEC) and the International Relations and Institutional Communication Direction are coordinating efforts at government level to establish and

implement monitoring systems for ODS indicators integrated with the national planning and identifying the advances and challenges in relation to them<sup>46 47 48</sup>

In this regard, the project contributes to the achievement of the country's goals defined to reach the SDGs by contributing to the sustainable development of the region and the country in the following ways:

- Climate impact: Through the reforested areas, native and non-native species of trees remove  $CO_2$  from the atmosphere and increase the resilience of the previously degraded areas.
- Social impact: New quality jobs will be created. Most of the new jobs created in afforestation projects tend to be fulfilled by nearby local communities, which is why they have a positive impact on them. Moreover, these jobs are fully in compliance with labour rights providing high quality jobs in the area.
- Conservation of biological diversity: with the plantation of native species and domestication studies, that will generate information necessary for further native commercial plantations.
- Development of capacities to afforest on clay loam, eroded and shallow soils.
- Maintenance of the productive capacity of forest ecosystems.
- Maintenance of the health and vitality of forest ecosystems.
- Conservation and maintenance of soil and water resources: the presence of trees also contributes to responsible soil management that reduces further erosion. The plantations manage a good undergrowth forest that protects both the soil and the fauna.

The project has a Forest Management Plan<sup>49</sup> in place, where social, economic, and environmental impacts are identified and action to mitigate as well as commitments to the public are stated. Moreover, the monitoring of the contributions is registered in the company's social and general monitoring spreadsheets<sup>50</sup>.

### 1.18.2 Sustainable Development Contributions Activity Monitoring

During the first monitoring period, the plantation of the total project area took place with native and non-native species, generating local job and training opportunities as well as first carbon removals. Moreover, the certification under FSC standards of the project took place, while at the same time the company has worked on development projects with communities in the project area, such as training on climate change adaptation, scholarships for tertiary and university

<sup>46</sup> <https://www.argentina.gob.ar/politicassociales/ods>

<sup>47</sup> <https://www.indec.gob.ar/indec/web/Institucional-GacetillaCompleta-177>

<sup>48</sup> <https://www.argentina.gob.ar/politicassociales/ods/subnacional/provincias/informes/2019>

<sup>49</sup> See document in shared folder with VVB during validation/verification "Forest Management Plan>Forest Management Plan POMERA V3.14"

<sup>50</sup> Available in shared folder "SD Contributions" to VVB during validation/verification

levels, among others. All these activities have resulted in a series of SD contributions listed in the table below, in line with the national SDGs<sup>51</sup>.

The co-benefits of the project, including the listed activities, are monitored and systematised as part of the company's general and social monitoring plan through spreadsheets registering stakeholders involved and activities<sup>52</sup>. Evidence of the project's SD contributions are provided throughout the document and in the appendix 3 to this report.

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<sup>51</sup> SDG for Argentina available at: <https://www.argentina.gob.ar/politicassociales/ods>

<sup>52</sup> Registry available in shared folder to VVB during validation/verification "SD Contributions>General Monitoring spreadsheet\_2022" and "SD Contributions> Social Monitoring spreadsheet\_2022"

Table 3: Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
1)	4.b	4.b.1 Volume of official development assistance flows for scholarships by sector and type of study	Scholarships assigned to increase indicator	1,394 USD <sup>53</sup> to finance scholarships to tertiary and university level education	1,394 USD to finance scholarships to tertiary and university level education
2)	8.8	8.8.1 Fatal and non-fatal occupational injuries per 100,000 workers	Training and security equipment implemented to decrease indicator	40 non-fatal occupational injuries per 100,000 workers <sup>54</sup> due to 100% of employees trained in security and use of work safety equipment	40 non-fatal occupational injuries per 100,000 workers due to 100% of employees trained in security and use of work safety equipment
3)	8.8	8.8.2 Level of compliance with labour rights	Full compliance with labour rights of job offerings implemented to increase indicator	100% of employees in full compliance with labour rights	100% of employees in full compliance with labour rights

<sup>53</sup> Based on a USD exchange value of \$137,65 based on August 's (2022) value and only for scholarships as of August 2022.

<sup>54</sup> Takes into consideration 2022 and 2023 personal accidents at work corrected to 100,000 workers and the proportion of the project area in total Garruchos S.A lands (2,4%)

4)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Forest plantation implemented to increase indicator	By planting 987.74 ha of native and exotic species, project has sequestered 1,161.94 tonnes of carbon into the atmosphere during the monitoring period	By planting 987.74 ha of native and exotic species, project has sequestered 1.161,94 tonnes of carbon into the atmosphere during the monitoring period
5)	13.3.1	Extent to which education on climate change mitigation, and adaptation are mainstreamed to population <sup>55</sup>	Talks and presentation within local communities implemented to increase indicator	105 stakeholders within project zone trained in climate change and mitigation	105 stakeholders within project zone trained in climate change and mitigation
6)	15.2	15.2.1 Progress towards sustainable forest management	FSC policies implemented to increase indicator	FSC certification of the 987.74 hectares of the project in process (awaiting report)	FSC certification of the 987.74 hectares of the project in process (awaiting report)
7)	15.5	Progress towards biodiversity conservation	Native species planted to increase indicator	28.6 has of native species planted	28.6 has of native species planted
8)	15.3	15.3.1 Proportion of land that is degraded over total land area	Restore degraded land and soil to increase indicator	No monitoring implemented in this period yet	No monitoring implemented in this period yet

<sup>55</sup> SDC defined by number of students who took part in workshop on “*Más bosques mas futuro, Prevención de dengue Mundo Sano*”

## 1.19 Additional Information Relevant to the Project

### Leakage Management

Where According to AR ACM-003 Methodology and Tool 15 “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity” leakage emission due to displacement of agricultural activities should only be considered if this leads to an increase in GHG emissions relative to the GHG emissions attributable to the activity as it exists within the project boundary. In the present project all livestock has been sent to a slaughterhouse (3 receipts for the sale of livestock are included in Appendix 2<sup>56</sup>. Therefore, no leaks emissions will be considered.

### Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description.

### Further Information

Garruchos has a long-lasting history of working together with the local community as it can be appreciated in the ongoing programs listed below. These and other projects are implemented in the whole project zone for the company but those within the project zone are listed below:

#### Environmental Education Programs at schools

Programs have been created aimed at primary and secondary educational centres (childhood: environmental education, household waste treatment, forestry as a productive system, rural work safety, FSC principles dissemination), community centres (health: prevention of endemic diseases), neighbourhood producers (fire management). Through a documentary mechanism, and in order to manage our relations with the communities and ensure compliance with the commitments assumed with them, all activities are recorded on monitoring spreadsheets<sup>57</sup>. These are saved and aim to document the progress and achievements accomplished with the community,

#### Community-oriented education programs:

*Más Bosque Más Futuro* (More Forest more Future): More future forests educational program has been implemented since 2010, since then it reached more than 7,000 girls and boys from the

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<sup>56</sup> All cattle sales available in shared folder with VVB during validation/verification within folder “Leakage”

<sup>57</sup> Spreadsheets available to VVB during validation in shared folder “SD Contributions>Social monitoring plan results\_2022”

neighbouring community of POMERA. This program is intended to raise awareness and promote environmental care in the neighbouring communities, and responsible forest management. More than 35 schools per year take part in this program in the provinces of Corrientes and Misiones. In 2022, the program reached 30 schools (3 within the project zone). More than 1,225 students participated in the program, 105 from the project zone. The main messages are the care and protection of biodiversity, the responsible use of natural resources, responsible consumption, responsible use of fire and proper waste management in line with climate change mitigation. This program was awarded three prizes -Eikon (Argentina), Stevie International Business Award (US) and Communitas Award (US)- in relation to environmental sustainability, communication and Corporate Social Responsibility<sup>58</sup>.



Figure 22. Activities within “Mas Bosque mas futuro” program

*Forest Cycle:* Technical talks are adapted to rural schools, with basic contents of the forest cycle, nursery, forestry, forest management, environmental care. The general goal is to disseminate information on responsible forest management of plantations.

*Club de Amigos del Bosque:* This program is intended for primary school students. The central theme is the responsible use of fire and controlled burning. The day ends with didactic games created especially for the program on the theme of fire.

<sup>58</sup> Evidence of prizes and recognitions in shared folder “Stakeholders>POMERA prizes and recognitions”

*Prevention of Dengue and Handwashing:* Aimed at primary school students in the Grupo Garruchos area and their families. The campaigns´ main objective is Dengue, Zika and Chikungunya prevention. Also, preventing diseases through hand hygiene. They are carried out in partnership with the Mundo Sano Foundation.

*Scholarships:* This program provides the opportunity to continue training at the tertiary or university level for those students from schools linked to the rural environment who have good academic performance. It is achieved through agreements with educational institutions such as the Instituto Navajas Centeno.

## 2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

### 2.1 Stakeholder Engagement and Consultation

#### 2.1.1 Stakeholder Identification

##### Stakeholder Identification

Being a company with more than 20 years in the area, it has been working with the impacted community for a long time. It has a registry and identification of key stakeholders within the area of influence, who make up the neighbouring communities with whom it maintains an ongoing relationship. This registry consists of an updated list of stakeholders, which identifies the interest group, type of relationship, contact information (telephone, email), organisation to which it belongs or represents, area of scope of Pomera's operating areas, location (town, place, field). The list has been prepared since 2014 and is updated annually. It is made up of approximately 149 stakeholders, with the main emphasis on the relationship with local neighbours. There are groups defined that allow the company to manage more effectively the relationship with them. The defined groups are as follows<sup>59</sup>:

- Communities that are immediately adjacent to the company's assets.

<sup>59</sup> Complete list with detailed information on stakeholders available in shared folder "Public consultation>Stakeholder list".

	<ul style="list-style-type: none"> <li>-Communities that may be affected by the company's main forestry operations.</li> <li>-Communities that have some link to the company's assets. This is due to the presence of sacred sites, ceremonial sites, cemeteries.</li> <li>-Communities with which there are links from the scope of collaboration in productive areas such as local development projects and entrepreneurship; cultural and/or religious; social and/or by the extraction of non-timber forest products (NTFPs), within the company's heritage.</li> <li>-Community leaders of the localities, or neighbourhoods, with whom community programs are articulated to promote local development.</li> <li>-Civil organisations both, in which the company is part of or with whom it interacts (Volunteer firefighters, NGOs such as Fundación Mundo Sano and Fundación Rewilding, Fire Management Consortium, Forestry consortium, APEFIC, FSC Argentina, national and regional AFOA).</li> <li>-National, provincial and/or local governmental organisations.</li> <li>-Primary and secondary education community of the areas and neighbouring localities to the establishments.</li> <li>-Health and primary care centres (CAPs) of neighbouring localities.</li> <li>-University and scientific educational community.</li> </ul>
<p><b>Legal or customary tenure/access rights</b></p>	<p>There are no disputes over land tenure in the project area. Nevertheless, to describe the general situation of stakeholders, further information is included for the colonies land tenure in the province.</p> <p>The existing colonies in the province of Corrientes were created in different stages -mostly at the end of 1800 and the beginning of 1900- and over the years the inhabitants and families who settled in them obtained the ownership of the lots, which is why at present the main objective of the process of awarding fiscal lands is to regularise the situation of the occupants who for some reason - lack of</p>

	<p>documentation, discontinuity in the procedures or payments - did not obtain the definitive ownership of the lot or plot.</p> <p>The inhabitants of the Official Colonies seek to regularise the tenancy situation of the lots where they live and some also seek to solve conflicts between neighbours who dispute the tenancy, which are generally resolved in the judicial sphere.</p> <p>In all cases, priority is given to the adjudication of former inhabitants and small producers who develop agricultural or livestock enterprises.</p> <p>Due to the age of the Colonies, the availability of new lots is subject to expirations, transfer of rights or resignations; therefore, as the situation of a lot is regularised, it is delivered to the applicants registered in a waiting list.</p> <p>The adjudications of fiscal lands are governed by Provincial Law No. 3,228 of Colonisation which establishes the conditions of delivery, these are the signature of the purchase-sale ticket, a payment plan, the obligation to reside in the place, not to sell without authorization or to lease to third parties for agricultural undertakings<sup>60</sup>.</p>
<p><b>Stakeholder diversity and changes over time</b></p>	<p>The project zone is surrounded by rural communities, with small city departments nearby. The population in both departments has shown an annual increase between 0.2 and 1.4% between the last two census 2001 and 2010<sup>61</sup>. Regarding gender, statistical information shows the same proportion of men and women in the population of project area departments (50.2% and 49.8% respectively).</p> <p>The main economic activities in the area are related to cattle raising, yerba mate production and forestry and the stakeholder groups are created around these economic activities.</p> <p>Regarding ethnic groups, 0.5% of the population in the whole province identify as indigenous (lower than the</p>

<sup>60</sup> Provincial information available at: <https://icaa.gov.ar/category/tierras-fiscales>

<sup>61</sup> INDEC population census for 2022 results are not yet available at department level.

	<p>national level of 2.4%)<sup>62</sup>; still, within the project zone, no indigenous communities are identified (see Figure 25).</p>
<p><b>Expected changes in well-being</b></p>	<p>The project is expected to generate new formal job positions. Moreover, Garruchos has been working with the community on development programs for a long time now, and these projects will continue and grow with the project in place, this includes training opportunities, field visits, among others.</p> <p>Regarding changes in ecosystem services, the planting of native species and the agreements with research institutions is expected to generate needed information regarding native species domestication.</p> <p>Moreover, the project activities are expected to reduce soil erosion and degradation due to cattle raising and cultural practices associated with it<sup>63</sup>, reducing fire risks for the region.</p> <p>Moreover, although there are confirmed existence of indigenous communities surveyed by the Institute of Indigenous Affairs (INAI)<sup>64</sup> in the province (see Figure 22), it can be confirmed that these communities have no productive or sacred link with the properties that have been included in the project. All the plots are owned by Garruchos S.A, and there are no legal conflicts in these areas. There is no indigenous community directly impacted by this project in any forest management unit so it can be said that no negative impacts have been found on any indigenous community by the project.</p>
<p><b>Location of stakeholders</b></p>	<p>The area presents a low demography (2hab/km<sup>2</sup>), and the rural population in Corrientes doubles the national average (17% of population is rural, compared to 8% in the country's total<sup>65</sup>), there are very little surrounding population, and the nearby villages are also very few<sup>66</sup>.</p>

<sup>62</sup> INDEC (2015) Censo Nacional de Población, Hogares y Viviendas 2010: Censo del Bicentenario. Pueblos originarios: región Nordeste Argentino. - 1a ed. - Ciudad Autónoma de Buenos Aires

<sup>63</sup> Publication on cultural practices of grassland burning for cattle raising available at: <https://santafe.conicet.gov.ar/inali-la-quema-de-pastizales-en-humedales-y-sus-efectos-nocivos/>

<sup>64</sup> Available at: <https://www.argentina.gob.ar/derechoshumanos/inai/mapa>

<sup>65</sup> INDEC (2010) Población Urbana y Rural por provincia available at: <https://www.indec.gob.ar/ftp/cuadros/poblacion/n020210.xls>

<sup>66</sup> Complete list with detailed information on stakeholders location available in shared folder "Public consultation>Stakeholder list"

	<p>Puerto Valle´s nearest towns are Santa Tecla (4 km), Ituzaingó (28 km) and Gobernador Virasoro (92 km), and the city of Posadas (65km) in the neighbouring province.</p> <p>Garruchos´ farm nearest towns are Colonia Garabí and Garruchos in the province of Corrientes, and Azara in the Province of Misiones.</p> <p>As previously mentioned, regarding indigenous population, they are present in the province of Corrientes but not in the project zone (see Figure 22).</p> <p>The identified stakeholders are in neighbouring cities and colonies, as well as others further away, such as Posadas in the case of a university (National Misiones University).</p>
<p><b>Location of resources</b></p>	<p>There are no resources which stakeholders own or to which they have customary access within the project area. The property, in which the project area is located, includes other forest plantations and a buffer area of HCV areas adjacent to the Iberá National Park. These areas are conserved and managed in line with the Natural Reserve Iberá´s policies (Decree 1,440/09<sup>67</sup>).</p>

### 2.1.2 Stakeholder Consultation and Ongoing Communication

<p><b>Date of stakeholder consultation</b></p>	<p>14-April-2023</p>
<p><b>Stakeholder engagement process</b></p>	<p>Since this afforestation project is the first that Garruchos S.A will register to obtain carbon credits, a public consultation was held to explain the details of the project so that stakeholders could have an opportunity to express themselves, share their concerns or benefits that this type of project can bring to the community.</p> <p>On April 14, 2023, at 11:00 a.m. through the Zoom virtual platform, a public consultation was held for local stakeholders in the community neighbouring the Garruchos and Puerto Valle ranch. The total number of</p>

<sup>67</sup> Provincial Decree 1,440/09 on Natural Reserve Iberá

participants was 34, of which 16 were external stakeholders and 18 were internal stakeholders.

The invitations were sent by email and WhatsApp to representatives of governmental organisations, civil associations, academia, educational centres, security forces, health, and private neighbours. The invitation included information on the day, time and form of the meeting. To ensure participation, an invitation reminder was sent the day before with the link to access the virtual platform.

The objective of the public consultation was to make the Garruchos S.A. carbon project known among its main stakeholders, raise awareness regarding the context of climate change, mitigation strategies, compensation, and commitments at global, national and local levels and the way this project will contribute to mitigate the effects of climate change.

The objectives, location, surface areas, species, and the process for its implementation in the field, registration and documentary compliance were explained.

A PowerPoint presentation was shared<sup>68</sup> with those present and Griselda Guarino, head of MASSO (Corporate Environmental, Safety, and Occupational Health Department) at Pomera Maderas, and Gumercindo Irala, the company's forestry manager, were responsible for the presentation.

The list of guest and attendees by site are listed below:

Table 4: List of participants – External and Internal Stakeholders

<sup>68</sup> Available to VVB in shared folder "Public consultation>Presentation\_April 2023"

Stakeholders Participants	
External Stakeholders	Description
Orlando Urbietta	Neighbor of Garruchos
Enrique Cervián	Occupational Health and Safety
Sergio Greniuk	Rural Workers Union of Gobernador Virasoro
Liliana Franco	Principal of Garruchos Elementary School
Sergio Enriquez	Teacher Colonia Unión
Vilma Salina	Principal of San Alonso Elementary School
Emiliano Fernández	Mayor of Gobernador Virasoro
Francisco Torres	Regional Argentine Forestry Association
Alicia Delgado	Foundation Rewilding
Ditmar Kurt	National Institute of Agricultural Technology
Rafaela Morales	National University of Misiones
Luis Ritter	National University of Misiones
Diego Ybarra	National Institute of Agricultural Technology
Carolina López Ferloni	Mundo Sano Foundation
José Bravo	Gendarmerie of Ituzaingó
Roberto Rojas	Ministry of Production of the Province of Corrientes
Internal Stakeholders	Department
María José Cristaldo	Planning
José María Marchessini	RH
Martín Vargas	Industry
Matías Jara	Operations
Pablo Aquino	Operations
Facundo Bernaudo	Sales
José Luis Añasco	Operations
Gustavo Dlutowski	Operations
Silvia Kosinski	Planning
Jorge Souza	Operations
Alan Mallorquín	Planning
Eduardo Acosta	Operations
Germán Andersson	Operations
Tania Dürks	HR
Gumerindo Irala	General Management
Gabriela del Ristoro	Communications
Griselda Guarino	MASSO
Federico Scheffer	Livestock Management

Consultation outcome	
	<p>At the end of the presentation, there were questions and queries related to the presentation and the expected impact on the community. The feedback was very positive, with acceptance of the project and recognition of the company for its initiative. There were no objections or comments about possible detrimental effects on the community. The questions were addressed, and the attendees were thanked, then the meeting was adjourned.</p> <p>The main comments include<sup>69</sup></p> <ul style="list-style-type: none"> <li>-Interest of the Misiones National University to take part in the project, especially working with the area of native species planted.</li> <li>-School teacher within project zone interested in including Climate Change subject in the school curricula.</li> </ul>

<sup>69</sup> Complete consultation minute available to VVB during validation/verification in shared folder "Public consultation>Minute\_public consultation 04.23"

	<p>-School teacher interested in knowing the relation and level of participation of the local authorities</p>
<p>Ongoing communication</p>	<p>Garruchos S.A has a Social Management Plan<sup>70</sup> which applies to all its projects and therefore also to the present. The main objective is to build and maintain permanent relationships of trust with those interest groups that coexist daily with the forestry activity, seeking to preserve and create social value. As part of their policy, there is a program which includes the invitation to different interested parties to visit the properties or facilities, with the objective that they can learn about the forest management practices in the field and express their opinions.</p> <p>It is the company's policy to maintain respectful and continuous communication with the neighbouring community. Garruchos S.A has had communication mechanisms and strategies with the neighbouring community for 20 years. It has a long-lasting history of working together with the local communities, as it can be appreciated in the ongoing programs that are listed in Further information section 1.18.</p> <p>The relationship with residents of the project zone is carried out through the leaders and representatives of Civil, Government and Non-Governmental Organisations of the neighbourhood community, together with the representatives of Garruchos.</p> <p>It also maintains direct communication with the local community through direct dialogue and visits from those responsible for each forest area. The heads and supervisors of the operational area are responsible for communicating changes in management, news, and invitations to local stakeholders. Community collaboration requests are formalised through notes, which are managed in a way that enables the company to give feedback to them as fast as possible. The company has a communication system through an indicative billboard at the main entrances of the forest establishments. This billboard</p>

<sup>70</sup> Social Management Plan 2023 available to VVB during validation/verification in shared folder "Stakeholders"

	<p>contains information on the names of the establishments and other regulations, such as prohibited and mandatory activities, which respond to reducing risks to people, property, and the environment.</p> <p>Garruchos shares an annual report with the neighbourhood community evidencing the results of the productive, social and environmental management that were developed during the year. This report is uploaded to the website and social networks and is sent by mail to all interested parties.</p>
<p><b>Stakeholder input</b></p>	<p>All comments were considered, but no updates to the project design were necessary as there were no comments regarding changes to the project. Within the comments that were made, there have been no complaints or negative views about the project. On the other hand, they have received comments on the importance of generating this type of projects in a sustainable way. Moreover, the main comments were seeking information regarding the certification methodology.</p> <p>Within the inputs received, it included the University's interest in helping in the project, especially with the native species area. In this sense, the project proponent is working on formalising the interaction with the stakeholder.</p>

### 2.1.3 Free Prior and Informed Consent

<p><b>Obtaining consent</b></p>	<p>The project is in private property and as well as all other forest plantations from the company, it was granted authorization by local and provincial authorities. This is done taking into consideration land ownership as well as the specific activity, authorised land use for the area, and with prior presentation of an EIA.</p> <p>Moreover, the project conducted a public consultation with interested stakeholders where the project was presented.</p> <p>There are no ongoing or unresolved conflicts and thus the project does not exacerbate nor influence the outcomes of unresolved conflicts.</p>
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<b>Outcome of FPIC</b>	The project has not encroached on land, relocated people without consent, and forced physical or economic displacement as the project is located within a private property owned by Garruchos for more than 10 years.
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### 2.1.4 Grievance Redress Procedure

<b>Development process</b>	The grievance redress procedure was developed in 2011, in line with FSC principles taking into consideration current regulations and the ILO Conventions. It is updated as needed.
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<b>Grievance redress procedure</b>	Garruchos S.A considers the opinions and claims that the community may have regarding the projects being carried out to be of vital importance. For this reason, a Community Relations Form as the one shown in figure 24 was created where all the complaints that come from the community are registered.
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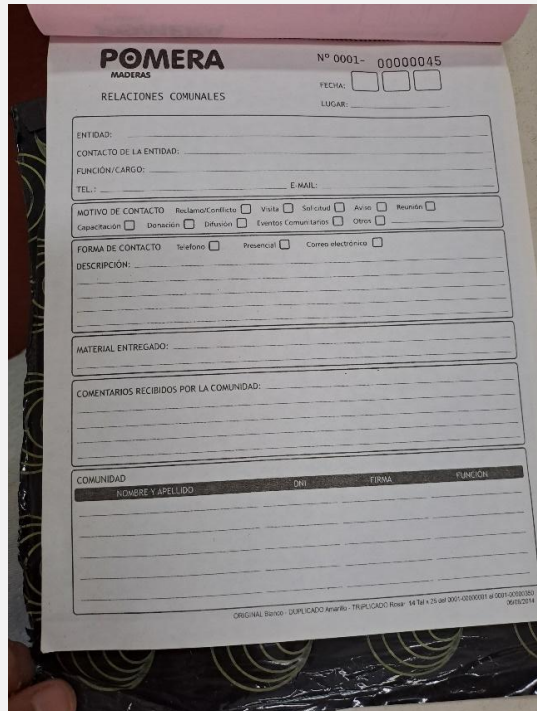


Figure 23. Community relations form to be completed with claims/complaints from stakeholders.

In the event of complaints formulated by stakeholders, they will be registered in the mentioned form, and their response

	<p>will be resolved within a period to be determined according to the type of consultation. In all cases, an interview will be sought with the Stakeholder who feels affected and the reasons for the complaint and possible points of agreement will be discussed in depth. The meeting will be documented or recorded. During the resolution process, communication will be maintained with the Stakeholder to keep them informed of progress.</p> <p>Any complaint received from a Stakeholder who feels morally, intellectually or economically affected by Pomera's Socio-Economic and Environmental Management will be submitted to a mediation process to avoid reaching a Conflict.</p> <p>If the mediation process is not successful and the complaint or claim leads to a process that interrupts the company's normal operations or involves loss of patrimony or monetary expenditures, negotiations will be carried forward by the Forestry Manager, who will define the actions to be taken.</p> <p>If forestry operations may compromise the right of tenure or future use of the communities or may be a direct cause of dispute, the suspension or non-commencement of forestry operations will be considered.</p> <p>In these cases, the country's current regulations and the ILO Conventions appropriate to each situation will be considered.</p>
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Grievances received	Resolution and outcome
Since de begging of the project, September 2022, Garruchos S.A has not received any complaints or claims of any kind through the communications channels of the company	NA

### 2.1.5 Public Comments

To be completed after the Public Comments period.

Comments received	Actions taken
NA	NA

## 2.2 Risks to Stakeholders and the Environment

The implementation of programs, plans, operating procedures, and guides to good forest practices allow avoiding and reducing risks to low and acceptable levels. In this project, as mentioned, no harvest or pruning is expected, still, the company has operating procedures available for each of the silvicultural and forest activities, which consider how to implement risk management and mitigation measures in the field. The procedures contemplate the preparation of land and planting, the responsible management of phytosanitary products, pest and weed control, waste management, if generated, the use of planted forests, the transport of personnel, forest roads, forest camps, management of fuels and lubricants, elaboration of poles, medical emergency plans, permanent plots.

	Risks identified	Mitigation or preventative measure taken
<b>Risks to stakeholder participation</b>	No risk identified	As mentioned, the organization has a long lasting experience working with the stakeholders in the project zone, and the project does not represent a risk to the current programs and activities in place with the communities, but it further enhances them, allowing new interactions for example, with research institutions.
<b>Working conditions</b>	Personal accidents	First, there is a risk assessment in place for the different silvicultural activities to take place. Second, as part of the contingency and prevention plan, there is a training plan for forestry personnel that details the schedule for the year with the topics to be taught, the person in charge and the procedure to be applied <sup>71</sup> . This is mandatory for all

<sup>71</sup> See training records in "Health and safety>General monitoring spreadsheet\_2022"

		<p>workers and collaborators in S&amp;H. Personal security equipment is provided as well.</p> <p>Third, operations are monitored monthly in terms of environmental, S&amp;H, social, and operating procedures through a system of nonconformities and corrective action requests, which allow Garruchos S.A to identify deviations, determine their causes, corrective and preventive actions, and deadlines for their correction. The monitoring and surveillance of inputs, products and services is carried out by means of a system of registration and administrative control during operations.</p>
<p><b>Safety of women and girls</b></p>	<p>No risk identified</p>	<p>There are no specific risks to women and girls' safety due to the project implementation. The project is implemented in a current productive private land.</p>
<p><b>Safety of minority and marginalized groups, including children</b></p>	<p>No risk identified</p>	<p>There are no specific risks to minority and marginalized groups, including children due to the project implementation. The project is implemented in a current productive private land. Moreover, the project includes limited silvicultural activities (no harvest) so less risks are to be expected.</p>
<p><b>Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials)</b></p>	<p>Hazardous substances are used, handled, and stored during the production process, during which time occasional spills could occur. These risks are internal and, depending on their magnitude, may be low to</p>	<p>The program implements the recommendations stated in the Responsible Management of Agrochemicals Program<sup>72</sup> which establishes the guidelines and safe work standards for the reception, loading, unloading, storage, handling,</p>

<sup>72</sup> Guidelines provided by public entities available at: <https://bancos.salud.gob.ar/recurso/guia-de-uso-responsable-de-agroquimicos>

	<p>medium risk. Within this group of substances, hydrocarbons are used during all stages of the production process for the movement of vehicles and machinery, and agrochemicals/ phytosanitary products are used to control weeds and pests, mainly during the first stage of the process. The potential environmental impacts, depending on where the spill occurs, the magnitude of the spill, and the type of substance, would be on the soil, water, and biota associated with these factors. Potential social impacts could be linked to the S&amp;H of personnel and the neighbouring community, depending on the case.</p>	<p>application and final disposal of phytosanitary products.</p> <p>Some of the measures include storage places for inputs based on dangerous substances such as hydrocarbons and/or agrochemicals, specially conditioned for this purpose, duly signposted, with signage indicative of the place and the risks associated with the stored input.</p> <p>Have PPE for handling and elements to act in emergency situations.</p> <p>Restrict access and handling to authorised personnel.</p> <p>Manage the different types of waste in its classification, collection, transfer, treatment and final disposal.</p> <p>Keep phytosanitary storage tanks at safe distances from other facilities, such as houses, populated areas, and watercourses.</p>
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## 2.3 Respect for Human Rights and Equity

### 2.3.1 Labor and Work

<p><b>Discrimination and sexual harassment</b></p>	<p>The project proponent or any other entity involved in project design or implementation is not involved in any form of discrimination or sexual harassment. Garruchos S.A is a registered company, compliant with local and national regulations regarding discrimination (National Law 23,592), with the regarding registration certifications as evidence. Moreover, non-discrimination is part of the company's policy, providing same working opportunities without gender, colour or religion considerations<sup>73</sup>. At the same time, being an FSC certified company, evidence of law compliance is certified<sup>74</sup>.</p>
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<sup>73</sup> Evidence for VVB during verification and information on company's policy in the Forest Management plan in shared folder "Forestry Management Plan"

<sup>74</sup> FSC certification in shared folder "FSC Certification"

<p><b>Management experience</b></p>	<p>Garruchos has a long-lasting history of working together with the local community as it can be appreciated based on the information provided along the document. With more than 20 years as a forestry company in the region, and certified under FSC, it has wide experience in this type of activities as well as engaging with communities. In this line, the team of experts is composed of:</p> <p>Forest engineers, Forest technicians, agriculture engineers as well as professionals in health and safety (see organization chart in figure 24 below.</p> <p>For those activities where more expert professional knowledge is needed, Garruchos S.A hires third parties. These activities have included in the past:</p> <ul style="list-style-type: none"> <li>-Forest inventory</li> <li>-Biodiversity and environmental monitoring</li> </ul> <p>Moreover, Cambium brings to the group expertise in economic and data analysis, as well as GIS and environmental analysis with professionals in the subject.<sup>75</sup></p>
<p><b>Gender equity in labor and work</b></p>	<p>Non-discrimination is part of the company's policy, providing same working opportunities without gender, colour or religion considerations<sup>76</sup>. At the same time, being an FSC certified company, gender equity in labour and work has been worked on and accomplished.</p>
<p><b>Human trafficking, forced labor, and child labor</b></p>	<p>As previously mentioned, the project proponent or any other entity involved in project design or implementation is not involved in any form of discrimination or sexual harassment, neither human trafficking, forced labor, and child labor. Garruchos S.A is a registered company, compliant with local and national regulations regarding working conditions (National Law 20,744 and 26,390), with the regarding registration certifications as evidence.</p>

<sup>75</sup> All personnel CV available for VVB during validation/verification in shared folder "Management team"

<sup>76</sup> Evidence for VVB during verification and information on company's policy in the "Forestry Management Plan"

At the same time, being an FSC certified company, evidence of law compliance is certified<sup>77</sup>.

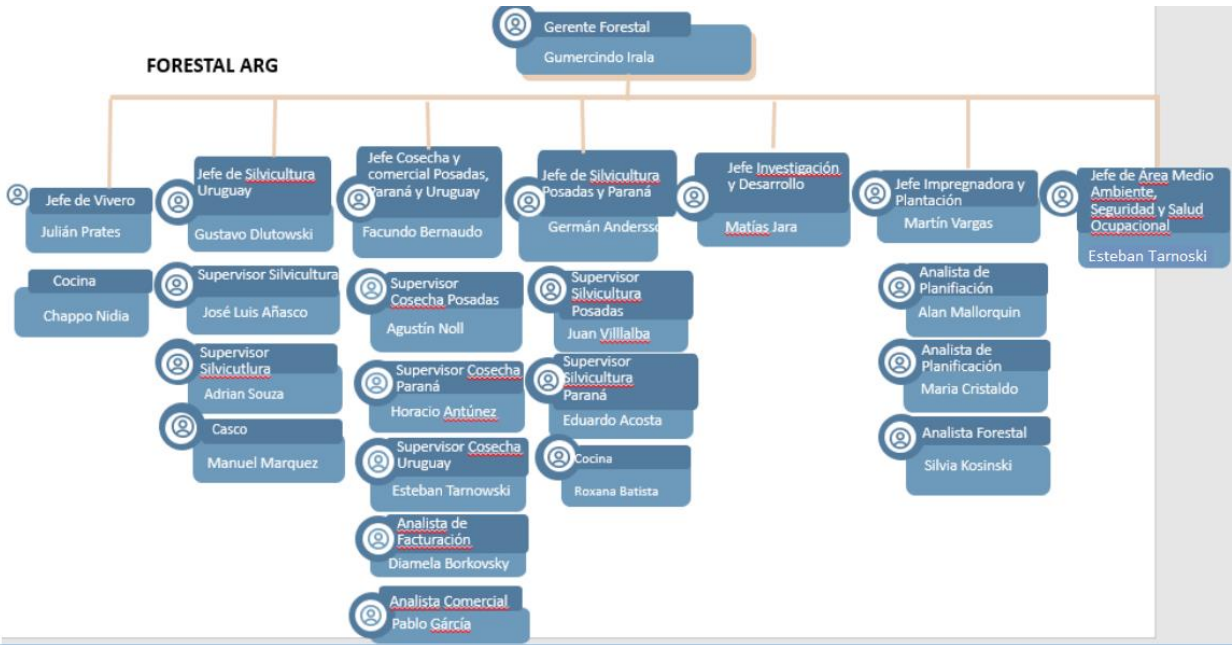


Figure 24. Organizational structure of Garruchos S.A

### 2.3.2 Human Rights

The project recognizes, respects, and promotes the protection of the rights of IPs, LCs, and customary rights holders in line with applicable international human rights law, and the United Nations Declaration on the Rights of Indigenous Peoples and ILO Convention 169 on Indigenous and Tribal Peoples. This can be evidenced as the project complies with all local legislation, which includes land tenure rights as well as all FSC principles. Moreover, as mentioned, there are no identified indigenous people or communities in the project area.

### 2.3.3 Indigenous Peoples and Cultural Heritage

Although there are confirmed existence of indigenous communities surveyed by the Institute of Indigenous Affairs (INAI)<sup>78</sup> in the province (see Figure 25), it can be confirmed that these communities have no productive or sacred link with the properties that have been included in the project. All the plots are owned by Garruchos S.A, and there are no legal conflicts in these areas. There is no indigenous community directly impacted by this project so it can be said that no negative impacts have been found on any indigenous community by the project.

<sup>77</sup> FSC certification in shared folder "FSC Certification"

<sup>78</sup> Available in: <https://www.argentina.gob.ar/derechoshumanos/inai/mapa>

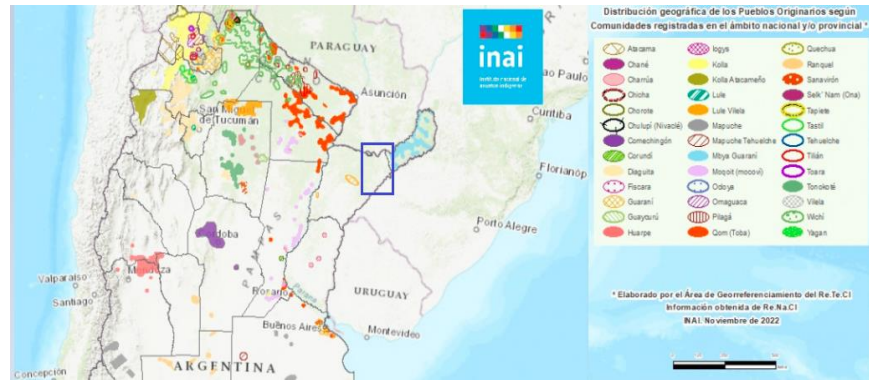


Figure 25. Comparative area of Garruchos´ project zone (blue square) and indigenous communities surveyed by INAI in northern Argentina.

In terms of Cultural Heritage, Garruchos S.A has a policy in place identifying communities that have some link to the company's assets. These can be either due to the presence of sacred sites, ceremonial sites or cemeteries, as well as communities with which have links to the properties in terms of cultural and/or religious; social and/or by the extraction of non-timber forest products (NTFPs). In case this takes place, there are processes in place to respect these relations, by allowing communities into the properties, with the corresponding registry of the activities in place.

### 2.3.4 Property Rights

<b>Rights to territories and resources</b>	<p>Since these lands are all legal forestry land, the ownership is clear, and there is no dispute over land ownership in the project site. Land tenure evidence is provided through notarial certificates of ownership<sup>79</sup> which comply with Argentinean legislation. Moreover, evidence of complying with principle n° 2 Rights and Responsibilities of Tenure and Use of FSC certification<sup>80</sup> are reported in FSC summary reports publicly available.</p>
<b>Respect for property rights</b>	<p>If forestry operations may compromise the right of tenure or future use of the communities or may be a direct cause of dispute, the suspension or non-commencement of forestry operations will be considered.</p> <p>In these cases, the country's current regulations and the ILO Conventions appropriate to each situation will be considered.</p>

<sup>79</sup> Land ownership evidence available in shared folder to VVB "Ownership"

<sup>80</sup> Certification evidence in shared folder to VVB "FSC certification"

### 2.3.5 Benefit Sharing

<b>Process used to design the benefit sharing plan</b>	Not applicable as there is no benefit sharing plan in place as the project does not impact property rights.
<b>Summary of the benefit sharing plan</b>	Not applicable as there is no benefit sharing plan in place as the project does not impact property rights.
<b>Approval and dissemination of benefit sharing plan</b>	Not applicable as there is no benefit sharing plan in place as the project does not impact property rights.
<b>Benefit sharing during the monitoring period</b>	Not applicable as there is no benefit sharing plan in place as the project does not impact property rights.

## 2.4 Ecosystem Health

The project activity converts an area that was modified and moderately degraded, where extensive continuous livestock activity was carried out, into an ARR project activity that does not harvest and where pruning is not expected. The sole objective is to provide the service to the environment by capturing CO<sub>2</sub> from the atmosphere contributing to carbon neutrality.

According to the EIA<sup>81</sup>, the potential alterations that the project could cause are low and of acceptable levels, due to the implementation of good forestry practices. The project is based on direct planting with low-impact and environmentally friendly techniques and the use of sustainable management practices under FSC certification, which implies that the design, planting and maintenance of the forest are carried out through a sustainable forest management program avoiding negative impacts on biodiversity, local communities, or water bodies. This is accomplished by identifying risks and determining a contingency plan that establishes the actions to be taken, the steps to be followed, and the assignment of roles in each case.

This afforestation project will be carried out considering the Basic Manual on Good Forest Practices suggested by the Secretary of Agriculture, Fisheries, Livestock and Food (SAGPyA)<sup>82</sup> of the national government as a basic tool for the implementation of environmentally sustainable forestry, as well as the Guidance on Good Forest Practices for the province of Corrientes (Resolution N° 875/14, Corrientes)<sup>83</sup>.

The ARR project activity is included in the environmental studies developed for both properties: Puerto Valle and Garruchos. Only a part of the environmental impacts mentioned in the

<sup>81</sup> EIA shared to VVB as document: "EIA\_Puerto Valle" and "EIA\_Garruchos" in shared folder "Environmental Health>EIA"

<sup>82</sup> [https://www.magyp.gob.ar/sitio/areas/desarrollo-foresto-industrial/buenas\\_practicas/\\_archivos//000000\\_Manual%20Basico%20de%20referencia%20de%20BPM.pdf](https://www.magyp.gob.ar/sitio/areas/desarrollo-foresto-industrial/buenas_practicas/_archivos//000000_Manual%20Basico%20de%20referencia%20de%20BPM.pdf)

<sup>83</sup> <https://icaa.gov.ar/Normativas/guia-de-buenas-practicas-forestales-resolucion-n-875-14-adhesion-icaa> and guideline available at: [https://www.magyp.gob.ar/sitio/areas/desarrollo-foresto-industrial/buenas\\_practicas/\\_archivos//000001\\_Provincia%20de%20Corrientes.pdf](https://www.magyp.gob.ar/sitio/areas/desarrollo-foresto-industrial/buenas_practicas/_archivos//000001_Provincia%20de%20Corrientes.pdf)

environmental assessment correspond to the project activity as no thinning or harvest is expected. Moreover, there is an environmental and social monitoring program<sup>84</sup> aimed at ascertaining the health of the ecosystems involved in the properties and the potential impacts of forestry operations, using status indicators that warn of possible risk situations.

The methodology is based on the EcoRap procedure guidelines, developed by TNC (The Natural Conservancy), which is used to assess the health of ecosystems and their attributes of high conservation value, and at the same time detect signs of deterioration due to erosion, contamination, fragmentation, exclusion, landscape affectation or any of its functions, and other processes that could occur as a consequence of area management. Given that forestry operations are in the higher parts of the relief, in addition to the effect of altering the natural landscape, it has an influence on the depressed sectors of the landscape. Therefore, the interpretation of the parameters usually used to know the health of the ecosystems are analysed in the context of the functioning of the basin. The frequency of this monitoring is annual.

Wildlife is monitored periodically during operations through a participatory program of occasional sightings. Operations are monitored monthly in terms of environmental, S&H, social, and operating procedures through a system of nonconformities and corrective action requests, which allow Garruchos S.A to identify deviations, determine their causes, corrective and preventive actions, and deadlines for their correction.

These is summarised in the table below:

	Risks identified	Mitigation or preventative measure taken
<b>Impacts on biodiversity and ecosystems</b>	<p>The EIA has concluded that the degree of affectation of the project to the flora, fauna and landscape is moderate. The project activity is developed in a productive establishment in which transformation of the natural environment has occurred many years ago and the context of the landscape and environments that surround it present similar characteristics of transformation.</p> <p>The project converts a degraded area, where continuous extensive livestock activity was carried out, into an ARR project</p>	<p>Garruchos S.A has an environmental management plan whose scope includes the conservation of natural ecosystems and their biodiversity, the treatment of waste generated during operations, among others. The risks related to the impacts on the ecosystem are regulated by the company in all of its properties, from planning and designing the stands in such a way that ages and species alternate, to leaving conservation areas of the natural ecosystem's representative of the fields, such as native forests, gallery forests, pastures, among others.</p>

<sup>84</sup> Document "Social monitoring spreadsheet" shared folder "SD Contributions", to VVB

	<p>activity with no harvesting. The impacts on these factors will be of a variable intensity over time according to the stage of the project.</p> <p>However, the presence of wild species is expected, even those with some degree of threat. Wildlife constitutes the factor of greatest environmental mobility and least predictability due to its variable requirements throughout its life cycle, growth phases, and difficulty of observation. Undoubtedly, its abundance and biodiversity are directly linked to the physical habitat spaces.</p>	<p>Connectivity between these conservation areas and with neighbouring natural areas is prioritised.</p> <p>Hunting and capture of wild animals is not allowed within the property. The extraction of native plants or their parts (flowers or fruits) in conservation areas is prohibited. Warning and prohibition signs are installed in key places on the properties, establishing a surveillance system.</p>
<p><b>Soil degradation and soil erosion</b></p>	<p>EIA<sup>85</sup> has identified that periods with low vegetation coverage may lead to slight soil erosion. This could take place during land preparation, and road and firebreak maintenance.</p>	<p>Ploughing will be the minimum essential to be able to form the needed canals.</p> <p>Planning of roads and firebreaks, adapting their construction to the existing topography, minimising the movement of earth and the alteration of water courses. On roads, sinks and sediment traps (indentations) are placed in representative places before the water passes into natural channels, and reduce the erosive energy of runoff waters. Between the planting plots, the drains are conducted towards the interior of the same, favouring the capture of humidity</p>

<sup>85</sup> Documentation shared to VVB in folder "Environmental health>EIA"

		<p>and reducing the dragging of sediments.</p> <p>The roads are located at a safe distance from bodies of water and protection areas, maintaining a buffer zone.</p>
<p><b>Water consumption and stress</b></p>	<p>The EIA has resulted in a moderate degree of affectation of the project to water resources. During the stages of the project, a potential alteration of the resource could occur, modifications in the quality of the surface water, in case of inadequate handling of phytosanitary products during land preparation, and of hydrocarbons during the entire cycle. Inadequate management of waste from forestry operations also represents a risk of altering water quality.</p>	<p>The use of agrochemicals is carried out in a targeted manner and is limited to the establishment stage of the plantations, during the first 2 or 3 years. There is an agrochemical responsible management plan<sup>86</sup> in place as well as training to agrochemical operators.</p> <p>The roads are located at a safe distance from bodies of water and protection areas, maintaining a buffer zone.</p>
<p><b>Usage of fertilizers</b></p>	<p>There is minimum fertiliser usage in forestry, only during the first stage of growing, with the plantation of individuals. For these reasons, risks are limited.</p>	

### 2.4.1 Rare, Threatened, and Endangered species

Is the project located in or adjacent to habitats for rare, threatened, or endangered species?

Yes

No

<sup>86</sup> Documentation shared to VVB in folder "Environmental health>Agrochemical responsible management"

<p><b>Species and habitat:</b></p> <p><i>Myrmecophaga tridactyla</i></p> <p><i>Ara chloropterus</i></p> <p><i>Pecari tajacu</i></p> <p><i>Panthera onca</i></p> <p><i>Pteronura Brasiliensis</i></p> <p><i>Ozotoceros besoarticus</i></p> <p><i>Blastocerus dichotomus</i></p> <p><i>Chrysocyon brachyurus</i></p> <p><i>Lontra longicaudis</i></p> <p>In wetland, grasslands, riparian forests and palms</p>	<p>The project will take place in modified and moderately degraded lands. It is located within cattle raising and forest plantation properties which have identified, and protect, 1,274 hectares of HCV areas, plus another 877ha of natural forest. These protected areas include wetlands as well as other areas of high conservation interest: riparian and native forest, grassland and palms; these form a buffer area with Iberá National Park (figure 6).</p> <p>As mentioned in the environmental monitoring report 2022<sup>87</sup>, regarding the HCV areas, “<i>none of the areas included in Puerto Valle and Aguaracué can be considered critical for maintaining the integrity of the landscape, which does not imply recognizing their relictual value and adopt the most appropriate management to maintain their stability over time (Burkart, 1994).</i>” In this line, the project’s design respects local legislation conditions regarding distance from water bodies, native forest, etc.</p> <p>Moreover, the project does not include thinning or harvesting activities, limiting silvicultural and transport impacts over biodiversity and ecosystems. Still, an EIA was conducted for the whole area, moreover, the implementation of the Non-native Invasive Species Control Plan is to be implemented in this area and throughout the crediting period.</p> <p>To assess the influence of productive activities on the natural environment, the guideline of the EcoRap procedure, developed by Conservation International, is used. This procedure allows analysing the ecosystem’s health and their high conservation value attributes, as well as to detect signs of deterioration due to erosion, contamination, fragmentation, exclusion and other processes consequence of productive management. Among the variables analysed there are physical, chemical and biological parameters of water quality measured in main water courses and wetlands, which have shown no signs of contamination.</p>
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<sup>87</sup> Environmental monitoring report 2022 available to VVB in shared folder “*Environmental health*” including impact assessment monitoring results for the protected areas.

<p><b>Species and habitat:</b></p> <p><i>Ozotoceros bezoarticus and Xanthopsar flavus in wetlands and grasslands</i></p>	<p>Specifically, to contribute to the conservation of endangered species of fauna Garruchos S.A has a "Conservation Program for the Venado de las Pampas and Tordo Amarillo". Through a letter of cooperation agreement with the NGO Conservation Land Trust, lines of work were agreed upon to promote the recovery of the environment where these two species live, long-term monitoring and follow-up, behavioural studies in forest environments, education and training of the personnel in charge, and recovery of pampas deer in other sectors of the Iberá Reserve through translocation.</p>
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## 2.4.2 Introduction of species

Species introduced	Classification	Justification for use	Adverse effects and mitigation
<i>Pinus elliottii</i>	Non-native	Rapid carbon removal with known adaptation to the area and growth level, due to wide commercial use	<i>Pinus elliottii</i> is classified as category 2 under the local list of invasive species meaning it is a "controlled use species" <sup>89</sup> . In this sense, and in line with local and FSC requirements, the project implements its "Non-native Invasive Species Control Plan" <sup>90</sup> which includes preventive and corrective measures. In the first place, with the analysis of the species characteristics and monitoring of invasion, while the second corresponds to control measures including the extraction of invasive individuals. This can be done manually or mechanically

			depending on the size.
<i>Pinus taeda</i>	Non-native	Rapid carbon removal with known adaptation to the area and growth level, due to wide commercial use	Although some species of <i>Pinus</i> are considered invasive, <i>Pinus taeda</i> is not the case <sup>91</sup> . Still, the “Non-native invasive Species Control Plan” is applied to control possible invasiveness outside the plantation plot.
<i>Pinus hybrid (elliottii-caribaea)</i>	Non-native	Rapid carbon removal with known adaptation to the area and growth level, due to wide commercial use	There is no classification within the invasive species official list for this variety, but taking into consideration <i>elliottii</i> ’s invasive condition, the mentioned “Non-native Invasive Species Control Plan” is applied.
<i>Handroanthus heptaphyllus</i>	Native	Carbon removal, native domestication studies & biodiversity benefits	No adverse impacts are expected nor identified, as the species are native from the region
<i>Parapiptadenia rigida</i>	Native	Carbon removal, native domestication studies & biodiversity benefits	No adverse impacts are expected nor identified, as the species are native from the region
<i>Apuleia leiocarpa</i>	Native	Carbon removal, native domestication studies & biodiversity benefits	No adverse impacts are expected nor identified, as the species are native from the region
<i>Patagonula americana L.</i>	Native	Carbon removal, native domestication studies & biodiversity benefits	No adverse impacts are expected nor identified, as the species are native from the region
<i>Cassia grandis</i>	Native	Carbon removal, native domestication studies & biodiversity benefits	No adverse impacts are expected nor identified, as the species are native from the region

<i>Handroanthus albus</i>	Native	Carbon removal, native domestication studies & biodiversity benefits	No adverse impacts are expected nor identified, as the species are native from the region
<i>Campomanesia xanthocarpa</i>	Native	Carbon removal, native domestication studies & biodiversity benefits	No adverse impacts are expected nor identified, as the species are native from the region
<i>Jacaranda mimosifolia</i>	Native	Carbon removal, native domestication studies & biodiversity benefits	No adverse impacts are expected nor identified, as the species are native from the region
<i>Plinia rivularis</i>	Native	Carbon removal, native domestication studies & biodiversity benefits	No adverse impacts are expected nor identified, as the species are native from the region
<i>Albizia niopoides</i>	Native	Carbon removal, native domestication studies & biodiversity benefits	No adverse impacts are expected nor identified, as the species are native from the region

Existing invasive species	Mitigation measures to prevent spread or continued existence of invasive species
No invasive species have been identified within the project area. Still there is a constant surveillance in place.	There is a “Non-native invasive Species Control Plan” in place applied to control possible invasiveness outside the plantation plots, thus the project activity will not allow appearing species to thrive.

### 2.4.3 Ecosystem conversion

No natural ecosystems have been converted, cleared, drained or degraded to generate GHG credits within 10 years of the project start date. Evidence has been gathered in Section 1.4.2, AFOLU Project Eligibility. The areas have remnants of native species but having been used for cattle breeding for more than 50 years they are highly modified and moderately degraded.

The figures below show the land conditions in the property with bare soils and modified vegetation (a), compared to natural grasslands in other parts of the same property.



Figure 26. Puerto Valle property images of (a) cattle breeding impacts on soil (b) conserved grassland, which occupies an extensive strip bordering Iberá, in a mid-hill position, within the same property.

Moreover, in the case of Garruchos' property, the type of vegetation present 10 years prior to the project start date is the result of many years of forest and grassland disturbances due to cattle breeding: slash-and-burn, forest plantations, roads, and other activities in the property. Through satellite images it is possible to identify an area of the farm which was planted with non-native species by the previous owner. This area of 16 hectares had been planted around 2000 and later harvested (2010), thus, no native ecosystem has been replaced by the project. Later, prior to project start date, with the aim of improving cattle feeding, pastures were planted in part of the area, further altering the land.

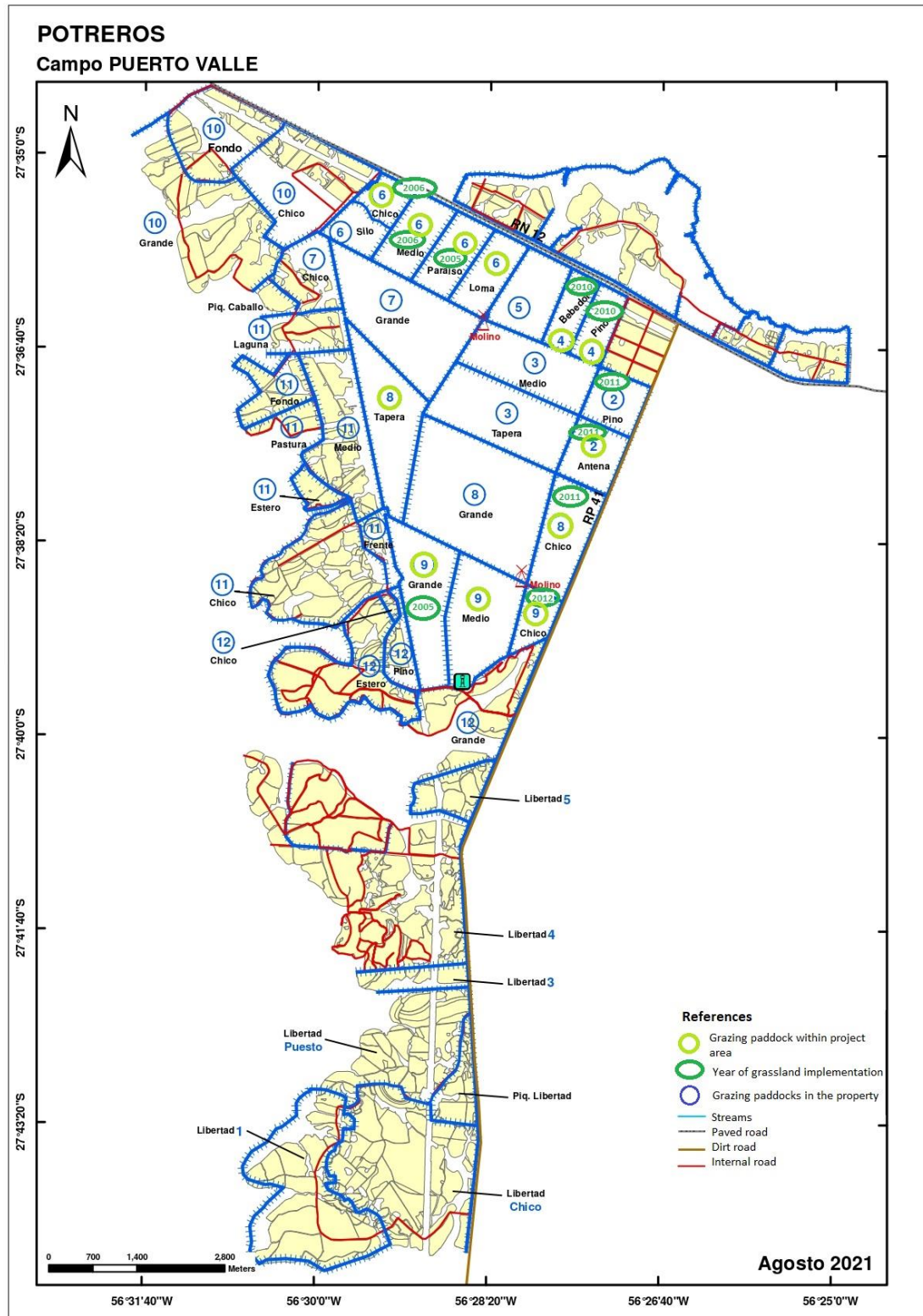


Figure 27. Cattle paddock with pasture implementation within project area and year of implementation.

## 3 APPLICATION OF METHODOLOGY

### 3.1 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	AR-ACM0003	AR-ACM0003: Afforestation and reforestation of lands except for wetlands	02.0
Tool	AR TOOL 02	Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities	07.0
Tool	EB meeting report 65, annex 31	Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity	04.0
Tool	AR TOOL 14	Estimation of carbon stocks and change in the carbon stocks of trees and shrubs in A/R CDM project activities	04.2
Tool	AR TOOL 15	Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity	02.0
Tool	EB meeting report Annex 15	Tool for the Calculation of the number of sample plots for measurements within A/R CDM project activities	02.1.0

No burning is expected from project's activity but in case of fire occurrence (natural or anthropogenic) the tool will be considered to analyse applicability.

### 3.2 Applicability of Methodology

Methodology ID	Applicability condition	Justification of compliance
AR-ACM0003	<p>The land subject to the project activity does not fall in wetland category</p>	<p>Project activities will not take place in wetlands. This is demonstrated through the land eligibility analysis in which wetlands and water bodies were excluded from project boundaries. See section 1.4.2</p>
	<p>Soil disturbance attributable to the project activity does not cover more than 10 percent of area in each of the following types of land, when these lands are included within the project boundary:</p> <ul style="list-style-type: none"> <li>• Land containing organic soils;</li> <li>• Land which, in the baseline, is subjected to land use and management practices and receives inputs listed in appendices 1 and 2 to the methodology AR ACM003.</li> </ul>	<p>The project activities do not take place in land containing organic soils, nor in land which, in the baseline, is subject to land use and management practices and receives inputs listed in appendices 1 and 2 to the methodology AR-ACM003). Baseline before the project start date was grasslands without any inputs. In the absence of the project activity, the baseline is expected to remain as unmanaged grasslands (without receiving inputs such as listed in appendices 1 and 2 to the methodology AR-ACM003). Such grasslands under tropical conditions have less carbon compared to plantations and forest cover. Therefore, it is</p>

		expected for soil organic carbon to increase less in the absence of the project activity relative to the baseline.
Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities (Version 01).	AFOLU activities the same or similar to the proposed project activity on the land within the proposed project boundary performed with or without being registered as the VCS AFOLU project shall not lead to violation of any applicable law even if the law is not enforced.	The reforestation activities won't lead to the violation of any applicable law.
Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity (version 04.0.0)	<p>The tool is applicable to all occurrence of fire within the project boundary</p> <p>Non-CO<sub>2</sub>CO<sub>3</sub> GHG emissions resulting from any occurrence of fire within the project boundary shall be accounted for each incidence of fire which affects an area greater than the minimum threshold area reported by the host Party for the purpose of defining forest, provided that the accumulated area affected by such fires in a given year is ≥5% of the project area.</p>	In the project activity there is no fire within the project boundary. Therefore, this criterion is not applicable

Estimation of carbon stocks and change in the carbon stocks of trees and shrubs in A/R CDM project activities (Version 04.2).	This tool has no internal applicability conditions	Not Applicable
Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity	This tool has no internal applicability conditions	Not Applicable

### 3.3 Project Boundary

Source		Gas	Included?	Justification/Explanation
Baseline	Above and below ground biomass in trees and shrubs	CO <sub>2</sub>	Yes	It is expected that carbon stock in these pools will not increase due to the implementation of the baseline activity. Above and below ground carbon stock in the baseline, present in isolated trees, is accounted as zero. The trees present in the Project Area before the Project were neither harvested, nor cleared, nor removed. These won't suffer mortality because of competition from trees planted in the project, or damage because of implementation of the Project activity and they are not inventoried along with the Project trees in monitoring of carbon stocks throughout the crediting of the project activity.
		CH <sub>4</sub>	No	This is not a requirement of the methodology.
		N <sub>2</sub> O	No	This is not a requirement of the methodology.
		Other	No	This is not a requirement of the methodology.

Source		Gas	Included?	Justification/Explanation
	Dead wood, litter and Soil organic Carbon	CO <sub>2</sub>	No	It is expected that carbon stock in these pools will not increase due to the implementation of the baseline activity
		CH <sub>4</sub>	No	This is not a requirement of the methodology.
		N <sub>2</sub> O	No	This is not a requirement of the methodology.
		Other	No	This is not a requirement of the methodology.
	Burning of woody biomass	CO <sub>2</sub>	No	There will be no burning of woody biomass in the project activity
		CH <sub>4</sub>	No	There will be no burning of woody biomass in the project activity
		N <sub>2</sub> O	No	There will be no burning of woody biomass in the project activity
		Other	No	There will be no burning of woody biomass in the project activity
Project	Above and below ground biomass in trees and shrubs	CO <sub>2</sub>	Yes	Carbon stocks in tree biomass is the main carbon pool affected by project activity.
		CH <sub>4</sub>	No	This is not a requirement of the methodology.
		N <sub>2</sub> O	No	This is not a requirement of the methodology.
		Other	No	This is not a requirement of the methodology.
	Dead wood, litter and	CO <sub>2</sub>	No	Optional. Expected to increase due to project activity, since it does not virtually exist in the pre-project situation.

Source		Gas	Included?	Justification/Explanation
	Soil organic Carbon	CH <sub>4</sub>	No	This is not a requirement of the methodology.
		N <sub>2</sub> O	No	This is not a requirement of the methodology.
		Other	No	This is not a requirement of the methodology.
	Burning of woody biomass	CO <sub>2</sub>	No	There will be no burning of woody biomass in the project activity
		CH <sub>4</sub>	No	There will be no burning of woody biomass in the project activity
		N <sub>2</sub> O	No	There will be no burning of woody biomass in the project activity
		Other	No	There will be no burning of woody biomass in the project activity

The following afforestation maps show the areas included within the project boundary. They show the plantation which took place in Puerto Valle property and in Garruchos property. The green colour represents *Pinus taeda* and *elliottii*, the orange colour represents *Eucalyptus grandis* species and the blue colour represents native mix of species. The last includes the list of native species in section 2.4.2.

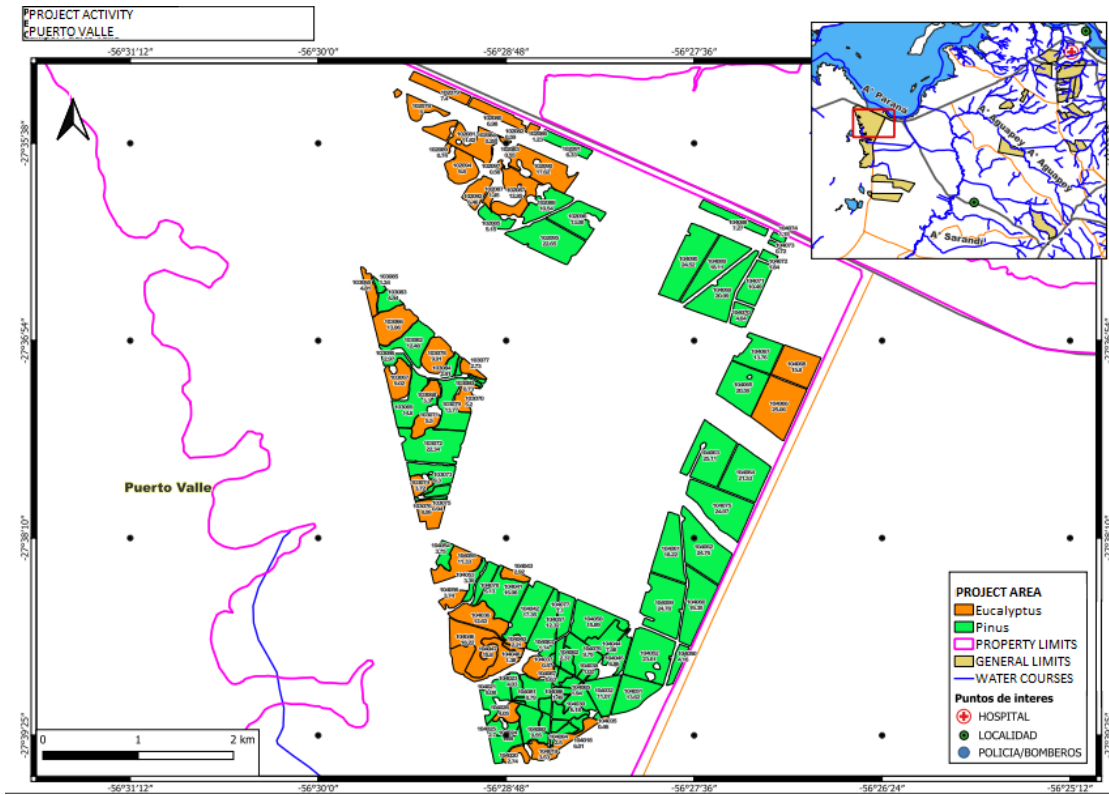


Figure 28. Eucalyptus and Pine plantations in Puerto Valle property equal to 959.16 hectares

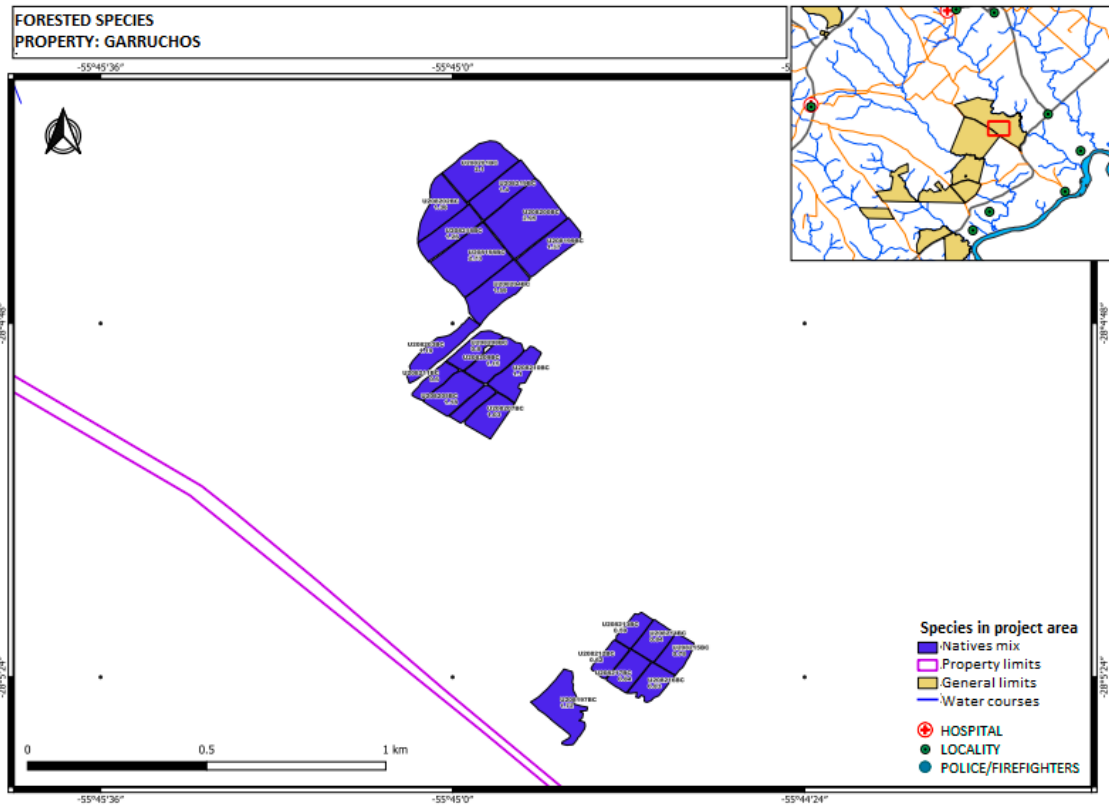


Figure 29. Native species plantations in Garruchos property equal to 28.6 hectares

### 3.4 Baseline Scenario

The baseline scenario and demonstration of additionality (see section 3.5), follows the “Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities (version 07)”. This tool is part of the methodology applied: AR-ACM0003 version 02.0 (see chapter 3.1) which is applicable to large-scale projects (according to CDM scale).

This tool is applicable to the project activity since afforestation of the land within the proposed project boundary does not lead to violation of any applicable law, even when laws might not be enforced. Garruchos S.A. activity is framed within the existing legislation and in a context of respect and harmony with the natural and social environment, as it is described in its FSC´ certification statement. Furthermore, the project activity exceeds what is requested by law in benefit of social and environmental characteristics.

According to the tool, the Project shall apply the following five steps to identify the baseline scenario and demonstrate additionality:

- Step 0. Demonstration that a proposed project activity is the first-of-its-kind (optional)
- Step 1. Identification of alternative scenarios
- Step 2. Barrier analysis
- Step 3. Investment analysis (if applicable)
- Step 4. Common practice

The following section presents the description and justification of the procedure followed in relation to these steps. In the section Baseline the step 0 and step 1 will be analysed. The following steps will be approached in the additionality section.

#### **Step 0: Demonstration that a proposed project activity is the first-of-its-kind**

To our knowledge, there is no record of another afforestation project with no harvesting activity with the sole objective of capturing CO2 from the atmosphere to obtain carbon credits in the region. Thus, this project would qualify as first-of-its-kind. Nevertheless, due to lack of robust evidence, additionality will be demonstrated following all the steps.

#### **Step 1: Identification of alternative scenarios**

According to Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities (version 07) section 4.2.1 one of the alternative scenarios that must be analyzed is the proposed project activity undertaken without the incentives from VCS carbon credits. In the following analysis it is presented as scenario two.

#### **Step 1a) Define alternative scenarios to the proposed project activity**

The alternative scenarios identified that would take place in the absence of the proposed project are:

- Scenario 1: Continuation of the pre-project land use – extensive continuous cattle raising, by grazing.
- Scenario 2: Afforestation with no harvesting activity and without incentives from VCS carbon credits.
- Scenario 3: Afforestation with only exotic species with harvesting activity.
- Scenario 4: Yerba mate production.

All these scenarios are viable, taking into consideration that the primary production sector of the project area is quite diversified, with the main productive activities being bovine cattle, forestry and the cultivation of yerba mate (Table 4) with their respective industrial processing<sup>88</sup>.

Table 4: Implanted surface by type of production. Data in hectares and cattle stocks from campaign 2021/2022. Source: SAGyP<sup>89</sup> and SENASA<sup>90</sup>. Own elaboration.

	<i>Land use</i>			
	<i>Livestock</i>	<i>Exotic Implanted Forest</i>	<i>Native Implanted Forest</i>	<i>Yerba Mate</i>
	<i>Cattle stocks</i>	<i>Implanted surface (hectares)</i>		
<b>Argentina</b>	53,416,435	1,206,471	44,058	177,530
<i>Province</i>				
<b>Corrientes</b>	4,493,777	436,880	940	23,085
<i>Project area Departments</i>	431,128	211,971	909	23,085

**Scenario 1:** Continuation of the pre-project land use – continuous extensive cattle raising

<sup>88</sup> Corrientes, Informe productivo provincial 2018. Secretaría de Política Económica. Subsecretaría de Programación Microeconómica (SSPMicro). Ministerio de Hacienda. Presidencia de la Nación. Available at: [https://www.argentina.gob.ar/sites/default/files/sspmicro\\_informes\\_productivos\\_provinciales\\_corrientes.pdf](https://www.argentina.gob.ar/sites/default/files/sspmicro_informes_productivos_provinciales_corrientes.pdf)

<sup>89</sup> Ministerio de agricultura, ganadería y pesca, Argentina. Available at: <https://datosestimaciones.magyp.gob.ar/reportes.php?reporte=Estimaciones>  
<https://www.magyp.gob.ar/sitio/areas/desarrollo-foresto-industrial/inventarios/tablero.php>  
<https://www.magyp.gob.ar/sitio/areas/estimaciones/tableros/tablero-cultivos.php?accion=imp>

<sup>90</sup> Animal statistics (SENASA). Available at: <https://www.argentina.gob.ar/senasa/mercados-y-estadisticas/estadisticas/animal-estadisticas/bovinos/bovinos-y-bubalinos-sector-primario>

The northeast of Argentina, commonly named as NEA, is the second livestock-producing region in the country<sup>91</sup> (Figure 30). Emphasising the project area, Corrientes is the fourth largest province in terms of livestock production<sup>92</sup>.

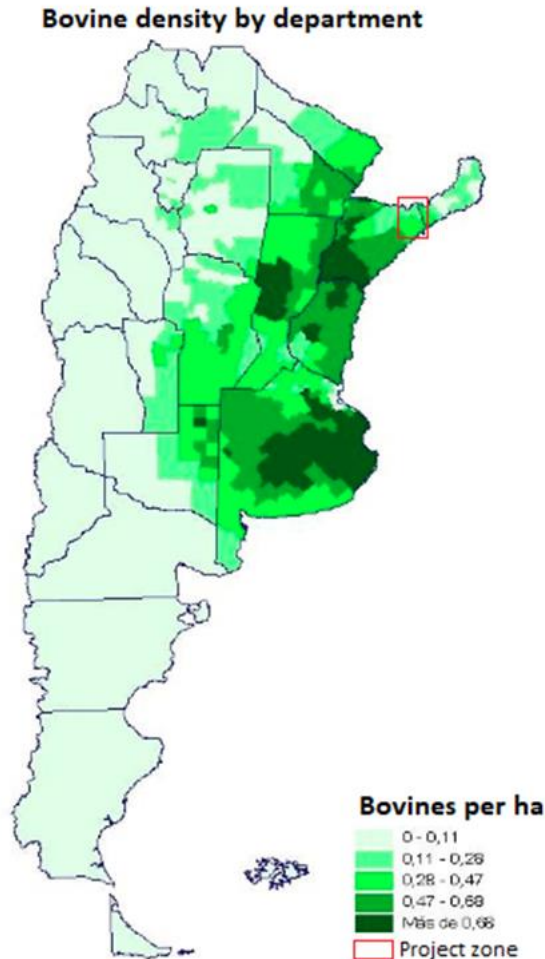


Figure 30. Bovine density by department. Dirección de Control de Gestión y Programas Especiales – Dirección Nacional de Sanidad y Calidad Agroalimentaria (SENASA)<sup>93</sup>

The predominant livestock activity in this province is breeding. This activity is carried out in conjunction with other livestock activities, such as mixed cattle and sheep farming. It is

<sup>91</sup> Científico-Tecnológicas, J., & Cibils, O. A. (2013). Situación de la ganadería bovina en Misiones y propuesta para intensificar su producción. Available at: [https://bibliotecadigital.fce.unam.edu.ar/bitstream/handle/bhp/548/Cibils%20A\\_2013\\_Situaci%c3%b3n.pdf?sequence=1&isAllowed=y](https://bibliotecadigital.fce.unam.edu.ar/bitstream/handle/bhp/548/Cibils%20A_2013_Situaci%c3%b3n.pdf?sequence=1&isAllowed=y)

<sup>92</sup> [https://www.argentina.gob.ar/sites/default/files/sspmicro\\_informes\\_productivos\\_provinciales\\_corrientes.pdf](https://www.argentina.gob.ar/sites/default/files/sspmicro_informes_productivos_provinciales_corrientes.pdf)

<sup>93</sup> Dirección de Control de Gestión y Programas Especiales – Dirección Nacional de Sanidad y Calidad Agroalimentaria (SENASA) Available at: [https://www.senasa.gob.ar/prensa/DNSA/Control\\_Gestion\\_y\\_Programas\\_Especiales/Indicadores\\_ganaderos/1\\_Indicadores\\_Ganaderia\\_Bovina/Densidad\\_Bovina\\_por\\_Hectarea.jpg](https://www.senasa.gob.ar/prensa/DNSA/Control_Gestion_y_Programas_Especiales/Indicadores_ganaderos/1_Indicadores_Ganaderia_Bovina/Densidad_Bovina_por_Hectarea.jpg)

characterised by the extensiveness of its production systems, based on the use of unmanaged pastures of spring-summer growth, with little participation of cultivated pastures and other complementary forage sources. Livestock production with grazing of unmanaged grassland is the existing activity prior to the project implementation and it has been the historical activity performed in the project area and surrounding areas. The soils in farms in this region are poor and livestock production does not require large investments.

This activity is one of the main economic activities not only of the province of Corrientes but also of Argentina as a whole. Cattle raising in the province of Corrientes participates with 33% of the Gross Geographic Product in the primary sector, average years 1993 to 2017 (being 2017 the latest official data provided by the National Institute of Agricultural Technology<sup>94</sup>). This activity is developed in the entire provincial territory, constituting the most widespread economic activity in the interior of the country, distributed among producers of different sizes (see figure 31). The cattle raising in the province of Corrientes covers approximately 6.3 million hectares (71.6% of surface) <sup>95</sup>.

It also supplies other provinces such as Santa Fe, Buenos Aires, Córdoba and La Pampa with calves for fattening. Approximately 70% of the calves produced are destined for fattening and slaughter, while the remaining 30% are used to replace breeding stock.

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<sup>94</sup> National Institution for Agriculture Technology. Available at:  
[https://inta.gob.ar/sites/default/files/inta\\_estadisticas\\_ganaderas\\_en\\_corrientes\\_hoja\\_informativa105.pdf](https://inta.gob.ar/sites/default/files/inta_estadisticas_ganaderas_en_corrientes_hoja_informativa105.pdf)

<sup>95</sup> Ministerio de Hacienda de la Nación (2018) Productive reports – Corrientes. Available at:  
[https://www.argentina.gob.ar/sites/default/files/sspmicro\\_informes\\_productivos\\_provinciales\\_corrientes.pdf](https://www.argentina.gob.ar/sites/default/files/sspmicro_informes_productivos_provinciales_corrientes.pdf)

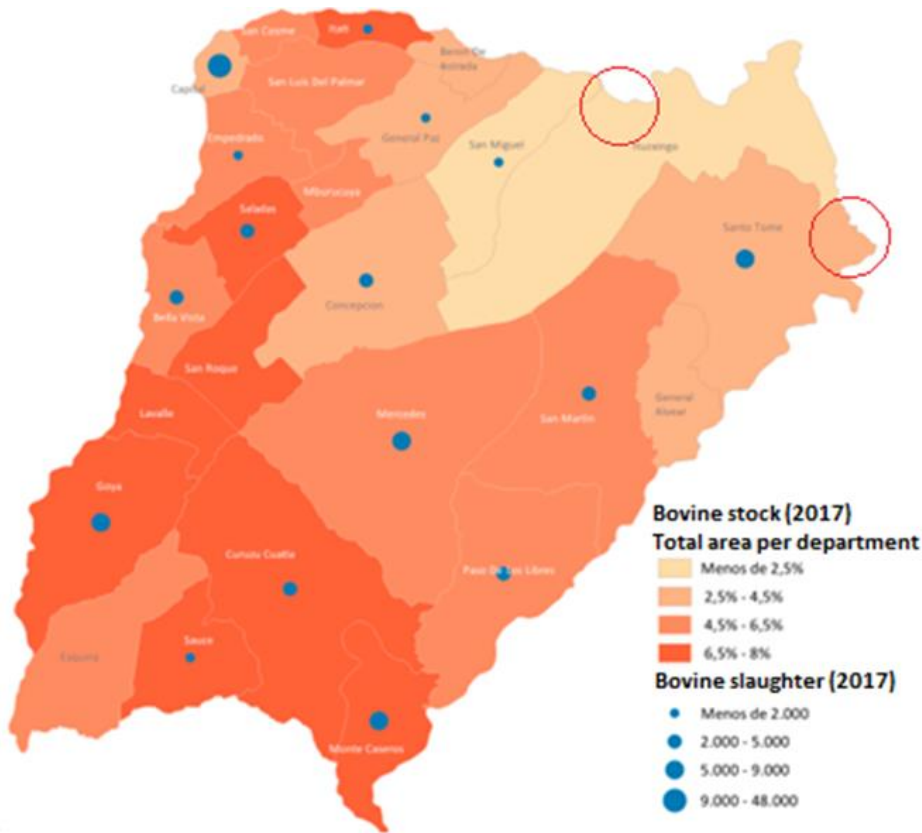


Figure 31. Livestock load (bovine stock/total area of the department) and provincial bovine slaughter of Corrientes. In red, the project zone. Ministerio de Hacienda de la Nación (2018) Productive reports – Corrientes

**Scenario 2:** Afforestation with no harvesting activity without incentives from VCS carbon credits

This scenario is credible since Garruchos S.A is a forest company with more than 20 years’ experience in the province of Corrientes (where the project is proposed to be placed) and in the province of Misiones. Between both provinces this company has over 23,000 hectares planted. Nevertheless, it’s important to keep in mind that in the province of Corrientes, where the project is located, industrial forest activities with harvesting are not uncommon. Nevertheless, the proposed project will not perform any harvesting activity and will also include native species. There are no records of a similar project in the region.

The proposed project will not perform harvesting activities according to the definition of Verra Program Definitions Version 4.3. The sole purpose for Garruchos S.A is to obtain carbon credits by the sequestration of CO<sub>2</sub>, it’s not feasible to develop this kind of project without the incentives of VCUs.

**Scenario 3:** Afforestation of only exotic species with harvesting activity

Forestry is one of the most recently developed productive sectors in Corrientes, with pine and eucalyptus plantations, mainly due to government incentives for afforestation<sup>96</sup>. In this sense, Corrientes stands out for its potential, both at a provincial and regional level, for the area available for reforestation, as well as for the quality of the wood that can be produced.

Corrientes is the province with the largest area of planted forests and is characterised by the presence of several seed-producing areas and seed orchards, which ensure that quality genetic material is obtained. The most interesting species are *Eucalyptus grandis*, *Eucalyptus saligna*, *Pinus elliottii*, *Pinus taeda* and *Pinus caribaea*. The species *Pinus* accounts for 73% of the forestation, followed by *Eucalyptus* (25.7%)<sup>97</sup>. The north-eastern basin, made up of the departments of Santo Tomé, Ituzaingó and General Alvear, has the highest production volumes and is home to the province's largest industries (Figure 32).

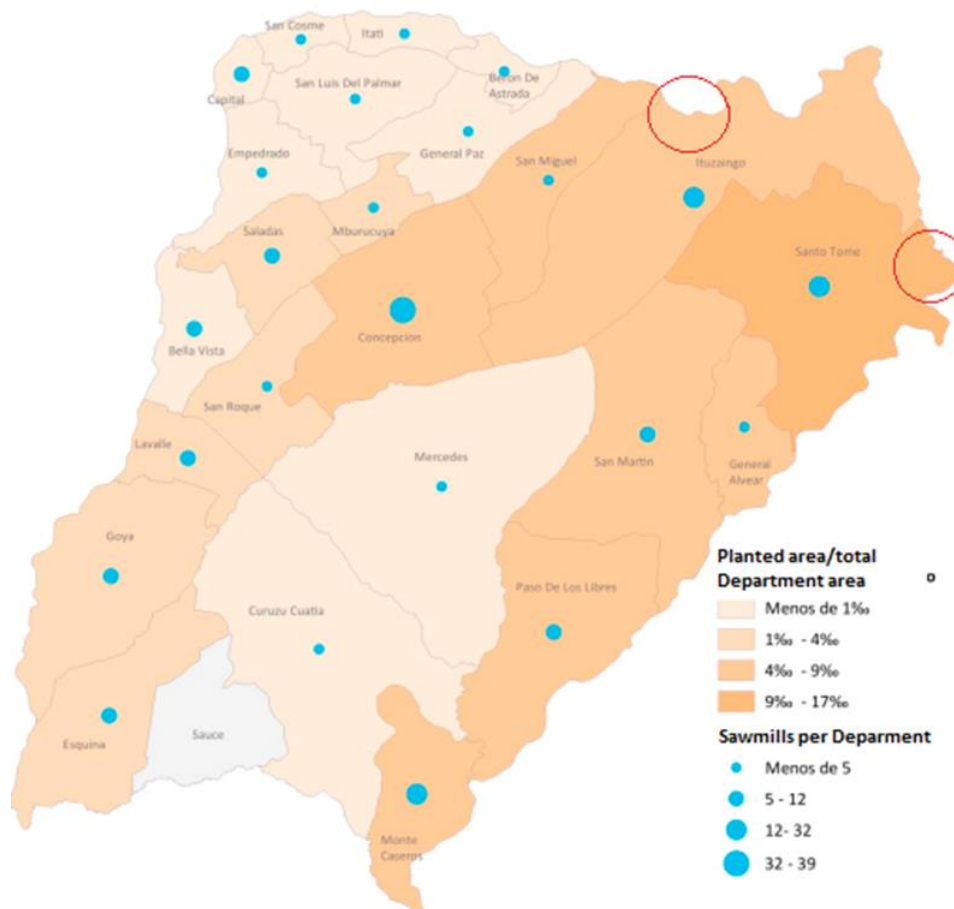


Figure 32. Forestal planted area over total department area and sawmills per department. In red, the project area. Ministerio de Hacienda de la Nación (2018) Productive reports – Corrientes

<sup>96</sup> Law 25,080: Investment law for cultivated forests. Available at: <http://servicios.infoleg.gob.ar/infolegInternet/verNorma.do?id=55596>

<sup>97</sup> Corrientes, Informe productivo provincial 2018. Secretaría de Política Económica. Subsecretaría de Programación Microeconómica (SSPMicro). Ministerio de Hacienda. Presidencia de la Nación.

**Scenario 4. Yerba mate production**

In Argentina, yerba mate is cultivated in the provinces of Misiones and Corrientes, with Corrientes representing 10% of the hectares planted in the country. In these provinces there is a "bush" production area corresponding to the north and centre of the territory of Misiones, and a "field" area in the south of this province and the northeast of Corrientes. The first one records greater performances and gives rise to a product with a more accentuated taste<sup>98</sup>. Of the total production area of Corrientes, 72% corresponds to the department of Santo Tomé and 28% to Ituzaingó (Figure 33), mainly due to its suitable soil (red soil) and the advantage of being a rural area and not a scrubland. This production represents about 10% of the gross production value of the agricultural sector in Corrientes.

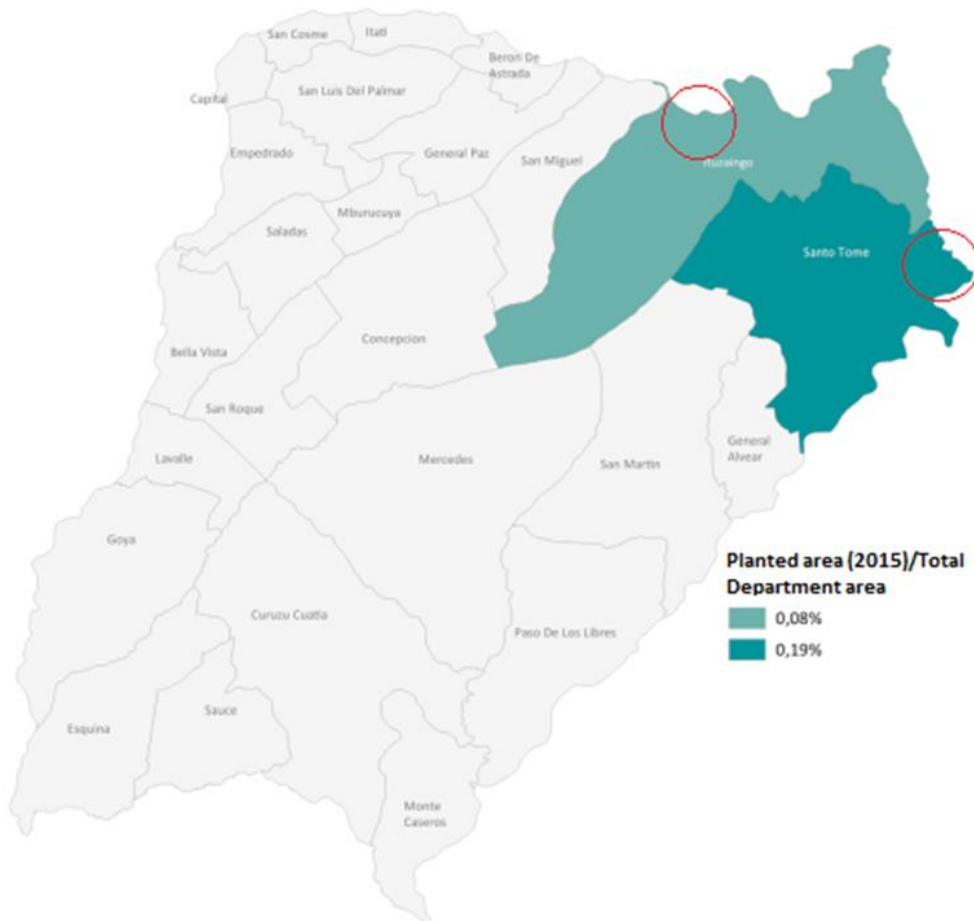


Figure 33. Yerba mate planted area over total department area, in Corrientes. In red, the project zone. Ministerio de Hacienda de la Nación (2018) Productive reports – Corrientes

**Step 1.b Consistency with mandatory applicable laws and regulations**

- Scenario 1: Continuation of the pre-project land use – continuous extensive cattle raising

<sup>98</sup> Misiones, Informe productivo provincial 2018. Secretaría de Política Económica. Subsecretaría de Programación Microeconómica (SSPMicro). Ministerio de Hacienda. Presidencia de la Nación.

There are no legal restrictions to continue with the activity of raising cattle in this land as stated by the Rural Code of the province of Corrientes. This activity is one of the main activities of the province and is the historical activity performed in the project area.

- Scenario 2: Afforestation with no harvesting activity without incentives from VCS carbon credits and Scenario 3: Afforestation with only exotic species with harvest activity

The province of Corrientes has adhered to the National Act 25,080 that promotes the plantation of forests for commercial use. This law establishes that the national and provincial enforcement authorities must establish a zoning for the location of the plantations, based on environmental, economic and social sustainable criteria. The zoning will respect the territorial ordering of native forests adopted by provincial law as established in Law 26,331. Plantation projects must obtain the corresponding provincial environmental approvals and be developed through the use of practices framed in environmental, economic and social sustainable criteria. Therefore, this scenario complies with applicable laws and regulations.

The rest of the mandatory laws which would apply to this project were described in section 14.1 of the present document.

- Scenario 4: Yerba mate production

In the case of yerba mate, the region has shown to have an important area planted with yerba mate. In terms of laws and regulations, Law No. 25,564 gives the National Institute of Yerba Mate (INYM, for its acronym in Spanish) the power to fix the price of the raw material every six months. This law, Resolution 170/21, establishes that each producer registered in the Register of Yerba Mate Sector Operators may plant up to five hectares of new yerba mate plantations per year, with the possibility of replanting up to 2% of its area, to avoid a future oversupply crisis. This limits the possibility of new yerba mate production activity in the area.

Outcome of Step 1:

All land use alternatives identified above are credible and comply with all mandatory regulations in the country and there is no law or regulation that prevents the realisation of them; thus, no alternatives are eliminated based on this criterion.

The following steps (step 2 “Barrier analysis” to step 4 “Common practice”) are presented in the section additionality of this document.

### 3.5 Additionality

#### 3.5.1 Regulatory Surplus

Is the project registered or seeking registration in an UNFCCC Annex 1 or Non-Annex 1 country?

- Annex 1 country                       Non-Annex 1 country

Are the project activities mandated by any law, statute, or other regulatory framework?

- Yes     No

If the project is located inside a Non-Annex 1 country and the project activities are mandated by a law, statute, or other regulatory framework, are such laws, statutes, or regulatory frameworks systematically enforced?

Yes

No

Project activities are not mandated by any law. As described previously, there are insufficient economic incentives for commercial plantation, which is not the case of this project with no projected harvest activities.

### 3.5.2 Additionality Methods

The baseline scenario (see chapter 3.4), and demonstration of additionality follows the “Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities (version 07)”. This tool is an indispensable part of the methodology applied: AR-ACM0003 version 02.0 (see chapter 3.1) which is applicable to large-scale projects.

In this section the remaining steps of the Tool will be analysed:

- Step 2. Barrier analysis
- Step 3. Investment analysis
- Step 4. Common practice

#### **Step 2: Barrier analysis**

This step is formed by two sub-steps: sub-step 2a. Identification of barriers that would prevent the implementation of at least one alternative land use scenario and sub-step 2b. Elimination of land use scenarios that are prevented by the identified barriers. This step serves to identify barriers and to assess which of the land use scenarios identified in the sub are not prevented by these barriers.

#### **Step 2a: Identify barriers that would prevent the implementation of alternative scenarios**

Based on the Tool 02 “Identify the baseline scenario and demonstrate additionality“ V01.0 the following list describes the barriers that were identified and described in the following analysis:

#### **Investment Barriers:**

To develop the investment analysis, it is important to understand the economical context that Argentina is going through.

Argentina´s long running inflation, economical risk, political and economic instability and the devaluation of the national currency makes any long-term investment a high-risk decision. Its long history of defaulting on its debt is reflected in the high spread of its interest rates.

Evolution of the country risk index Argentina. November 2018 -2022

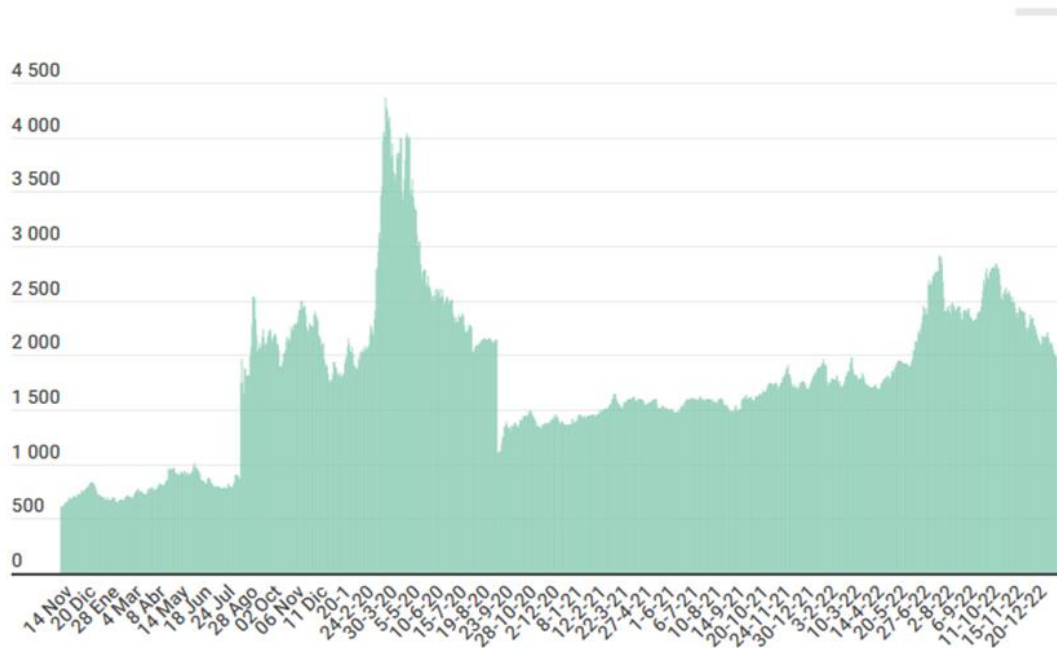


Figure 34. Evolution of Argentina Risk Index period 2018-2022. Source: JP Morgan

The risk index closed at over 2.000 points at the end of 2022 with the inflation on that year reaching almost 100% <sup>37</sup>.

The lack of fiscal discipline, a chronic problem in Argentina, and the scarce access to credit result in inflation via monetary issues to face the high level of public spending. Fiscal dominance thus becomes a central factor in uncertainty and economic instability.

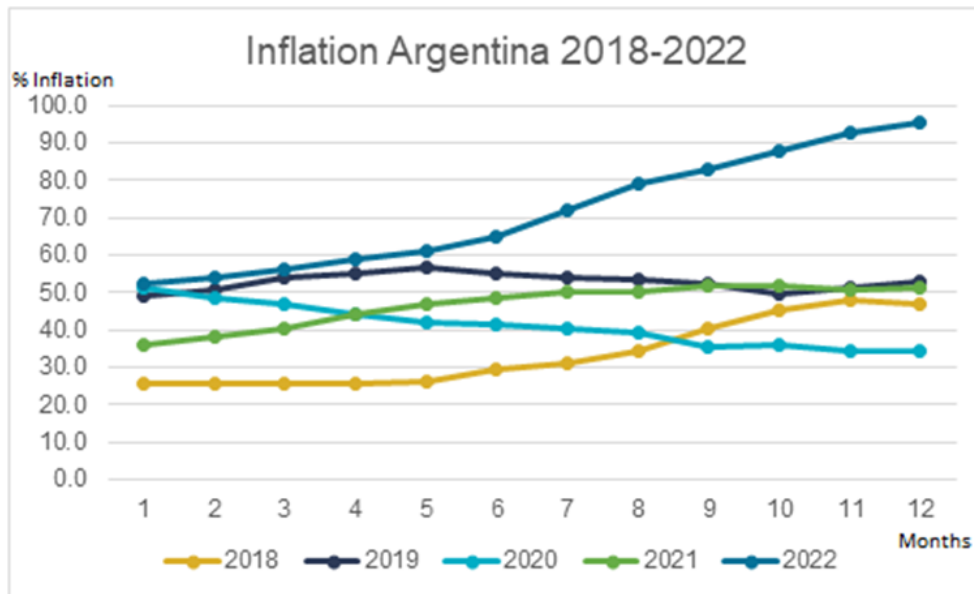


Figure 35. Inflation index Argentina for period 2018-2022. Source: INDEC<sup>99</sup>

The constant loss of value over time suffered by the Argentine local currency (peso) reflects a weak economy. Even though the official nominal exchange rate follows a path of devaluation, the local economic policy is using the exchange rate as a nominal anchor in an economy that accumulates inconsistencies making the official exchange rate less competitive. While in most economies, exchange rate movements help cushion macroeconomic shocks, in Argentina they represent a misused tool which weakens even further the economy and pushes away any long-term investment.

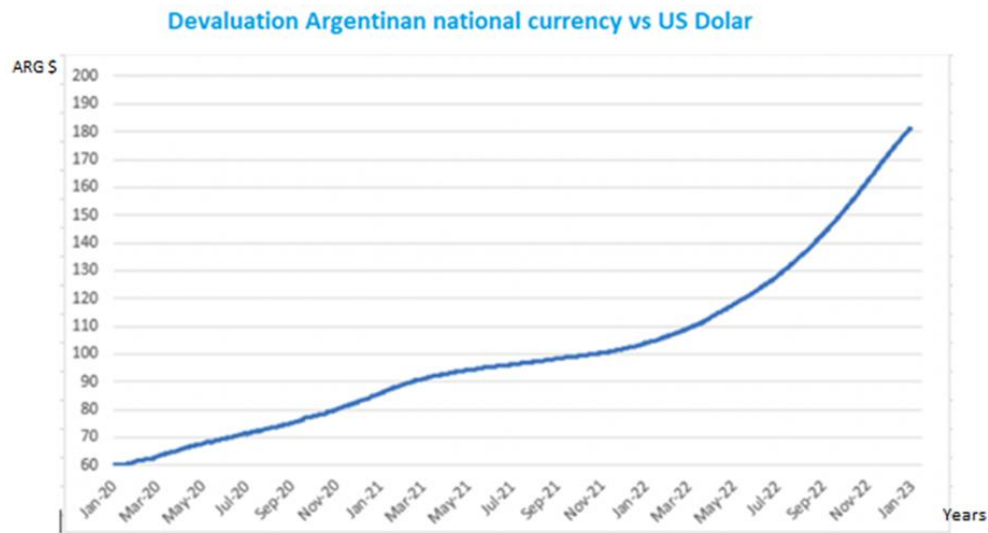


Figure 36. Monthly devaluation Argentinian national currency vs US Dollar for period January 2020 to January 2023. Source: Banco Nacion<sup>100</sup>

This level of devaluation makes any long-term investment in Argentina considered as high risk not only for foreign investors but also domestic. The incentive of a carbon credit which is paid in US dollars would be an incentive to develop any production since the US dollar, unlike the peso, is a stable currency on which there is a high degree of certainty of its long-term value.

In addition to macroeconomic instability, the environment for doing business in the country is one of the most hostile that can be found in the world. The recognize survey Doing Business (World Bank<sup>101</sup>), which provides objective measures of business regulations and their enforcement across 190 economies and selected cities at the subnational and regional level, every year ranked Argentina at the almost end of the line<sup>102</sup>. This survey was replaced recently by a new measure called Business Enabling Environment (BEE) that will be published in the second quarter of 2023. The last survey in 2020 showed Argentina in the 126th place out of 190 countries:

<sup>99</sup> <https://www.indec.gov.ar/indec/web/Buscador-Buscador-1-inflacion-Todo-Todo-Relevantes>

<sup>100</sup> <https://www.bna.com.ar>

<sup>101</sup> <https://www.worldbank.org/en/programs/business-enabling-environment/doing-business-legacy>

<sup>102</sup> <https://www.pwc.com.ar/es/publicaciones/doing-business-in-argentina.html>

Rank	Economy	DB score	Rank	Economy	DB score	Rank	Economy	DB score
1	New Zealand	86.8	65	Puerto Rico (U.S.)	70.1	128	Barbados	57.9
2	Singapore	86.2	66	Brunei Darussalam	70.1	129	Ecuador	57.7
3	Hong Kong SAR, China	85.3	67	Colombia	70.1	130	St. Vincent and the Grenadines	57.1
4	Denmark	85.3	68	Oman	70.0	131	Nigeria	56.9
5	Korea, Rep.	84.0	69	Uzbekistan	69.9	132	Niger	56.8
6	United States	84.0	70	Vietnam	69.8	133	Honduras	56.3
7	Georgia	83.7	71	Jamaica	69.7	134	Guyana	55.5
8	United Kingdom	83.5	72	Luxembourg	69.6	135	Belize	55.5
9	Norway	82.6	73	Indonesia	69.6	136	Solomon Islands	55.3
10	Sweden	82.0	74	Costa Rica	69.2	137	Cabo Verde	55.0
11	Lithuania	81.6	75	Jordan	69.0	138	Mozambique	55.0
12	Malaysia	81.5	76	Peru	68.7	139	St. Kitts and Nevis	54.6
13	Mauritius	81.5	77	Qatar	68.7	140	Zimbabwe	54.5
14	Australia	81.2	78	Tunisia	68.7	141	Tanzania	54.5
15	Taiwan, China	80.9	79	Greece	68.4	142	Nicaragua	54.4
16	United Arab Emirates	80.9	80	Kyrgyz Republic	67.8	143	Lebanon	54.3
17	North Macedonia	80.7	81	Mongolia	67.8	144	Cambodia	53.8
18	Estonia	80.6	82	Albania	67.7	145	Palau	53.7
19	Latvia	80.3	83	Kuwait	67.4	146	Grenada	53.4
20	Finland	80.2	84	South Africa	67.0	147	Maldives	53.3
21	Thailand	80.1	85	Zambia	66.9	148	Mali	52.9
22	Germany	79.7	86	Panama	66.6	149	Benin	52.4
23	Canada	79.6	87	Botswana	66.2	150	Bolivia	51.7
24	Ireland	79.6	88	Malta	66.1	151	Burkina Faso	51.4
25	Kazakhstan	79.6	89	Bhutan	66.0	152	Mauritania	51.1
26	Iceland	79.0	90	Bosnia and Herzegovina	65.4	153	Marshall Islands	50.9
27	Austria	78.7	91	El Salvador	65.3	154	Lao PDR	50.8
28	Russian Federation	78.2	92	San Marino	64.2	155	Gambia, The	50.3
29	Japan	78.0	93	St. Lucia	63.7	156	Guinea	49.4
30	Spain	77.9	94	Nepal	63.2	157	Algeria	48.6
31	China	77.9	95	Philippines	62.8	158	Micronesia, Fed. Sts.	48.1
32	France	76.8	96	Guatemala	62.6	159	Ethiopia	48.0
33	Turkey	76.8	97	Togo	62.3	160	Comoros	47.9
34	Azerbaijan	76.7	98	Samoa	62.1	161	Madagascar	47.7
35	Israel	76.7	99	Sri Lanka	61.8	162	Suriname	47.5
36	Switzerland	76.6	100	Seychelles	61.7	163	Sierra Leone	47.5
37	Slovenia	76.5	101	Uruguay	61.5	164	Kiribati	46.9
38	Rwanda	76.5	102	Fiji	61.5	165	Myanmar	46.8
39	Portugal	76.5	103	Tonga	61.4	166	Burundi	46.8
40	Poland	76.4	104	Namibia	61.4	167	Cameroon	46.1
41	Czech Republic	76.3	105	Trinidad and Tobago	61.3	168	Bangladesh	45.0
42	Netherlands	76.1	106	Tajikistan	61.3	169	Gabon	45.0
43	Bahrain	76.0	107	Vanuatu	61.1	170	São Tomé and Príncipe	45.0
44	Serbia	75.7	108	Pakistan	61.0	171	Sudan	44.8
45	Slovak Republic	75.6	109	Malawi	60.9	172	Iraq	44.7
46	Belgium	75.0	110	Côte d'Ivoire	60.7	173	Afghanistan	44.1
47	Armenia	74.5	111	Dominica	60.5	174	Guinea-Bissau	43.2
48	Moldova	74.4	112	Djibouti	60.5	175	Liberia	43.2
49	Belarus	74.3	113	Antigua and Barbuda	60.3	176	Syrian Arab Republic	42.0
50	Montenegro	73.8	114	Egypt, Arab Rep.	60.1	177	Angola	41.3
51	Croatia	73.6	115	Dominican Republic	60.0	178	Equatorial Guinea	41.1
52	Hungary	73.4	116	Uganda	60.0	179	Haiti	40.7
53	Morocco	73.4	117	West Bank and Gaza	60.0	180	Congo, Rep.	39.5
54	Cyprus	73.4	118	Ghana	60.0	181	Timor-Leste	39.4
55	Romania	73.3	119	Bahamas, The	59.9	182	Chad	36.9
56	Kenya	73.2	120	Papua New Guinea	59.8	183	Congo, Dem. Rep.	36.2
57	Kosovo	73.2	121	Eswatini	59.5	184	Central African Republic	35.6
58	Italy	72.9	122	Lesotho	59.4	185	South Sudan	34.6
59	Chile	72.6	123	Senegal	59.3	186	Libya	32.7
60	Mexico	72.4	124	Brazil	59.1	187	Yemen, Rep.	31.8
61	Bulgaria	72.0	125	Paraguay	59.1	188	Venezuela, RB	30.2
62	Saudi Arabia	71.6	126	Argentina	59.0	189	Eritrea	21.6
63	India	71.0	127	Iran, Islamic Rep.	58.5	190	Somalia	20.0
64	Ukraine	70.2						

Source: Doing Business database.

Note: The rankings are benchmarked to May 1, 2019, and based on the average of each economy's ease of doing business scores for the 10 topics included in the aggregate ranking. For the economies for which the data cover two cities, scores are a population-weighted average for the two cities. Rankings are calculated on the basis of the unrounded scores, while scores with only one digit are displayed in the table.

Figure 37. Ease of doing business ranking for year 2020. Source: World Bank<sup>103</sup>

<sup>103</sup> World Bank - Doing Business Database. Available in: <https://databank.worldbank.org/source/doing-business>

Furthermore, there is an additional obstacle which any company which decides to invest in Argentina faces. In May 2020, the Official Communication “a” 7030 of the Central Bank of the Argentina Republic established severe restrictions for companies to access the Free and Single Exchange Market (MULC)<sup>104</sup>, thus hindering the possibility of making transfers abroad. If the investment were to be profitable, the current existing legislation, and the problem related to the stocks in the foreign exchange in Argentiniens central bank, makes it extremely difficult to access dollars to transfer abroad as dividends.

- **Cattle raising**

The economical context explained above has mild repercussions over cattle raising activities. While all the economical index undermines any kind of investment, if Garruchos S.A or other landowner had continued with cattle raising a large investment would not have been necessary because this activity was already being developed in the area.

Access to credit has always been a problem for the private sector in Argentina<sup>105</sup>, an issue that has been exacerbated by the economic context of recent years. In this sense, it is important to analyse the access to credit of the livestock sector. According to Argentinian National Bank, in 2022 a total of 628,003,156 US\$ was lent to the agriculture, livestock, hunting and forestry sector which was the sector with the highest amount of loans. The livestock sector obtained 30% of the total amount (186,102,977 US\$)<sup>106</sup>

In addition, it is important to stress out that an investment in livestock is a short-term investment because the sale of livestock occurs within 2 to 3 years from the beginning of the investment. Corrientes’ main cattle productive scheme is cattle raising, with calf sales for fattening. Therefore, in an economic situation of such instability as the one Argentina is going through, this type of investment is the most convenient. Furthermore, the great beef consumption culture in Argentina always ensures a high demand for this product<sup>107</sup>.

In Argentina there are many agricultural financial instruments, with a vision of a productive chain and policies that give more and better stimulus for farming and livestock activities. These activities have lower perceived risks, proven experience, and a steady cash flow. Furthermore, Corrientes’ ecological conditions allow the supply of grass required for production of cattle raising. Added to the great Argentine tradition of raising cattle, this product has a great demand both domestically and abroad.

Some of the main national and provincial incentive plans for cattle raising are:

- National Decree 133/2015<sup>108</sup>: Reduction on export duty rates. For the tariff items corresponding to bovine meat and live cattle, the tariffs are reduced to 0%.

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<sup>104</sup> <https://www.bcra.gob.ar/pdfs/comytexord/A7030.pdf>

<sup>105</sup> National Bank statistics report on financial inclusion: <https://www.bcra.gob.ar/PublicacionesEstadisticas/informe-inclusion-financiera-0219.asp>

<sup>106</sup> National Bank statistics report on standardised series:

[https://www.bcra.gob.ar/PublicacionesEstadisticas/Cuadros\\_estandarizados\\_series\\_estadisticas.asp](https://www.bcra.gob.ar/PublicacionesEstadisticas/Cuadros_estandarizados_series_estadisticas.asp)

<sup>107</sup> Average meat consumption: <https://www.visualcapitalist.com/cp/mapped-meat-consumption-by-country-and-type/>

<sup>108</sup> <https://www.argentina.gob.ar/normativa/nacional/decreto-133-2015-256979>

- Argentine Livestock Campaign<sup>109 110</sup>. More efficiency, more future: intended for breeding stock. It is a public-private campaign at the initiative of the Undersecretary of Livestock of the Ministry of Agroindustry of the Nation. Good practices are promoted to increase productive efficiency in cattle breeding.
- Federal Plan for the Bicentennial of Livestock and Meat<sup>111</sup>: one of its objectives is to increase the supply of livestock products and by-products to adequately supply the internal and external market, both in quality and quantity, improving productive efficiency
- Provincial Law 5,552<sup>112</sup>: Rural Development Fund: its purpose is to assist and finance infrastructure works in rural areas, phytosanitary campaigns and projects that increase the productivity of agricultural activities. constitutes a trust composed mainly of the collection of real estate tax administered by Banco de Corrientes

For these reasons there is no financial barrier to continue with the actual activity of cattle raising.

#### - **Commercial Forestry with harvest activities**

In comparison, no local sources of finance were found specifically for forestry<sup>113 114</sup>. It is necessary to consider the forest sector as atypical compared to the agricultural sector, due to the high initial investment funds needed to develop a project, maturity periods (above 12 years), biological cycles, maintenance requirements, etc. Commercial afforestation in Argentina is supported by incentives and tax benefits given by the government under the Act. 27,487 (modification of Law 25,080<sup>115</sup>). Garruchos S.A is part of this program for its commercial plantations. However, due to the lack of adequate budgeting, average payment exceeds by far the 2-year period established by the law<sup>116 117 118</sup>. In addition, due to the high inflation rates, for instance the inflation rate of 2022 was 94,8%<sup>119 120</sup>, and the lack of adjustments for inflation these subsidies, which are in local currency, fail as an incentive. Furthermore, all this benefit

<sup>109</sup> <https://magyp.gob.ar/ganar/>

<sup>110</sup> [https://magyp.gob.ar/sitio/areas/cfa/actividad/2017/\\_reunion2/\\_material/ganaderia//000000\\_SSG-CFA%202017-09-20%20Campa%C3%B1a%20Ganader%C3%ADa.pdf](https://magyp.gob.ar/sitio/areas/cfa/actividad/2017/_reunion2/_material/ganaderia//000000_SSG-CFA%202017-09-20%20Campa%C3%B1a%20Ganader%C3%ADa.pdf)

<sup>111</sup> <https://servicios.infoleg.gob.ar/infolegInternet/anexos/165000-169999/166132/norma.htm>

<sup>112</sup> <https://hcdcorrientes.gov.ar/wp-content/uploads/2022/04/Ley5552.pdf>

<sup>113</sup> Plan estratégico forestal y foresto industrial Argentina 2030. Ministerio de Agricultura, Ganadería y Pesca. Available at: [https://www.argentina.gob.ar/sites/default/files/2021/04/plan\\_estrategico\\_foresto\\_industrial\\_2030.pdf](https://www.argentina.gob.ar/sites/default/files/2021/04/plan_estrategico_foresto_industrial_2030.pdf)

<sup>114</sup> <https://www.noticiasagropecuarias.com/2021/09/27/destacan-la-importancia-de-invertir-en-forestacion/>  
<https://www.ambito.com/informacion-general/medio-ambiente/plantar-arboles-y-recuperar-bosques-mitigar-el-cambio-climatico-n5309212>

<sup>115</sup> <https://www.argentina.gob.ar/normativa/nacional/ley-25080-55596#:~:text=Resumen%3A,AMBITO%20DE%20APLICACION%20Y%20ALCANCES>

<sup>116</sup> News from the newspaper La Nación: "Forestry industry complains about non-payment of subsidies". Available at: <https://www.lanacion.com.ar/economia/reclamo-de-la-industria-forestal-por-la-falta-de-pago-de-subsidios-nid712055/>

<sup>117</sup> Desarrollo Forestal. "AFoA: falta de presupuesto provoca pérdida de miles de hectáreas y puestos de trabajo". Available at: <https://maderamen.com.ar/desarrollo-forestal/2015/09/28/afoa-falta-de-presupuesto-provoca-perdida-de-miles-de-hectareas-y-puestos-de-trabajo/>

<sup>118</sup> Argentina Forestal. "Ley 25.080. No llegan fondos nacionales de la deuda de planes y preocupa la baja de plantaciones de pino en las cuencas forestales de Misiones". Available at: <https://www.argentinaforestal.com/2023/04/16/ley-25-080-no-llegan-fondos-nacionales/>

<sup>119</sup> INDEC (2022) Índices y variaciones porcentuales mensuales e interanuales según principales aperturas de la canasta. Diciembre de 2016-mayo de 2022. Available at: <https://www.indec.gob.ar/indec/web/Nivel4-Tema-3-5-31>

<sup>120</sup> INDEC in <https://www.cronista.com/economia-politica/el-indec-dio-a-conocer-la-inflacion-de-2022-que-fue-la-mas-alta-en-31-anos/>

only applies when the destination of the harvest wood is for the generation of energy or wood. Carbon credits are not considered by the law thus the proposed project is exempt from these benefits.

Regarding the loans to the forestry industrial sector, it only obtained loans for 1,532,886 USD<sup>121</sup> in the year 2022 which, in comparison to the livestock sector is almost 400 times less. It is important to point out that these loans are only to companies which harvest and sell wood. There is no kind of loan for an afforestation project with no harvesting activity with the sole objective of capturing CO<sub>2</sub> from the atmosphere to obtain carbon credits.

The economical context explained above has a high impact on the forestry scenarios. This situation is a consequence of the low development of the banking system and the capital market, which in turn is explained by the persistent instability of economic activity and the price system, which have encouraged short-termism in the demand and supply of finance<sup>122</sup>. In the same line, the Argentine Chamber of Forestry Industry identifies as negative forces, to the growth of the sector in the last 15 years, the macroeconomic instability, legal insecurity, the conflict with the R.O. of Uruguay over the installation of the ex-Botnia and the passing of the Land Law (Law No. 26,737) which restricts foreign investments in land. While in the region there was a wave of investments of around US\$ 25 billion linked only to pulp mills, during that period, investments in Argentina were almost non-existent<sup>123</sup>.

In short, the information mentioned above provides a strong argument to justify that forestry investment, for this scale and type, faces a concrete barrier related to financial restrictions.

- **Forestry without harvest activities:**

Considering the above-described scenario for forestry with harvest activities, cash flow analysis for the project (Forestry without harvest) was carried out. The results indicate a negative NPV for the project without carbon credits sales<sup>124</sup>. This means the project represents an economic loss for the company and without the corresponding investment it is not economically viable. Moreover, timber forestry represents the lowest IRR value results.

In this case of no-harvest forest activities, not only these projects must face the risk of a long-term investment but also the non-existing credits to develop an afforestation project. Therefore, it is concluded that this scenario faces a strong investment barrier.

- **Yerba mate**

For its part, yerba mate production in Corrientes (as well as Misiones) has access to financial assistance by the National Bank in the shape of credits. In 2022, the total amount of the credits to be granted by the Argentinean National Bank is up to \$ 300 million, and the National Ministry of Agroindustry would benefit an additional 6 annual percentage points of interest rate. The

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<sup>121</sup> [https://www.bcra.gob.ar/PublicacionesEstadisticas/Cuadros\\_estandarizados\\_series\\_estadisticas.asp](https://www.bcra.gob.ar/PublicacionesEstadisticas/Cuadros_estandarizados_series_estadisticas.asp)

<sup>122</sup> Clarín (2017) Editorial. La falta de crédito de largo plazo. Febrero 2017. Available at [https://www.clarin.com/opinion/falta-credito-largo-plazo\\_0\\_r1EzC9RpKe.html](https://www.clarin.com/opinion/falta-credito-largo-plazo_0_r1EzC9RpKe.html)

<sup>123</sup> Argentinean Forestry Industry Chamber available at: <https://forestindustria.org.ar/plantaciones-forestales/>

<sup>124</sup> Cashflow analysis for the forestry project and best economic alternatives available to VVB during validation/verification in shared folder "NPRR>Cashflow analysis(...)"

benefit is available to individuals and/or legal entities engaged in production and industrialization activities in the yerba mate production value chain in the provinces of Misiones and Corrientes<sup>125</sup>.

Still, the production is limited by law, with a small margin for the incorporation of new plantation areas. This is evidence by analysing Law 25,564 with its Resolution 170/21 and its limitations in terms of production price and production area<sup>126</sup>. This establishes that each producer registered in the Register of Operators of the Yerba Mate Sector may sew up to five hectares of new yerba mate plantations per year, with the possibility of replanting up to 2% of its surface, to avoid a future crisis of oversupply. Further evidenced with the limited variability (less than 0.8%) in raw material entry to drying plants´ evolution for the last 5 years (figure 38).

In conclusion, financial assistance is accessible for existing producers, and the production area quota represents a strong barrier for new production units.

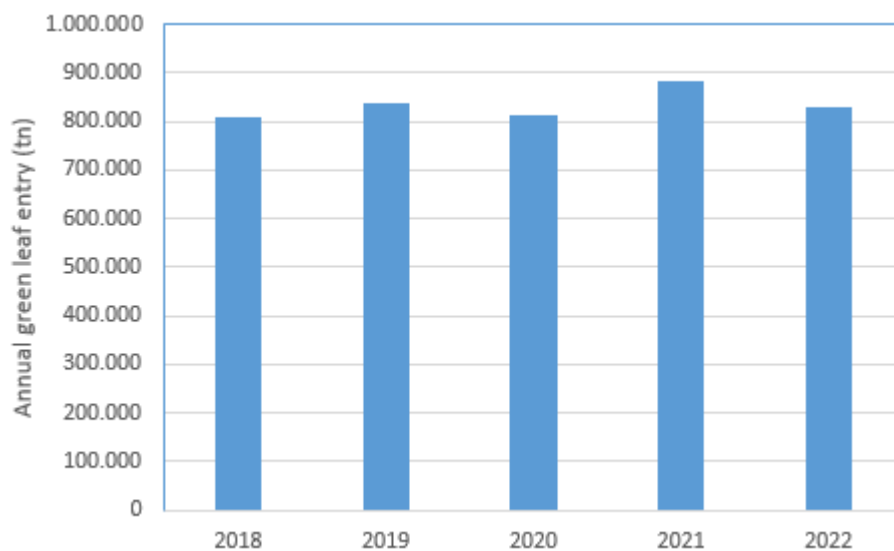


Figure 38. Annual green leaf entry to drying plants for all productive regions of Corrientes and Misiones, for the period 2018 to 2022. National Institution of Yerba Mate<sup>127</sup>

**Technological barriers:**

The scenarios that are being analysed do not have any kind of technological barrier. On one hand, low cattle raising is being done now and there is no technological barrier that could prevent this activity from continuing in the future. On the other hand, an afforestation project without the incentives of VCS carbon credits is also viable from the technological point of view due to the over 20 years of experience from Garruchos S.A in the industrial forest activity. Garruchos owns all the machinery needed to develop this kind of project in this area despite the difficulty represented by the degradation of the soil.

<sup>125</sup> National Institution of Yerba Mate. Available in: <https://inym.org.ar/noticias/programas/78276-estan-disponibles-300-millones-para-el-sector-yerba-tero.html>

<sup>126</sup> <https://www.boletinoficial.gob.ar/detalleAviso/primera/245891/20210622>

<sup>127</sup> National Institution for Yerba Mate (20022) Annual report for Yerba Mate sector 2022. Available at: <file:///C:/Users/lenovo/Downloads/2022-12-Estadisticas.pdf>

In the case of yerba mate production, although the company has no experience, the region has trained personnel and technology at hand so it would not represent a barrier.

**Ecological conditions barriers:**

The cattle raising alternative does not present ecological barriers. The soil where this activity is taking place is a low-quality soil, nevertheless the subtropical weather of the province helps to provide grass for the cattle during spring/summer with higher limitations during winter.

On the other hand, afforestation projects do suffer a midst ecological barrier due to the low quality of the soil for commercial plantations. This has prevented Garruchos S.A from developing any kind of commercial forest activity in this area due to the opportunity cost with cattle raising.

The plantation site in Puerto Valle farm corresponds to a flat relief with gentle hills, generally with low to medium natural fertility. Garruchos farm corresponds to a normal relief, in a hilly position, called *lomas coloradas*. Both with historical livestock use, with implanted pastures at some point. The stocking rate is low compared to the average for the province, which indicates the low quality of the site.

Furthermore, Garruchos S.A. is an industrial forest company with more than 20 years' experience in this field. Between the province of Corrientes and Misiones Garruchos S.A has over 23,000 hectares of plantations. However, the plots of land where this project activity will take place have never been an option to develop a commercial forest project since acquiring the land. Garruchos S.A owns Puerto Valle since 2004 and Garruchos farm since 2006. This lack of forest plantation development in this area is due to the soil conditions of the farms, and to the opportunity cost with cattle raising in that area. Growing conditions are heterogeneous due to small uneven plots, access limited thus complicating a commercial plantation.

It can be seen in the oldest satellite images, there has not been an attempt to afforest Puerto Valle ranch since at least 1985 (older available image), while in Garruchos farm there has been no attempt to afforest the area, not even reforest the 16 ha planted by previous owners around 2000 and harvested in 2010. There is confidence that in these plots of land, except for the 1.6% harvested in Garruchos farm, no type of tree planting took place for an even longer period of time.



Figure 39. Garruchos farm. Plot of lands for the proposed ARR project activity are indicated in red. Date 1985

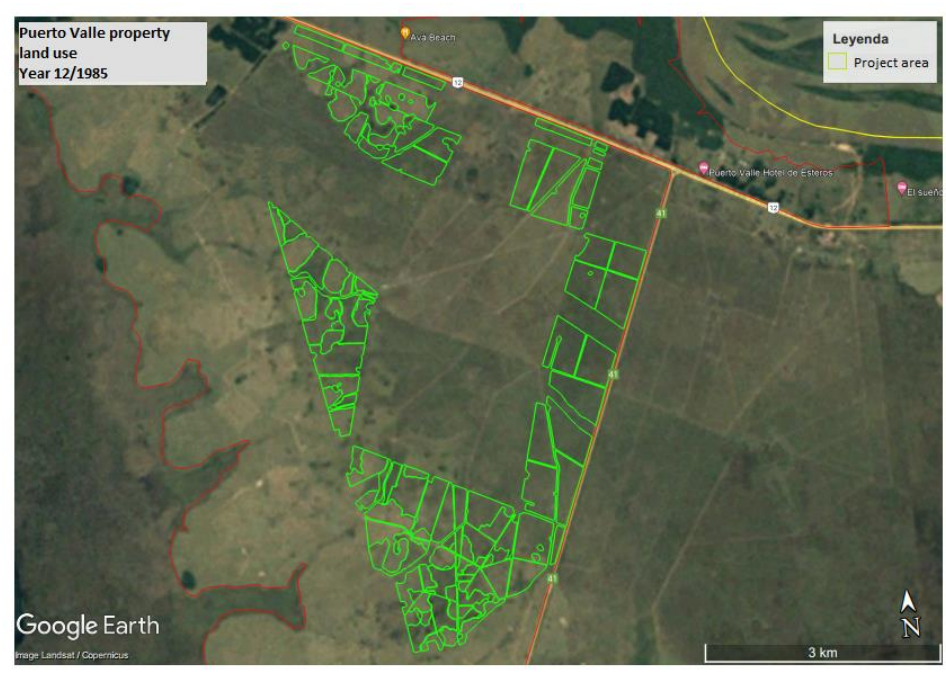
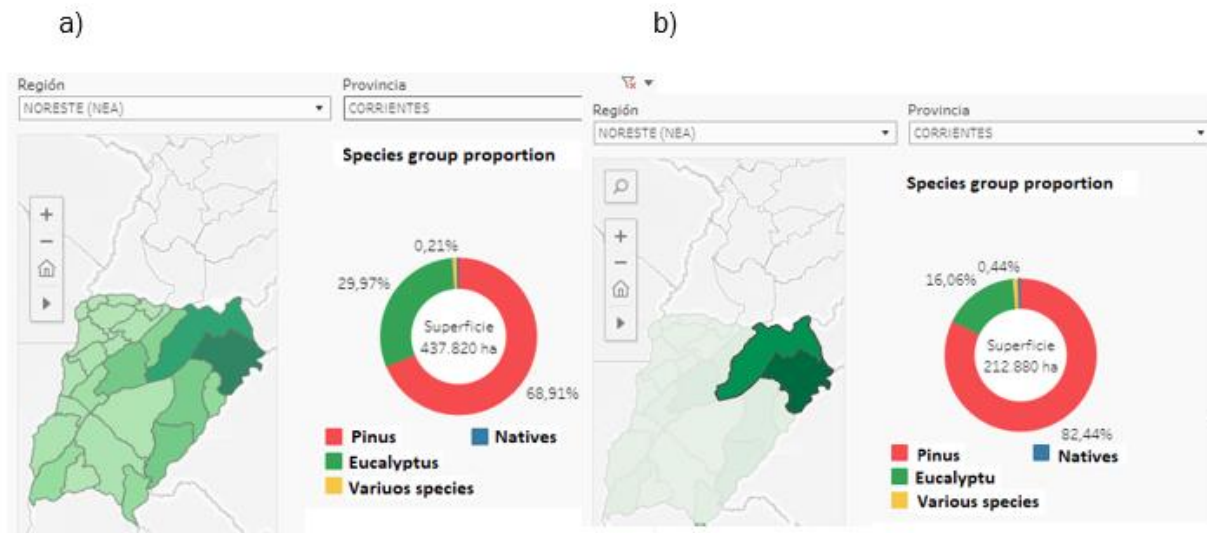


Figure 40. Puerto Valle farm. The plot of lands for the proposed ARR project activity are indicated in red. Date 1985

**Barriers related to local tradition**

The three main economic activities that have historically developed in the project zone are cattle ranching, forest plantations of exotic species and yerba mate. Unlike cattle raising and agricultural production, which have been carried out in the region for centuries, forestry, a relatively new type of production, began its commercial development in the 1990s<sup>128</sup>. Also, forestry with native species is completely new in the area and in the country. However, this incipient activity has strong limitations to obtain an adequate quantity of seedlings and plants together with the knowledge to manage this type of plantation<sup>129 130</sup>.

Although Corrientes, together with Misiones, is the province with the largest area of planted forest and is characterised by the presence of several seedling nurseries and sawmills, forest plantations with no harvest and with the planting of native species, are not common practice in the region (Figure 41). Therefore, there is a general lack of knowledge about this type of activity along the region: on the one hand, the number of nurseries producing native seedlings is very limited; on the other hand, there are not enough studies on the productivity of the species and it is not known how it is affected by diseases, climate and management, it is a subject that is still at the research stage<sup>131</sup>. In addition, no growth simulators have been developed for native or mixed plantations. Therefore, local knowledge and the technology to implement it are still taking their first steps in the area, creating significant uncertainties. It must be added that no harvest activities are not common practice, and this may present cultural challenges for management.



<sup>128</sup> Ramírez, D. (2017). Un abordaje histórico de la actividad forestal en Misiones: del frente extractivo al agronegocio forestal. *Folia histórica del nordeste*, (30), 29-51. Available at:

[http://www.scielo.org.ar/scielo.php?script=sci\\_arttext&pid=S0325-82382017000300002](http://www.scielo.org.ar/scielo.php?script=sci_arttext&pid=S0325-82382017000300002)

<sup>129</sup> El Litoral: "Yacyretá y el Inta crearán un vivero de bosques nativos en Corrientes". Available at:

<https://www.ellitoral.com.ar/corrientes/2023-2-14-1-0-0-yacyreta-y-el-inta-crearan-un-vivero-de-bosques-nativos-en-corrientes>

<sup>130</sup> INTA. Catálogo de variedades vegetales INTA. Available at: <https://www.argentina.gob.ar/inta/variedades#4>

<sup>131</sup> Ensayo de especies leñosas nativas para la producción de biomasa mediante bosques energéticos en la provincia de Misiones. Available at:

[https://www.magyp.gob.ar/sitio/areas/proyectos\\_forestales/transferencia/eldorado/PIA%2010069\\_BOHREN.pdf](https://www.magyp.gob.ar/sitio/areas/proyectos_forestales/transferencia/eldorado/PIA%2010069_BOHREN.pdf)

Figure 41. Area of planted forests in (a) Corrientes and (b) project area departments. Native species represent 0.21% and 0.44%, respectively. Ministerio de Agricultura, Ganadería y Pesca<sup>132</sup>

Cattle raising does not have any barriers regarding local tradition cattle raising because it is one of the main economic activities of the Province of Corrientes for more than 50 years. According to official reports produced by the National Forest Directorate, which depends on the Ministry of Environment and Sustainable Development, cattle raising has been the primary activity set up in this area since colonial times (early XIX century).

In conclusion, only for the case of scenario 2 local tradition barriers are identified.

Outcome of Step 2a: List of barriers that may prevent one or more land use scenarios identified in the Step 1b:

As analysed above, the proposed project without the incentive of VCS carbon credits faces several barriers that would prevent its development. On the other hand, current land use, cattle raising doesn't face any of the barriers analysed. Moreover, for afforestation projects with exotic species, investment and ecological barriers have been identified. Last, in the case of yerba mate, investment barriers are identified as summarised in table 5.

Table 5: Barriers per scenario

Barriers	Scenario 1: Continuation of the pre-project land use (cattle raising)	Scenario 2: Afforestation without incentives from VCS carbon credits	Scenario 3: Afforestation with non-native with harvest	Scenario 4: Yerba mate production
Investment/ quote barriers	NO	YES	YES	YES
Technological barriers	NO	NO	NO	NO
Ecological barriers	NO	YES	YES	NO
Local Tradition barriers	NO	YES	NO	NO

<sup>132</sup> Ministerio de Agricultura, Ganadería y Pesca – Tablero de Plantaciones Forestales. Available at: <https://www.magyp.gob.ar/sitio/areas/desarrollo-foresto-industrial/inventarios/tablero.php>

### Step 2b: Elimination of land use scenarios that are prevented by the identified barriers.

Concluding what was analysed in the previous sections, the land-use that is not prevented by any of the barriers is:

Scenario 1: Continuation of the pre-project land use – continuous extensive cattle raising

According to the Tool “Combined tool to identify the baseline scenario and demonstrate additionality “version 07.0 If there is only one alternative scenario that is not prevented by any barrier and that alternative is not the proposed project activity undertaking without being register as VCS project activity and the project proponent is the only that can provide this activity than this alternative is identified as the baseline scenario.

This is the case for the proposed project. Therefore, following the flowchart of the step-wise approach (Figure 2 of the Tool “Combined tool to identify the baseline scenario and demonstrate additionality “version 07.0) there is no need to carry out an investment analysis (Step 3 of the mentioned tool) thus Scenario 1: Continuation of the pre-project land use – low intensity cattle raising by grazing is the baseline scenario.

### **Step 4: Common practice analysis**

According to the Tool for the demonstration and assessment of additionality in VCS agriculture, forestry and other land use (AFOLU) project activities, the previous steps shall be complemented with an analysis of the extent to which forestation activity has already diffused in the geographical area of the proposed AFOLU VCS project activity. This test is a credibility check to demonstrate additionality which complements the barrier analysis (Step 2) above conducted.

The analysis consists in examining to which extent similar activities to the one proposed as the VCS AFOLU project activity have been implemented previously or are currently underway. Furthermore, the tool defines similar forestation activities as those which are of similar scale, take place in a comparable environment, inter alia, with respect to the regulatory framework and are undertaken in the relevant geographical area as defined in Step 1a above.

As defined by the Tool for the demonstration and assessment of additionality in VCS agriculture, forestry and other land use (AFOLU) project activities the applicable geographical area should be the entire host country.

Although commercial forestry is a growing activity in Argentina and in the province of Corrientes, the common practice is to develop plantations with only commercial non-native species, with harvest activities. The total forest plantation area in Corrientes, as shown in figure 41 is 437,820ha. This area is for commercial plantations of Pinus followed by Eucalyptus, used by local main wood product establishments (with their own plantations) and exported to neighbour provinces <sup>133</sup> .

There are essential distinctions between the industrial forestry activity that is being developed in the province of Corrientes and the proposed project. This project does not intend to perform any kind of harvesting activities as defined in the Verra Standard Document version 4.4. In addition, it will also include the plantation of 28.3 hectares of native species (3% of project area).

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<sup>133</sup> [https://www.argentina.gob.ar/sites/default/files/sspmicro\\_informes\\_productivos\\_provinciales\\_corrientes.pdf](https://www.argentina.gob.ar/sites/default/files/sspmicro_informes_productivos_provinciales_corrientes.pdf)

While it could be considered that the forestry activity with the objective to perform harvesting to sell the wood is a common practice, there is no record of another forestry project with no harvesting activity. According to forest statistics, only 24% of Corrientes plantation area has individuals above 18 years, showing rotational forestation production and less than 0,2% of the area planted with native species<sup>134</sup>. The lack of distinction in public reports and stats, between forests planted for harvesting and not, evidence that there are no significant afforestation projects without harvesting, may be said that there are not. Communication with experts in forest activities also confirms this point.

In conclusion, similar activities cannot be observed in the project region therefore the proposed project is not a common practice thus is additional.

### 3.6 Methodology Deviations

No methodology deviations apply to this period.

## 4 IMPLEMENTATION STATUS

### 4.1 Implementation Status of the Project Activity

This monitoring period is the first for the crediting period of the project, thus, the activities which have been implemented during the current period have been detailed in the document.

These include:

- Land preparation took place during September, starting September 1st.
- Total project area was planted: 987.74ha of native and non-native species during last and first quarter of year 2022 and 2023, respectively.
- Public consultation including project description, redress and communication processes, risks and benefits took place.
- Research activities started in the project, together with INTA and National University of Misiones.
- First forest inventory took place between 14 and 16<sup>th</sup> of November 2023, on those plots with 50% of individuals higher than 1.5m height. This represents an area of 144.57has of *Eucalyptus grandis* plantation.
- Other activities with communities such as training, presentations, among others.

The area has received exceptionally high precipitation volumes caused by El Niño during the last quarter of year 2023 (figure 42), affecting part of the area. These are small plots with limited carbon removal accomplished and were not monitored during this monitoring period, so no net removals were estimated for this area and no loss event should be considered.

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<sup>134</sup> Ministerio de Agricultura, Ganadería y Pesca – Tablero de Plantaciones Forestales. Available at: <https://www.magyp.gob.ar/sitio/areas/desarrollo-foresto-industrial/inventarios/tablero.php>

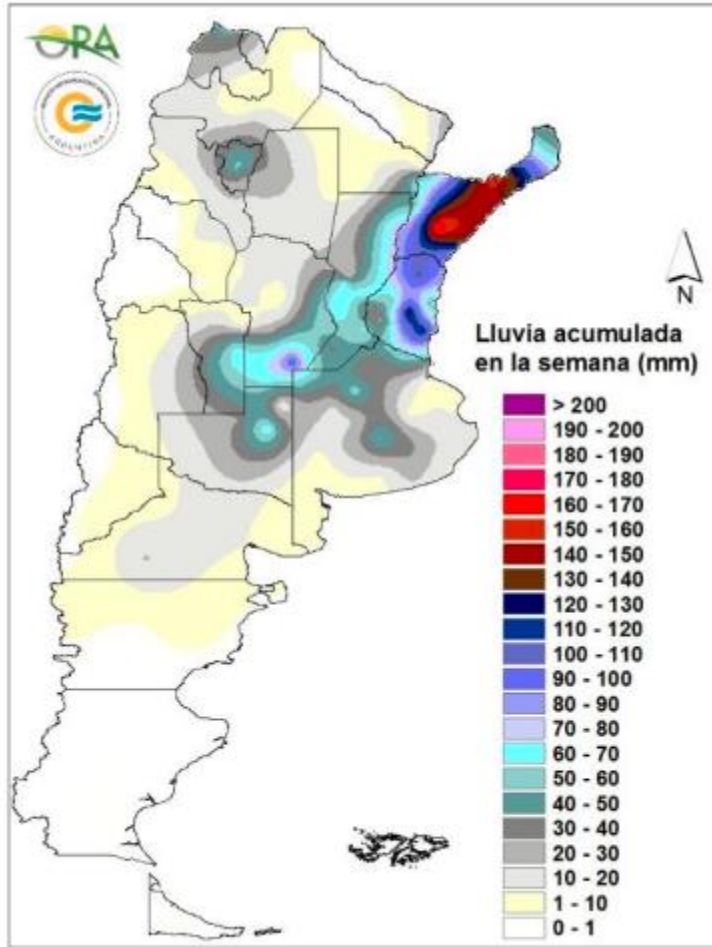


Figure 42. Accumulated precipitation volumes (mm) for one week in October of 2023 (from 19th to 26th). Source: Ministry of Economics<sup>135</sup>

No leakage is expected, as all previous cattle in the area were sold to slaughterhouses. Regarding non-permanence risk factors monitoring and mitigation actions, fire and floodings are the main identified natural risks.

<sup>135</sup> Ministry of Economics - Agriculture, cattle and fishing Secretariat (2023) Agriculture estimates, weekly report. Available at:

[https://www.magyp.gob.ar/sitio/areas/estimaciones/archivos/estimaciones/230000\\_2023/231000\\_Octubre/231026\\_Informe%20Semanal%20al%2026\\_10\\_2023.pdf](https://www.magyp.gob.ar/sitio/areas/estimaciones/archivos/estimaciones/230000_2023/231000_Octubre/231026_Informe%20Semanal%20al%2026_10_2023.pdf)

# 5 QUANTIFICATION OF ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS

## 5.1 Baseline Emissions

According to methodology AR-ACM 0003 v.2.0, section 5.4, baseline net GHG removals by sinks are calculated as follows:

$$\Delta C_{BSL,t} = \Delta C_{TREE,BSL,t} + \Delta C_{SHRUB,BSL,t} + \Delta C_{DW,BSL,t} + \Delta C_{LI,BSL,t}$$

Where,

$\Delta C_{BSL,t}$  = Baseline net GHG removals by sinks in year t; tCO<sub>2</sub>-e

$\Delta C_{TREE,BSL,t}$  = Change in carbon stock in baseline tree biomass within the project boundary, in year t, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”; tCO<sub>2</sub>-e

$\Delta C_{SHRUB,BSL,t}$  = Change in carbon stock in baseline shrub biomass within the project boundary, in year t, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”; tCO<sub>2</sub>-e

$\Delta C_{DW,BSL,t}$  = Change in carbon stock in baseline dead wood biomass within the project boundary, in year t, 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”; tCO<sub>2</sub>-e

$\Delta C_{LI,BSL,t}$  = Change in carbon stock in baseline litter biomass within the project boundary, in year t, 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”;  
tCO<sub>2</sub>-e

As it was demonstrated above, the baseline scenario is the continuation of historic use of land, which consists of extensive continuous cattle grazing. This means that the project area without the project activity would have remained as modified pastureland. The only existing trees within the project area are scattered individuals. Those scattered trees present in the project area will be neither harvested, nor cleared, nor removed; will not suffer mortality because of competition from trees planted in the project, or damage because of implementation of the project activity, and will not be inventoried along with the project trees in monitoring of carbon stocks but their continued existence, consistent with the baseline scenario, is monitored, all of the above throughout the crediting period of the project activity. It is clear then, that carbon stock and change in carbon stock may be estimated as zero. Therefore, changes in carbon stock of above-ground and below-ground biomass of non-tree vegetation are assumed to be nil in the baseline scenario.

In terms of baseline emissions, it is important to note the common practices for livestock production. It is estimated that in savannas and wet pastures the fire interval is 1-2 years. Fire is considered a management alternative because of its low cost and simple application, whose main purpose is to remove senescent or dry material rejected by livestock. It stimulates the growth of new, softer, more palatable and better-quality grass used by ruminants, thus achieving better results in animal production (Heringer & Jacques, 2001). In this sense, whenever the shrub generates a significant encroachment, it is recently burned, generating GHG emissions. For this project, a conservative approach has been taken and emissions from burning have not been estimated <sup>136 137</sup>.

Likewise, it is expected that the dead wood and litter carbon pools will not increase in the baseline. Finally, the change in carbon stock in SOC may be conservatively assumed to be nil since it is unlikely to increase in the baseline conditions.

In summary and based on IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry (2003), given that the activity of the identified baseline scenario has been the same for the last decades, it is assumed that the net GHG removals by sinks in the baseline are nil.

**DC<sub>BSL,t</sub> = 0**

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<sup>136</sup> Heringer, I., & Jacques, A. V. A. (2011). Effect of burning and management alternatives on forage litter composition of a native pasture. Available at: <https://uknowledge.uky.edu/igc/19/9/10/>

<sup>137</sup> Fernández, J. A., Schroeder, M. A., Goldfarb, M. C., & Bernardis, A. C. (2011). Efecto de la frecuencia de quema prescrita sobre la composición mineral de los pastizales en el nordeste argentino. *Ecología Aplicada*, 10(1), 23-29. Available at: [http://www.scielo.org.pe/scielo.php?pid=S1726-22162011000100003&script=sci\\_arttext](http://www.scielo.org.pe/scielo.php?pid=S1726-22162011000100003&script=sci_arttext)

## 5.2 Project Emissions

The actual net GHG removals by sinks shall be calculated as follows:

$$\Delta C_{ACTUAL,t} = \Delta C_{P,t} - GHG_{E,t}$$

Where,

$\Delta C_{ACTUAL,t}$  = Actual net GHG removals by sinks, in year  $t$ ; tCO<sub>2</sub>-e

$\Delta C_{P,t}$  = Change in the carbon stocks in project, occurring in the selected carbon pools, in year  $t$ ; tCO<sub>2</sub>-e

$GHG_{E,t}$  = Increase in non-CO<sub>2</sub> GHG emissions within the project boundary because of the implementation of the A/R CDM project activity, in year  $t$ , as estimated in the tool “Estimation of non-CO<sub>2</sub> GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity”; tCO<sub>2</sub>-e

According to methodology AR-ACM 0003 v.2.0, section 5.5. GHG emissions resulting from removal of herbaceous vegetation, combustion of fossil fuel, fertilizer application, use of wood, decomposition of litter and fine roots of N-fixing trees, construction of access roads within the project boundary, and transportation attributable to the project activity shall be considered insignificant and therefore accounted as zero<sup>138</sup>.

The use of fire for site preparation and/or to clear the land of harvest residue prior to replanting will not take place as the project does not include harvesting, thus excluded from the project management. Hence, project emissions are estimated as zero.

$$GHG_{E,t} = 0$$

### Actual net GHG removals by sinks

Change in the carbon stocks in project, occurring in the selected carbon pools in year  $t$  shall be calculated as follows:

<sup>138</sup> Project emissions calculations include fuel used in machinery. This value is equal to 0,12tCO<sub>2</sub>/ha. Estimation is included in ex-ante spreadsheets available to VVB during validation/verification.

$$\Delta C_{P,t} = \Delta C_{TREE\_PROJ,t} + \Delta C_{SHRUB\_PROJ,t} + \Delta C_{DW\_PROJ,t} + \Delta C_{LI\_PROJ,t} + \Delta SOC_{ALT}$$

Where,

$\Delta C_{P,t}$  = Change in the carbon stocks in project, occurring in the selected carbon pools, in year  $t$ ; tCO<sub>2</sub>-e

$\Delta C_{TREE\_PROJ,t}$  = Change in carbon stock in tree biomass in project in year  $t$ , as estimated in the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”; tCO<sub>2</sub>-e

$\Delta C_{SHRUB\_PROJ,t}$  = Change in carbon stock in shrub biomass in project in year  $t$ , as estimated in the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”; tCO<sub>2</sub>-e

$\Delta C_{DW\_PROJ,t}$  = Change in carbon stock in dead wood biomass in project in year  $t$ , 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”; tCO<sub>2</sub>-e

$\Delta C_{LI\_PROJ,t}$  = Change in carbon stock in litter biomass in project in year  $t$ , 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”; tCO<sub>2</sub>-e

$\Delta SOC_{ALT}$  = Change in carbon stock in SOC in project, in year  $t$ , in areas of land meeting the applicability conditions of the tool “Tools 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; tCO<sub>2</sub>-e

#### Above and below ground biomass carbon pools

- Change in carbon stock in trees in a year

According to the “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity” tool, v. 4.2, section 7, change in carbon stock in trees in a year

(annual change) between two successive verifications is estimated on the assumption of linear change. Change in carbon stock in trees in a year is estimated as follows:

$$\Delta C_{TREE,t} = \frac{C_{TREE,t_2} - C_{TREE,t_1}}{T} \times 1 \text{ year}$$

Where,

$\Delta C_{TREE,t}$  = Change in carbon stock in trees within the project boundary in year  $t$ ; tCO<sub>2</sub>-e

$C_{TREE,t_2}$  = Carbon stock in trees within the project boundary at time  $t_2$ ; tCO<sub>2</sub>-e

$C_{TREE,t_1}$  = Carbon stock in trees within the project boundary at time  $t_1$ ; tCO<sub>2</sub>-e

$T$  = Time elapsed between two successive estimations  
( $T=t_2 - t_1$ ); yr

According to the tool, carbon stock in trees at a point of time can be estimated by using one or a combination of four methods.

- Ex-ante estimation (projection) of carbon stock in trees

Method (b) “Estimation by modelling of tree growth and stand development” has been applied as follows:

$$C_{TREE} = 44/12 * B_{TREE} * CF_{TREE}$$

Where,

$C_{TREE}$  = Carbon stock in tree biomass within the project boundary at a given point of time; t CO<sub>2</sub>-e

$B_{TREE}$  = Biomass of trees within the project boundaries at a given point in time; t d.m

$C_{FTREE}$  = Carbon fraction of tree biomass; t C (t d.m)<sup>-1</sup>

A default value of 0.47 is used unless transparent and verifiable information can be provided to justify a different value.

With,

$B_{TREE} = V_{TREE} * DJ * BEF_{J,2} * (1 + RJ)$

$V_{TREE} =$  Stem volume of tree species; m<sup>3</sup>

Vtree is obtained from growth projections from PlaForNEA, based on more than 100 years growth data in the region and for the species considered. This simulation tool was developed by INTA and is of public access<sup>139</sup>.

For Native species, there is general limited information available on Argentinean native species growth rates. For ex-ante estimations available information was analysed and White Timbó growth was used and projected over the crediting period, based on Arturi, M.F; et al. (2008)<sup>140</sup>.

$DJ$  = Basic wood density of tree species j; t d.m. /m<sup>3</sup>

$BEF_{J,2}$  = Biomass expansion factor for conversion of stem biomass to above-ground tree biomass, for tree species j; dimensionless

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<sup>139</sup> Keller, A.E; Crechi, E.H; Fassola, H.E; Colcombet, L; Barth, S.R; Winck, R.A; Di Rienzo, J. (2017). PlaForNEA, Plataforma de Gestión Forestal. INTA EEA Montecarlo. URL <http://www.plafornea.com.ar>

<sup>140</sup> Arturi, M.F; et al. (2008) Height and diameter growth and mortality in plantations of native species of the Yungas in Valle Morado, Salta.

$RJ$  = Root-shoot ratio for tree species  $j$ ; dimensionless

- Ex-post estimation of carbon stock in trees

Ex-post estimations will be based on method (a) of the applicable tool (“Estimation by measurement of sample plots”) and more specifically in option (a) of this method: “Stratified random sampling”.

According to this method, mean carbon stock in trees within the tree biomass estimation strata and the associated uncertainty will be estimated as follows:

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

$$B_{TREE} = A \times b_{TREE}$$

$$b_{TREE} = \sum_{i=1}^M w_i \times b_{TREE,i}$$

$$u_C = \frac{t_{VAL} \times \sqrt{\sum_{i=1}^M w_i^2 \times \frac{s_i^2}{n_i}}}{b_{TREE}}$$

Where,

$C_{TREE}$  = Carbon stock in trees in the tree biomass estimation strata; tCO<sub>2</sub>-e

$CF_{TREE}$  = Carbon fraction of tree biomass; t C (t.d.m)<sup>-1</sup>

A default value of 0.47 is used unless transparent and verifiable information can be provided to justify a different value.

$B_{TREE}$  = Tree biomass in the tree biomass estimation strata; t.d.m

$A$  = Sum of areas of the tree biomass estimation strata; ha

$b_{TREE}$  = Mean tree biomass per hectare in the tree biomass estimation strata; t.d.m ha<sup>-1</sup>

$w_i$  = Ration of the area of stratum  $i$  to the sum of areas of tree biomass estimation strata (i.e.  $w_i=A_i/A$ ); dimensionless

$b_{TREEi}$  = Mean tree biomass per hectare in stratum  $i$ ; t.d.m. ha<sup>-1</sup>

$U_c$  = Uncertainty in  $C_{TREE}$

$T_{val}$  = Two-sided Student's t-value for a confidence level of 90 percent and degrees of freedom equal to  $n-M$ , where  $n$  is total number of sample plots within the tree biomass estimation strata and  $M$  is the total number of tree biomass estimation strata

$s_i^2$  = Variance of tree biomass per hectare across all sample plots in stratum  $i$ ; (t.d.m. ha<sup>-1</sup>)<sup>2</sup>

$n_i$  = Number of sample plots in stratum  $i$

Mean tree biomass per hectare in a stratum ( $b_{TREE}$ ) and the associated variance ( $s_i^2$ ) will be estimated as follows:

$$b_{TREE,i} = \frac{\sum_{p=1}^{n_i} b_{TREE,p,i}}{n_i}$$

$$s_i^2 = \frac{n_i \times \sum_{p=1}^{n_i} b_{TREE,p,i}^2 - (\sum_{p=1}^{n_i} b_{TREE,p,i})^2}{n_i \times (n_i - 1)}$$

Where,

$b_{TREE\ p,i}$  = Tree biomass per hectare in plot  $p$  of stratum  $i$ ; t.d.m.  $ha^{-1}$

$n_i$  = Number of sample plots in stratum  $i$

Finally, according to Appendix 1 (Methods of plot biomass measurement) of the tool, the plot biomass value will be determined as follows:

$$b_{TREE,p,i} = \frac{B_{TREE,p,i}}{A_{PLOT,i}}$$

$$B_{TREE,p,i} = \sum_j B_{TREE,j,p,i}$$

$$B_{TREE,j,p,i} = \sum_l B_{TREE,l,j,p,i}$$

Where,

$b_{TREE\ p,i}$  = Tree biomass per hectare in sample plot  $p$  of stratum  $i$ ; t.d.m.  $ha^{-1}$

$B_{TREE\ p,i}$  = Tree biomass in sample plot  $p$  of stratum  $i$ ; t.d.m.

$A_{PLOT\ i}$  = Size of sample plot in stratum  $i$ ; ha

$B_{TREE\ j,p,i}$  = Biomass of trees of species  $j$  in sample plot  $p$  of stratum  $i$ ; t.d.m.

$B_{TREE\ l,j,p,i}$  = Biomass of tree  $l$  of species  $j$  in sample plot  $p$  of stratum  $i$ ; t.d.m.

With,

$$B_{TREE,l,j,p,i} = f_j(x_{1,l}, x_{2,l}, x_{3,l}, \dots) \times (1 + R_j)$$

$$B_{TREE,l,j,p,i} = V_{TREE,j}(x_{1,l}, x_{2,l}, x_{3,l}, \dots) \times D_j \times BEF_{2,j} \times (1 + R_j)$$

Where,

$f_j(x_{1,l}, x_{2,l}, x_{3,l}, \dots)$  = Above-ground biomass of the tree returned by the allometric equation for species j relating to measurements of three l to the above-ground biomass of the tree: t.d.m.

$R_j$  = Root-shoot ratio for tree species j; dimensionless

The value of  $R_i$  is estimated as:

$$R_j = \frac{e^{(-1.085 + 0.9256 \times \ln b)}}{b}$$

Where  $b$  is the above-ground tree biomass per hectare (in t.d.m. ha<sup>-1</sup>), unless transparent and verifiable information can be provided to justify a different value.

$V_{TREE,j}(x_{1,l}, x_{2,l}, x_{3,l}, \dots)$  = Stem volume of tree l of species j in sample plot p of stratum i estimated from the tree dimension(s) as entry data into a volume table or volume equation; m<sup>3</sup>

Note. Where the volume table or volume equation predicts under-bark volume (i.e. wood volume, rather than gross stem volume), suitable correction will be applied to estimate the over-bark volume.

Moreover, when the allometric equation used provides biomass values (kg) the corresponding adjustments will be applied to the methodology. Including BEF2 dismissal when total biomass is obtained.

$D_j$  = Density (over-bark) of tree species j; t.d.m m<sup>-3</sup>

Note. Where density (specific gravity) of the bark of a tree species is different from the density of the wood, suitable correction should be applied to estimate a conservative value of the overall (over-bark) density of tree stem.

BEF<sub>2,j</sub> = Biomass expansion factor for conversion of tree stem biomass to above-ground tree biomass, for tree species j; dimensionless

For ex-post estimation the conservative default value of 1.15 is used, unless transparent and verifiable information can be provided to justify a different value. This value will be only used if needed, as allometric equations include total biomass estimation.

Moreover, density and BEF<sub>2,j</sub> values will only be used when no BCEFs value is available, taking into consideration the 2019 refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories as the most recent source available (replacing 2003 LULUCF Good Practice Guidelines).

In line with AR-TOOL14 Appendix 1 “Demonstrating appropriateness of biomass equations for estimation of aboveground tree biomass in A/R CDM project activities”, only recognised by public entities or peer reviewed VTREE and Fi equations will be used, meaning national or regional forest inventories or research institutions recommendations.

For *Eucalyptus*, the equation used is the one recommended for Northeast region by the National Institution of Agricultural Technology (INTA) from Winck, R.A; et al. (2015) <sup>141</sup>:

$$\ln(\text{total biomass (kg)}) = -3.32 + 2.12 * \ln(\text{DBH}) + 0.65 * \ln(\text{H})$$

As demonstrated, the equation used for *Eucalyptus* is the one promoted by the national agroindustry Ministry and INTA for, at least, the last 10 years for commercial plantation inventories.

In the case of Pinus species biomass, the allometric equation used are those by peer reviewed research, extensively used and analysed for the ecoregion:

Species	Allometric equation	Source
<i>Pinus elliottii</i>	Total biomass (kg) =0.7359*(1/dap) <sup>-2.3482</sup> *(1/h) <sup>0.6043</sup>	Carvalho, R. R., et al. (2022) <sup>142</sup>

<sup>141</sup>Winck, R.A; et al. (2015) Modelos predictivos de biomasa aérea de Eucalyptus grandis para el Noreste de Argentina. *Ciência Florestal*, vol. 25, núm. 3, julio-septiembre, pp. 595-606. Universidade Federal de Santa Maria.

<sup>142</sup> Carvalho, R. R., Trautenmüller, J. W., Kohler, S. V., Serpe, E. L., Corte, A. P. D., Silva, D. A., & Figueiredo Filho, A. (2022). Biomass modeling in a mixed plantation of Pinus taeda L. and Pinus elliottii Engelm. *Scientia Forestalis*, 50, e3894. <https://doi.org/10.18671/scifor.v50.27>

<i>Pinus taeda</i>	Total biomass (kg) = - 3,18 + 2,62*Ln(dap)	Fassola, H.E; et al. (2010) <sup>143</sup>
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For the case of native species mix plots, for those species with known allometric equation reported in the Second National Native Forest Inventory (INBN2) <sup>144 145</sup>, the equation will be used, if not a general equation from the mentioned reference will be used:

Species	Allometric equation
General equation	$V_{TREE} = -0.09996 + 0.00057954 * DBH^2$ (V being stem volume over bark) <sup>146</sup>
<i>Apuleia leiocarpa</i> (Grapia)	$V_{TREE} = -0,36367 + 0,00102635 * DAP^2$
<i>Handroanthus heptaphyllus</i> (Lapacho negro)	$V_{TREE} = 0,000166288 * DAP^{1,29072} * LF^{1,5206}$
<i>Parapiptadenia rigida</i> (Anchico colorado Horco cebil)	$V_{TREE} = 0,0313 + 0,00077810 * DAP^2$
<i>Patagonula americana</i> (Guayubirá)	$V_{TREE} = -0,18563 + 0,00072140 * DAP^2$

<sup>143</sup> Fassola, H.E; et al. (2010) Regional prediction models for aboveground biomass estimation of *Pinus taeda* in Misiones and NE Corrientes region, Argentina. EEA Montecarlo, INTA. Available at: <https://core.ac.uk/download/pdf/335290727.pdf>

<sup>144</sup> MAGyP (2020) Segundo Inventario Nacional de Bosques Nativos (INBN2): informe Región Forestal Parque Chaqueño. Primera revisión. Section with equation at: Annex 4. Table 34. Available at: <https://www.argentina.gob.ar/ambiente/bosques/segundo-inventario-nacional-bosques-nativos>

<sup>145</sup> MAGyP (2020). Segundo Inventario Nacional de Bosques Nativos: informe Selva Paranaense: primera revisión. Buenos Aires. Section with equation at: Annex 4. Table 34. Available at: <https://www.argentina.gob.ar/ambiente/bosques/segundo-inventario-nacional-bosques-nativos>

<sup>146</sup> Source for the equation: PINBN analysis

Refer to sections 6.1 and 6.2 for further information regarding monitored parameters and method of plot biomass measurement.

- ***Change in carbon stock in shrub biomass in the project***

Regarding change in carbon stock in shrub biomass in the project, since the baseline scenario is the continuation of extensive cattle breeding in pastureland, this landscape does not present shrubs on it. Therefore, it is not a source of GHG emissions.

$$AC_{SHRUB\_PROJ,t} = 0$$

**Litter and Dead Wood Carbon Pools**

Not included

***Soil organic carbon Pool***

Not included

### 5.3 Leakage Emissions

The Project activity does not expect any displacement of agricultural activities present in the Project’s boundary before the beginning of it, as all cattle has been sold to slaughterhouses<sup>147</sup>, thus leakage emissions are considered insignificant and hence accounted as zero.

According to the methodology AR-ACM 0003 v.2.0, section 5.6, leakage emissions shall be estimated as follows:

$$LK_t = LK_{AGRIC,t}$$

Where,

$LK_t$  = GHG emissions due to leakage, in year  $t$ ; tCO<sub>2</sub>-e

$LK_{AGRIC,t}$  = Leakage due to the displacement of agricultural activities in year  $t$ , as estimated in the toll “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity”; tCO<sub>2</sub>-e

According to the “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity” tool v.2, leakage emission

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<sup>147</sup> Sale invoices available to VVB during validation/verification in shared folder *Leakage*

attributable to the displacement of agricultural activities due to implementation of an A/R CDM project activity is estimated as the decrease in carbon stocks in the affected carbon pools of the land receiving the displaced activity.

Thus, it is concluded that the displacement of agricultural activities is considered insignificant and hence accounted as zero.

$$LK_t = 0$$

## 5.4 Estimated GHG Emission Reductions and Carbon Dioxide Removals

According to the methodology AR-ACM 0003 v.2.0, section 5.7, net anthropogenic GHG removals by sinks shall be calculated as follows:

$$\Delta C_{AR-CDM,t} = \Delta C_{ACTUAL,t} - \Delta C_{BSL,t} - LK_t$$

Where,

$\Delta C_{AR-CDM,t}$  = Net anthropogenic GHG removals by sinks, in year t; tCO<sub>2</sub>-e

$\Delta C_{ACTUAL,t}$  = Actual net GHG removals by sinks, in year t; tCO<sub>2</sub>-e

$\Delta C_{BSL,t}$  = Baseline net GHG removals by sinks, in year t; tCO<sub>2</sub>-e

$LK_t$  = GHG emissions due to leakage, in year t; tCO<sub>2</sub>-e

1) Based on the parameters detailed in section 6.1 and 6.2 and equation in section 5.2, the following table summarises the GHG removals estimated for the project crediting period:

Vintage period	Estimated baseline emissions (tCO <sub>2</sub> e)	Estimated project emissions (tCO <sub>2</sub> e)	Estimated leakage emissions (tCO <sub>2</sub> e)	Estimated buffer pool allocation (tCO <sub>2</sub> e)	Estimated reduction VCUs (tCO <sub>2</sub> e)	Estimated removal VCUs (tCO <sub>2</sub> e)	Estimated total VCU issuance (tCO <sub>2</sub> e)
01-Sep-2022 to 31-Dec-2022	0	0	0	0	-	0	0
01-Jan-2023 to 31-Dec-2023	0	686.66	0	82.40	-	604.26	604.26
01-Jan-2024 to 31-Dec-2024	0	10,654.80	0	1,278.58	-	9,376.23	9,376.23
01-Jan-2025 to 31-Dec-2025	0	21,492.39	0	2,579.09	-	18,913.31	18,913.31
01-Jan-2026 to 31-Dec-2026	0	29,231.93	0	3,507.83	-	25,724.10	25,724.10
01-Jan-2027 to 31-Dec-2027	0	35,227.64	0	4,227.32	-	31,000.32	31,000.32
01-Jan-2028 to 31-Dec-2028	0	39,117.62	0	4,694.11	-	34,423.51	34,423.51
01-Jan-2029 to 31-Dec-2029	0	40,768.61	0	4,892.23	-	35,876.37	35,876.37

01-Jan-2030 to 31-Dec-2030	0	40,715.94	0	4,885.91	-	35,830.03	35,830.03
01-Jan-2031 to 31-Dec-2031	0	39,604.49	0	4,752.54	-	34,851.95	34,851.95
01-Jan-2032 to 31-Dec-2032	0	37,866.03	0	4,543.92	-	33,322.11	33,322.11
01-Jan-2033 to 31-Dec-2033	0	35,851.17	0	4,302.14	-	31,549.03	31,549.03
01-Jan-2034 to 31-Dec-2034	0	33,729.71	0	4,047.57	-	29,682.15	29,682.15
01-Jan-2035 to 31-Dec-2035	0	31,599.30	0	3,791.92	-	27,807.38	27,807.38
01-Jan-2036 to 31-Dec-2036	0	29,618.18	0	3,554.18	-	26,064.00	26,064.00
01-Jan-2037 to 31-Dec-2037	0	27,660.90	0	3,319.31	-	24,341.59	24,341.59
01-Jan-2038 to 31-Dec-2038	0	25,933.62	0	3,112.03	-	22,821.58	22,821.58

01-Jan-2039 to 31-Dec-2039	0	24,218.25	0	2,906.19	-	21,312.06	21,312.06
01-Jan-2040 to 31-Dec-2040	0	22,609.72	0	2,713.17	-	19,896.55	19,896.55
01-Jan-2041 to 31-Dec-2041	0	21,079.38	0	2,529.53	-	18,549.86	18,549.86
01-Jan-2042 to 31-Dec-2042	0	20,182.54	0	2,421.90	-	17,760.63	17,760.63
01-Jan-2043 to 31-Dec-2043	0	18,766.87	0	2,252.02	-	16,514.85	16,514.85
01-Jan-2044 to 31-Dec-2044	0	17,488.27	0	2,098.59	-	15,389.68	15,389.68
01-Jan-2045 to 31-Dec-2045	0	16,566.83	0	1,988.02	-	14,578.81	14,578.81
01-Jan-2046 to 31-Dec-2046	0	15,632.20	0	1,875.86	-	13,756.34	13,756.34
01-Jan-2047 to 31-Dec-2047	0	15,041.72	0	1,805.01	-	13,236.71	13,236.71

01-Jan-2048 to 31-Dec-2048	0	13,907.95	0	1,668.95	-	12,239.00	12,239.00
01-Jan-2049 to 31-Dec-2049	0	13,276.54	0	1,593.18	-	11,683.36	11,683.36
01-Jan-2050 to 31-Dec-2050	0	12,347.78	0	1,481.73	-	10,866.05	10,866.05
01-Jan-2051 to 31-Dec-2051	0	12,121.11	0	1,454.53	-	10,666.57	10,666.57
01-Jan-2052 to 31-Dec-2052	0	11,544.11	0	1,385.29	-	10,158.82	10,158.82
01-Jan-2053 to 31-Dec-2053	0	10,452.16	0	1,254.26	-	9,197.90	9,197.90
01-Jan-2054 to 31-Dec-2054	0	9,874.98	0	1,185.00	-	8,689.99	8,689.99
01-Jan-2055 to 31-Dec-2055	0	9,538.24	0	1,144.59	-	8,393.65	8,393.65
01-Jan-2056 to 31-Dec-2056	0	9,028.46	0	1,083.42	-	7,945.05	7,945.05

01-Jan-2057 to 31-Dec-2057	0	8,761.66	0	1,051.40	-	7,710.26	7,710.26
01-Jan-2058 to 31-Dec-2058	0	8,525.66	0	1,023.08	-	7,502.58	7,502.58
01-Jan-2059 to 31-Dec-2059	0	8,102.38	0	972.29	-	7,130.10	7,130.10
01-Jan-2060 to 31-Dec-2060	0	7,701.07	0	924.13	-	6,776.94	6,776.94
01-Jan-2061 to 31-Dec-2061	0	7,536.59	0	904.39	-	6,632.20	6,632.20
01-Jan-2062 to 31-Aug-2062	0	7,175.73	0	861.09		6,314.64	6,314.64
<b>Total</b>	<b>0</b>	<b>801,239.2</b>	<b>0</b>	<b>96,148.7</b>		<b>705,090.5</b>	<b>705,090.5</b>

## 6 MONITORING

### 6.1 Data and Parameters Available at Validation

<b>Data / Parameter</b>	D <sub>j</sub>
<b>Data unit</b>	t d.m. m <sup>-3</sup>
<b>Description</b>	Density (over-bark) of tree species j

<b>Source of data</b>	Atencia, M.E (2003) INTI-CITEMA <sup>148</sup>
<b>Value applied:</b>	<p><i>Eucalyptus grandis</i>: 0.46</p> <p><i>Pinus taeda</i>: 0.46</p> <p><i>Pinus elliottii</i>: 0.51</p> <p><i>Pinus elliottii</i> var. <i>elliottii</i> x <i>caribaea</i>: 0.51</p> <p>Native mix: 0.80 (average from different species value available in mentioned reference)</p>
<b>Justification of choice of data or description of measurement methods and procedures applied</b>	<p>The densities used are of an official source: INTI, National Institution of Industrial Technology. It provides a wide list of species and corresponding densities for wet and dry wood.</p> <p>There is no data for <i>Pinus elliottii</i> var. <i>elliottii</i> x <i>caribaea</i>, so <i>Pinus elliottii</i>'s value is used. In the case of native species, the list is limited.</p> <p>In the case of native mix, a conservative average value is used taking into consideration densities for the mix of species planted with available data in reference:</p> <p><i>Parapiptaderia rigida</i>: 0.95</p> <p><i>Apuleia leiocarpa</i>: 0.83</p> <p><i>Patagonula americana</i>: 0.78</p> <p><i>Campomanesia xanthocarpa</i>: 0.87</p> <p><i>Jacaranda mimosifolia</i>: 0.58</p>
<b>Purpose of data</b>	Calculation of project emissions
<b>Comments</b>	In the case of ex-ante estimations, the value 0.61 is used, corresponding to <i>Albizia inundata</i> , species used due to general limited information available on Argentinean native species growth rates <sup>149</sup> .

<sup>148</sup> Atencia, M.E (2003) Densidad de maderas (Kg/m<sup>3</sup>) ordenadas por nombre científico. INTI-CITEMA. Available at: <https://www.inti.gob.ar/publicaciones/descargac/366>

<sup>149</sup> Arturi, M.F; et al. (2008) Height and diameter growth and mortality in plantations of native species of the Yungas in Valle Morado, Salta.

Data / Parameter	BEF <sub>2,j</sub>
Data unit	Dimensionless
Description	Biomass expansion factor for conversion of stem biomass to above-ground biomass for tree species j
Source of data	AR-TOOL 14 Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities V. 04.2 page 26
Value applied:	1.15
Justification of choice of data or description of measurement methods and procedures applied	According to the A/R methodological tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”, for ex post estimation the conservative default value of 1.15 will be used unless transparent and verifiable information can be provided to justify a different value.
Purpose of data	Calculation of project emissions
Comments	-

Data / Parameter	R <sub>j</sub>
Data unit	dimensionless
Description	Root-shoot ratio for tree species j
Source of data	Based on biomass and equation in AR-TOOL 14 Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities V. 04.2
Description of measurement methods and procedures applied	<p>R<sub>j</sub> will be estimated using the recommended equation taken from the suggested equation from the mentioned source and no default value for ranges of biomass are used</p> $R_j = \frac{e^{(-1.085+0.9256 \times \ln b)}}{b}$ <p>Where b is aboveground biomass content (t.d.m./ha). The aboveground biomass will be calculated per verification period.</p> <p>It is calculated based on projected aboveground biomass for ex-ante estimations and estimated biomass for ex-post estimations.</p>

<b>Frequency of monitoring/recording</b>	For every plot measured
<b>Value applied:</b>	Varies with measuring plot depending on biomass see ex-ante spreadsheet <sup>150</sup>
<b>Monitoring equipment</b>	Excel spreadsheet
<b>QA/QC procedures applied</b>	Calculations revised by third party within consultancy firm
<b>Purpose of data</b>	Calculation of project emissions
<b>Calculation method</b>	N/A
<b>Comments</b>	N/A

<b>Data / Parameter</b>	CF
<b>Data unit</b>	dimensionless
<b>Description</b>	Carbon fraction
<b>Source of data</b>	Table 4.3 <i>Carbon fraction of aboveground forest biomass in 2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>
<b>Value applied:</b>	0.47
<b>Justification of choice of data or description of measurement methods and procedures applied</b>	Default value recommended by IPCC
<b>Purpose of data</b>	Calculation of project emissions
<b>Comments</b>	N/A

<b>Data / Parameter</b>	$V_{TREE,j,p,i}$
<b>Data unit</b>	m <sup>3</sup>

<sup>150</sup> Document in shared folder with VVB during validation/verification in Monitoring Plan>ex-ante removal calculations>Garruchos carbon capture 40 years

<b>Description</b>	Stem volume of trees of species or group of species
<b>Source of data</b>	PlaForNEA simulation tool for <i>Eucalyptus grandis</i> , <i>Pinus elliottii</i> , <i>Pinus taeda</i> and <i>Pinus hybrid</i> .  Arturi, M.F; et al. (2008) Height and diameter growth and mortality in plantations of native species adapted for native mix plantation area
<b>Value applied:</b>	Varies with species and date of plantation. See project ex-ante spreadsheet <sup>151</sup>
<b>Justification of choice of data or description of measurement methods and procedures applied</b>	PlaForNEA <sup>152</sup> is developed by a recognized organization in Argentina, INTA, which simulates Eucalyptus and Pinus growth, allowing to include detail on densities, forestry index, among other parameters.  In the case of native mix stands, there is general limited information available on Argentinean native species growth rates. After analysing available information, White Timbó growth was used and projected over the crediting period.
<b>Purpose of data</b>	Calculation of project emissions (ex-ante)
<b>Comments</b>	For ex-post calculations, allometric equations will be used based on DBH and H values measured and estimated. When allometric equations result in total biomass (kg) the corresponding adjustments will be applied.

## 6.2 Data and Parameters Monitored

<b>Data / Parameter</b>	A <sub>i</sub>
<b>Data unit</b>	ha
<b>Description</b>	Area of stratum I
<b>Source of data</b>	Monitoring of strata and stand boundaries was done using a Geographical Information System (GIS)

<sup>151</sup> Document in shared folder with VVB during validation/verification in "Monitoring Plan>ex-ante removal calculations>Garruchos carbon capture 40 years"

<sup>152</sup> PlaForNEA access through: <https://www.plafornea.com.ar/>

<b>Description of measurement methods and procedures applied</b>	Strata areas were measured based on cartography documents, related with GIS.																																																												
<b>Frequency of monitoring/recording</b>	Every time the project boundaries are modified. when disturbances events take place, the project participants shall re-build the stratum and add the area of the project under disturbance in the GIS																																																												
<b>Value applied:</b>	<table border="1"> <thead> <tr> <th>Stratum</th> <th>Gender</th> <th>Species</th> <th>Tree density (plants/ha)</th> <th>Surface (ha)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td><i>Pinus</i></td> <td><i>hybrid (elliottii x caribaea)</i></td> <td>833</td> <td>473.82</td> </tr> <tr> <td>2</td> <td><i>Pinus</i></td> <td><i>hybrid (elliottii x caribaea)</i></td> <td>1,250</td> <td>123.09</td> </tr> <tr> <td>3</td> <td><i>Pinus</i></td> <td><i>taeda</i></td> <td>1,250</td> <td>41.39</td> </tr> <tr> <td>4</td> <td><i>Pinus</i></td> <td><i>taeda</i></td> <td>833</td> <td>19.43</td> </tr> <tr> <td>5</td> <td><i>Pinus</i></td> <td><i>elliottii</i></td> <td>1,250</td> <td>14.35</td> </tr> <tr> <td>6</td> <td><i>Eucalyptus</i></td> <td><i>grandis</i></td> <td>625</td> <td>129.83</td> </tr> <tr> <td>7</td> <td><i>Eucalyptus</i></td> <td><i>grandis</i></td> <td>1,250</td> <td>157.25</td> </tr> <tr> <td>8</td> <td colspan="2"><i>Native mix</i></td> <td>625</td> <td>9.62</td> </tr> <tr> <td>9</td> <td colspan="2"><i>Native mix</i></td> <td>1,250</td> <td>6.91</td> </tr> <tr> <td>10</td> <td colspan="2"><i>Native mix + Eucalyptus</i></td> <td>625</td> <td>5.76</td> </tr> <tr> <td>11</td> <td colspan="2"><i>Native mix + Eucalyptus</i></td> <td>1,250</td> <td>6.29</td> </tr> </tbody> </table>	Stratum	Gender	Species	Tree density (plants/ha)	Surface (ha)	1	<i>Pinus</i>	<i>hybrid (elliottii x caribaea)</i>	833	473.82	2	<i>Pinus</i>	<i>hybrid (elliottii x caribaea)</i>	1,250	123.09	3	<i>Pinus</i>	<i>taeda</i>	1,250	41.39	4	<i>Pinus</i>	<i>taeda</i>	833	19.43	5	<i>Pinus</i>	<i>elliottii</i>	1,250	14.35	6	<i>Eucalyptus</i>	<i>grandis</i>	625	129.83	7	<i>Eucalyptus</i>	<i>grandis</i>	1,250	157.25	8	<i>Native mix</i>		625	9.62	9	<i>Native mix</i>		1,250	6.91	10	<i>Native mix + Eucalyptus</i>		625	5.76	11	<i>Native mix + Eucalyptus</i>		1,250	6.29
Stratum	Gender	Species	Tree density (plants/ha)	Surface (ha)																																																									
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<b>Monitoring equipment</b>	Garmin GPS, model etrex 10 y 20 and Garmin GPSMap 65; Google Earth, QGis																																																												
<b>QA/QC procedures applied</b>	Quality control/quality assurance (QA/QC) procedures prescribed under national forest inventory are applied. In the absence of these, QA/QC procedures from published handbooks, or from the IPCC GPG LULUCF 2003, are applied.																																																												

<b>Purpose of data</b>	Calculation of project emissions
<b>Calculation method</b>	The value was used in equations N° 3, 12 y 24 of the Methodological tool AR TOOL 14 “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities” (Version 04.1)
<b>Comments</b>	N/A

<b>Data / Parameter</b>	A <sub>PLOT,i</sub> ,
<b>Data unit</b>	ha
<b>Description</b>	Total area of sample plots in stratum i
<b>Source of data</b>	Field measurement
<b>Description of measurement methods and procedures applied</b>	<p>First, the centre of the plot is identified by navigating with the GPS until the planned waypoint is found and marked with a stake after the satellite location has 2 meters or less margin of error. The centre of the plot is determined in such a way that it is in the middle of 4 surrounding trees. From there, the limit of the plot is delimited considering a radio of 11.284mts around the centre, marking all the perimetral trees.</p> <p>The access to the plot is registered as a GPS point, taken on the road and a stake with the top painted white is placed, as well as the PPM number will be marked on a tree located on the road, provided that the diameter allows it.</p>
<b>Frequency of monitoring/recording</b>	Before every verification event.
<b>Value applied:</b>	Sample plots are circular of 400m <sup>2</sup>
<b>Monitoring equipment</b>	Garmin GPS, model etrex 10 y 20 and Garmin GPSMap 65; Google Earth, QGis and measuring tape.
<b>QA/QC procedures applied</b>	Quality control/quality assurance (QA/QC) procedures prescribed under national forest inventory are applied. In the absence of

	these, QA/QC procedures from published handbooks, or from the IPCC GPG LULUCF 2003, are applied.
<b>Purpose of data</b>	Calculation of project emissions
<b>Calculation method</b>	The plots are located using a GPS, with previously loaded maps of plots, each having its own coordinates.
<b>Comments</b>	N/A

<b>Data / Parameter</b>	DBH
<b>Data unit</b>	cm
<b>Description</b>	Diameter at breast height of tree
<b>Source of data</b>	Field measurements in sample plots
<b>Description of measurement methods and procedures applied</b>	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.
<b>Frequency of monitoring/recording</b>	Every tree within sample plots
<b>Value applied:</b>	Varies with plot, see file "Forest inventory - Verification I" <sup>153</sup>
<b>Monitoring equipment</b>	For adult individuals (more than 10cm diameter), the instrument used for measuring DBH is a millimetric caliper with a 650 mm reach; with diameter accuracy, aluminium scales with clear digits anti-wear off, printed on both sides. In the case of young individuals, a measuring tape is used.
<b>QA/QC procedures applied</b>	<p>A quality control procedure consists in qualified personnel conducting the measurements in the first place, and the first control is conducted by contractor.</p> <p>Secondly, instruments are checked and tested before starting the verification process. To calibrate the measuring tape, this is measured against a masonry fiber tape and metal masonry tape or metal rulers from the metallurgical industry.</p>

<sup>153</sup> Removal spreadsheets available to VVB in shared folder "Monitoring Plan>Monitoring period>Forest inventory - Verification I"

Purpose of data	Calculation of project emissions
Calculation method	The trees are inside the plot if more than 50% of DBH is inside the plot.
Comments	N/A

Data / Parameter	$R_j$
Data unit	dimensionless
Description	Root-shoot ratio for tree species j
Source of data	Based on measured biomass and equation in AR-TOOL 14 Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities V. 04.2
Description of measurement methods and procedures applied	<p><math>R_j</math> will be estimated using the recommended equation taken from the suggested equation from the source and calculated based on estimated aboveground biomass for each verification period and not a default value for ranges of biomass:</p> $R_j = \frac{e^{(-1.085+0.9256 \times \ln b)}}{b}$ <p>Where b is aboveground biomass content (t.d.m./ha). The aboveground biomass will be calculated per verification period.</p>
Frequency of monitoring/recording	For every plot measured
Value applied:	Varies with measuring plot depending on biomass see “Forest inventory – Verification I”
Monitoring equipment	Excel spreadsheet
QA/QC procedures applied	Calculations revised by third party within consultancy firm
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	H
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<b>Data unit</b>	m
<b>Description</b>	Height of tree
<b>Source of data</b>	Field measurements in sample plots
<b>Description of measurement methods and procedures applied</b>	<p>Standard operating procedures (SOPs) prescribed under national forest inventory are applied. In the absence of these, SOPs from published handbooks, or from the IPCC GPG LULUCF 2003, are applied.</p> <p>In relation to the height measurement, the following considerations according to each situation take place:</p> <ol style="list-style-type: none"> <li>1. Trees with zero slope: To achieve a correct measurement, the operator must be located at a distance equivalent to the tree height. It is important to keep in mind that the distance taken with the tape measure is the one entered in the inclinometer.</li> <li>2. Measurements with slope (positive or negative): In those cases where the tree base is located over the contractor's visual sight, the measurement and total height will be a result of the subtraction of the measurements. If the operator is over a hill, the height will be the sum of the measurements.</li> <li>3. Trees that are dead, burned, or broken will be excluded from the measurement.</li> </ol>
<b>Frequency of monitoring/recording</b>	All trees within plot are measured
<b>Value applied:</b>	See file "Forest inventory - Verification I"
<b>Monitoring equipment</b>	All trees within the plot are measured with a telescopic rod or laser hypsometer.
<b>QA/QC procedures applied</b>	Quality control/quality assurance (QA/QC) procedures prescribed under national forest inventory are applied. In the absence of these, QA/QC procedures from published handbooks, or from the IPCC GPG LULUCF 2003, are applied.
<b>Purpose of data</b>	Calculation of project emissions
<b>Calculation method</b>	N/A
<b>Comments</b>	N/A

<b>Data / Parameter</b>	V <sub>TREE,j,p,l</sub>
<b>Data unit</b>	m <sup>3</sup>
<b>Description</b>	Stem volume of trees of species or group of species
<b>Source of data</b>	<p><i>Eucalyptus grandis</i>: Winck, R.A; et al. (2015) <sup>154</sup></p> <p><i>Pinus elliottii &amp; hybrid</i>: Carvalho, R. R., et al. (2022) <sup>155</sup></p> <p><i>Pinus taeda</i>: Fassola, H.E; et al. (2010) <sup>156</sup></p> <p>For native mix stands, the allometric equation used are those reported in the Second National Native Forest Inventory (INBN2) <sup>157 158</sup></p>
<b>Value applied:</b>	Varies with each individual based on species and date of plantation. See project ex-ante spreadsheet <sup>159</sup>
<b>Justification of choice of data or description of measurement methods and procedures applied</b>	Allometric equations are used based on measured DBH and H values. These sources provide total biomass values (kg) and have been recognized by INTA (National Agriculture Technology Institution)
<b>Purpose of data</b>	Calculation of project emissions

<sup>154</sup>Winck, R.A; et al. (2015) Modelos predictivos de biomasa aérea de *Eucalyptus grandis* para el Noreste de Argentina. *Ciencia Florestal*, vol. 25, núm. 3, julio-septiembre, pp. 595-606. Universidade Federal de Santa Maria.

<sup>155</sup> Carvalho, R. R., Trautenmüller, J. W., Kohler, S. V., Serpe, E. L., Corte, A. P. D., Silva, D. A., & Figueiredo Filho, A. (2022). Biomass modeling in a mixed plantation of *Pinus taeda* L. and *Pinus elliottii* Engelm. *Scientia Forestalis*, 50, e3894. <https://doi.org/10.18671/scifor.v50.27>

<sup>156</sup> Fassola, H.E; et al. (2010) Regional prediction models for aboveground biomass estimation of *Pinus taeda* in Misiones and NE Corrientes region, Argentina. EEA Montecarlo, INTA. Available at: <https://core.ac.uk/download/pdf/335290727.pdf>

<sup>157</sup> MAGyP (2020) Segundo Inventario Nacional de Bosques Nativos (INBN2): informe Región Forestal Parque Chaqueño. Primera revisión. Section with equation at: Annex 4. Table 34. Available at: <https://www.argentina.gob.ar/ambiente/bosques/segundo-inventario-nacional-bosques-nativos>

<sup>158</sup> MAGyP (2020). Segundo Inventario Nacional de Bosques Nativos: informe Selva Paranaense: primera revisión. Buenos Aires. Section with equation at: Annex 4. Table 34. Available at: <https://www.argentina.gob.ar/ambiente/bosques/segundo-inventario-nacional-bosques-nativos>

<sup>159</sup> Document in shared folder with VVB during validation/verification in "Monitoring Plan>ex-ante removal calculations>Garruchos carbon capture 40 years"

<b>Comments</b>	When total biomass is used in carbon removal equations, based on allometric equation results, adjustment will be implemented to the equation (ex. no use of BEF or D variables).
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<b>Data / Parameter</b>	Wi																																																																								
<b>Data unit</b>	dimensionless																																																																								
<b>Description</b>	Relative weight of stratum																																																																								
<b>Source of data</b>	Area field measurements																																																																								
<b>Description of measurement methods and procedures applied</b>	Standard operating procedures (SOPs) prescribed under national forest inventory are applied. In the absence of these, SOPs from published handbooks, or from the IPCC GPG LULUCF 2003, are applied.																																																																								
<b>Frequency of monitoring/recording</b>	During every verification event.																																																																								
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<b>Purpose of data</b>	Calculation of project emissions																																																																								
<b>Calculation method</b>	Ratio of the area of stratum i to the sum of areas of biomass estimation strata (i.e.Ai/A )																																																																								
<b>Comments</b>	N/A																																																																								

<b>Data / Parameter</b>	Si <sup>2</sup>
<b>Data unit</b>	(t d.m. ha <sup>-1</sup> ) <sup>2</sup>
<b>Description</b>	Variance of tree biomass per hectare across all sample plots in each stratum
<b>Source of data</b>	Tree biomass from field measurements
<b>Description of measurement methods and procedures applied</b>	Standard operating procedures (SOPs) prescribed under national forest inventory are applied. In the absence of these, SOPs from published handbooks, or from the IPCC GPG LULUCF 2003, are applied.
<b>Frequency of monitoring/recording</b>	During every verification event.
<b>Value applied:</b>	See file "Forest inventory - Verification I"
<b>Monitoring equipment</b>	Excel - Microsoft Office based on measured data
<b>QA/QC procedures applied</b>	Quality control/quality assurance (QA/QC) procedures prescribed under national forest inventory are applied. In the absence of these, QA/QC procedures from published handbooks, or from the IPCC GPG LULUCF 2003, are applied.
<b>Purpose of data</b>	Calculation of project emissions
<b>Calculation method</b>	Equation 17 from AR-Tool 14 $s_i^2 = \frac{n_i \times \sum_{p=1}^{n_i} b_{TREE,p,i}^2 - (\sum_{p=1}^{n_i} b_{TREE,p,i})^2}{n_i \times (n_i - 1)}$
<b>Comments</b>	N/A

<b>Data / Parameter</b>	T
<b>Data unit</b>	Year
<b>Description</b>	Time period elapsed between two successive estimations of carbon stock
<b>Source of data</b>	Recorded time
<b>Description of measurement methods and procedures applied</b>	N/A

<b>Frequency of monitoring/recording</b>	N/A
<b>Value applied:</b>	N/A
<b>Monitoring equipment</b>	N/A
<b>QA/QC procedures applied</b>	N/A
<b>Purpose of data</b>	Calculation of project emissions
<b>Calculation method</b>	N/A
<b>Comments</b>	If the two successive estimations of carbon stock are carried out at different points of time in year t2 and t1, (e.g. in the month of November in year t1 and in the month of March in year t2), then a fractional value is assigned to T.

### 6.3 Monitoring Plan

Garruchos S.A monitoring plan has been designed following the methodology AR-ACM0003 and its applicable tools referenced in sections 3.1 and 3.2 of the present PDD to provide all relevant data necessary to verify:

- The applicability conditions listed under section 3.2 are met
- Changes in carbon stocks in pools selected
- Project emissions and leakage emissions

All data which is mentioned in the present section will be collected and archived electronically and kept for at least 2 years after the end of the crediting period as required by the methodology.

As mentioned in section 1.1 of the present document, the Garruchos S.A afforestation project will be carried out considering the Manual of Good Forest Practices suggested by the Secretary of Agriculture, Fisheries, Livestock and Food (SAGPyA) of the Argentine Nation as a basic tool for the implementation of environmentally sustainable forestry, as well as the local Manual of Good Practices for the province of Corrientes (Resolution N° 875, Corrientes). In addition, standard operating procedures (SOPs) and quality control/quality assurance (QA/QC) procedures for inventory operations, including field data collection and data management are identified, recorded and applied (i.e.: SOPs from the “IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry 2003”).

Due to the size of the project, it is not possible to measure the stock of the total project area. Therefore, it is necessary to take representative samples of the population. These sampling plots

will include a representative sample of the whole area based on the stratification variables defined for the activity. These include year of plantation, species mix & density of trees.

The monitoring plan is designed to produce biomass stock estimates with a 90% confidence level in line with the precision requirements established in the Tool 14 Estimation of carbon stocks of trees and shrubs in A/R CDM Project activities” version 04.2.

Data collected will be archived for a period of at least two years after the end of the last crediting period of the project activity.

### **Sampling plan**

The forest inventories will be performed considering statistical predefined parameters, with the objective of establishing the precision and the probability level of the results. The selection of the work methodology for developing forest inventory involves the determination of the following variables, in line with the *Monitoring Plan*:

- *Sample size*
- *Sampling error*
- *Sampling process*
- *Mapping of the sampling*
- *Recollection of field data (this will include the variables measured and the instruments which will be used)*
- Calculation process
- Statistical analysis.

Project boundaries will be defined at the beginning of project activity and updated, as needed, along the crediting period but always within the project boundaries initially validated. If any unplanned contingency occurs (fires, droughts, pests) new strata may be created and or boundaries may vary and be redefined.

Geographic coordinates are established, recorded and archived. A Geographic Information System will be implemented with the following basic layers:

- Project boundaries
- Aerial photographs
- Infrastructure (nursery, roads, etc.)

- Permanent sampling plots

Other layers could be added in the future. The layers will be linked to several databases.

### **Stratification (Ai)**

The characteristics of the population under study are heterogeneous in relation to the types and combinations of species, planting densities, year of planting, topography and soil types of the planting lots/rootstocks. Due to the existence of this variation, it is convenient to divide the population into subpopulations called strata to increase precision, so that the variable of interest reduces its variability, since they will have a marked influence on the changes in the carbon stock both above and below ground. Stratification eliminates sources of variation that can mask the inventory results, so that the variability within strata is less than the variability of the entire population. It will also be possible to obtain more precise estimators thanks to stratification. Stratification also facilitates data collection and data processing by stratum and is also convenient for planning and conducting field work.

The variable types and combinations of species, planting density and spacing, and year of planting were considered to determine the number of strata, while topography and soil type were considered previously at the time of defining planting designs. For the pine genus, considering the three planted species *hybrid*, *elliottii* and *taeda*, and the two planting densities for *hybrid* and *taeda* (833 plants/ha and 1,250 plants/ha), 5 strata were defined. In the case of the eucalyptus genus, it is planted at two densities (625 plants/ha and 1,250 plants/ha), defining 2 more strata. Last, in the case of native species mix, 4 stratifications were defined taking into consideration the two densities´ design (625 plants/ha and 1,250 plants/ha) both, for all native species mix and native mix+eucalyptus. This last, as explained in section 1.11, is part of the domestication study where eucalyptus individuals will be used as shelter for native young individuals during the first years. The total number of strata is 11. The strata are mapped and identified in the GIS (Geographic Information System).

### **Sampling**

#### **Design**

The design includes the setting of the different variables to be used in the sampling, that is, the distribution of plots, setting their quantities and sizes, as well as the information analysis techniques. In this case, the design used was "Systematic Random", through the implementation of a rectangular grid and location of the plots in each stratum. The plots have been distributed over the area of interest to be inventoried in homogeneous units (lots), determining the dasometric parameters corresponding to the lots they represent.

The stratum are characterized by homogeneity in species, age, density, in order that the variability is absorbed within the batch and thus improve inventory precision.

Permanent sampling plots are used to measure and monitor changes in carbon stocks over time. These are considered to be more efficient for estimating changes in carbon stocks by filtering out any variance due to plot effect. For the location definition of the plots, QGIS tools are used. Thus, a perimeter buffer of 15 mts. is made for each polygon, to avoid that the plots are in the border areas of the polygons. Then, to determine the random location of the plots (only for the first time) these are defined over a grid, trying that each polygon has one, according to its surface. The plots will be located with GPS.

### **Sample size**

The sample size involves the number of plots to be distributed with a certain statistical criterion in every stratum. The representative number of plots of the total project area and of every stratum shall be previously decided to accomplish the predefined level of accuracy and precision.

The size of the sample plot is a trade-off between accuracy, precision, and time (cost) of measurement. The size is also related to the number of trees, their diameter and the carbon stock variance among plots. The plot should be large enough to contain an adequate number of trees per plot to be measured. IPCC Good Practice Guidance for LULUCF, Chapter 4.3 recommends using a single plot varying between 100 m<sup>2</sup> to 600 m<sup>2</sup>, increasing the size from densely planted stands of 1000 trees per hectare to sparsely planted stands of multi-purpose trees.

Thus, taking into consideration the project-specific conditions and the IPCC guidance, circular plots of 400 m<sup>2</sup> have been selected for monitoring the stratum.

### **Plots number**

Permanent sampling plots are used to measure and monitor changes in carbon stocks from the most relevant carbon pools over the time. These are considered to be more efficient for estimating changes in carbon stocks by filtering out any variance due to plot effect. The plots will be located with GPS and although physically marked, they will be as invisible as possible to avoid any possible special treatments (e.g. during site and soil preparation, weeding, fertilization, harvesting, etc.) that could affect growth. They will also be prevented from being deforested over the crediting period.

The number of sample plots was first estimated according to the “Calculation of the number of sample plots for measurements within A/R CDM project activities” tool. The outcome for the estimation of number of sample plots with the tool was 97 for the whole project area.

For each stratum, a total number of circular sampling plots was determined proportionally to the area of each stratum, being distributed according to the table below. To ensure statistical independence per stratum, a minimum number of 2 plots was established for each stratum. In strata where the distribution of sampling units was less than 2, they were adjusted to reach this minimum. This number was defined to achieve a 10% significance. Calculations are archived as

part of project documentation. The new number estimated for the whole project area is of a total of 103 sample plots described in the table below, for each stratum:

The frequency of measurement of the permanent plots will be annual and a specific area of Garruchos S.A. will oversee coordinating the measurement. Calculation measurements will be outsourced by a specialized service provider and reviewed by Garruchos S.A.

Table 6: Plots detail per stratum

Estrata	Genus	Species	Tree density (plants/ha)	YOP	Surface (ha)	Assigned plots by tool	Adjusted number of plots
1	PINUS	Hybrid (Elliotti x Caribaea)	833	Q2 2023	473,82	46,20	46
2	PINUS	Hybrid (Elliotti x Caribaea)	1250	Q4 2022	123,09	11,89	12
3	PINUS	TAEDA	1250	Q4 2022	41,39	4,04	4
4	PINUS	ELLIOTTI	1250	Q2 2023	19,43	1,87	2
5	PINUS	ELLIOTTI	833	Q4 2022	14,35	1,39	2
6	EUCALYPTUS	GRANDIS	625	Q4 2022	129,83	5,45	5
7	EUCALYPTUS	GRANDIS	1250	Q4 2022	157,25	2,24	2
8	Native mix		625	Q4 2022	9,62	6,30	6
9	Native mix		1250	Q4 2022	6,91	6,68	7
10	Native mix + Eucalyptus		625	Q4 2022	5,76	8,31	8

11	Native mix + Eucalyptus		1250	Q4 2022	6,29	0,93	2
Total					987,74	97	103

### **Mapping**

The location of the plots will follow the guidance given by the corresponding methodological tool, as well as IPCC Good Practice Guidance for LULUCF (2002), Chapter 4.3.

### **Permanent sample plots**

First, the polygons to be sampled were selected. Then, to reduce the edge effect of random drawing, a buffer of 15 meters was made to prevent plots from falling on the edge. Last, the vector tool in GIS *Random points within polygons* was used. This algorithm creates a point layer, randomly placed on the polygons of the input polygon layer.

For each feature in the input polygon layer, the algorithm attempts to add the specified number of points for each feature to the output layer. A minimum distance between points and an overall minimum distance between points can be specified. A point will not be added if there is already a point generated within this (Euclidean) distance from the generated location.

With the minimum distance between points, only points on the same polygon feature are considered, while for the global minimum distance between points all previously generated points are considered. If the global minimum distance between points is set equal to or greater than the minimum (local) distance between points, the latter has no effect.

If the minimum distance between points is too large, it may not be possible to generate the specified number of points for each feature, but all generated points are returned. The maximum number of attempts per point can be specified.

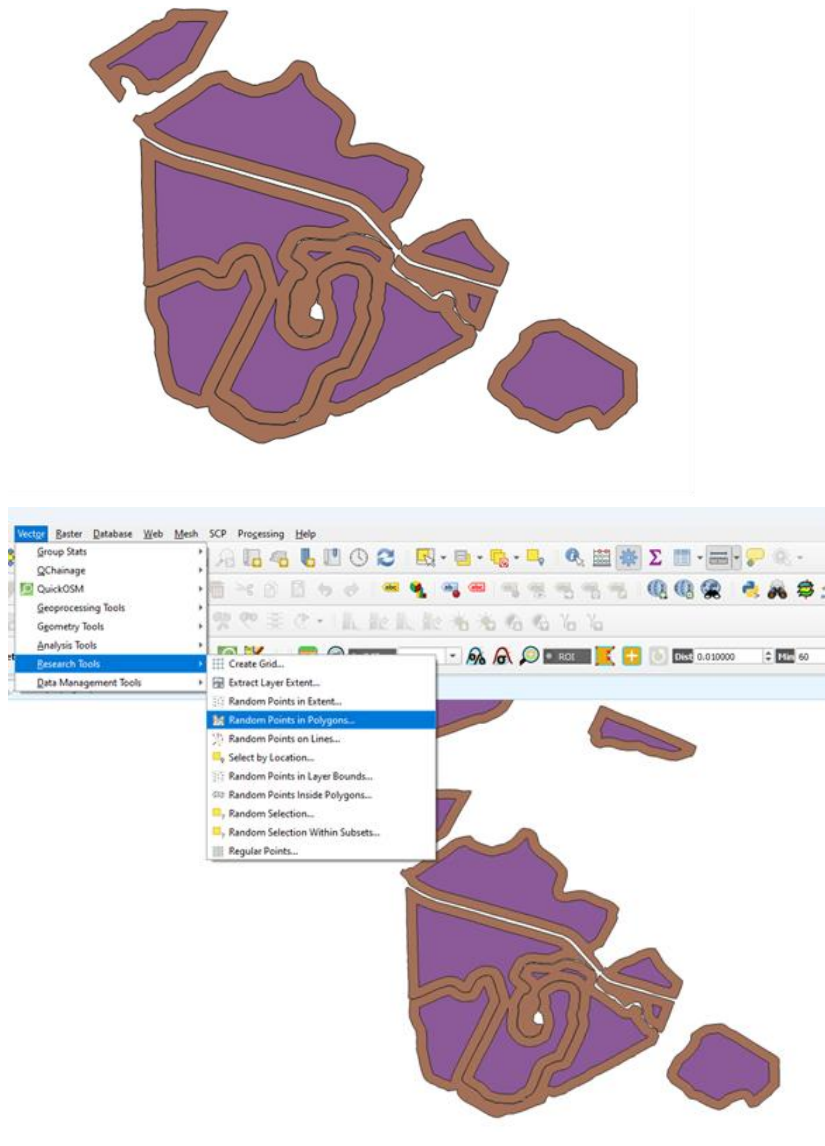


Figure 43. Permanent plot's location process with a) Buffer areas to border, roads, etc to define sample plots and b) GIS function to assign random points in polygons.

The location of the plot centre is established and recorded by means of a GPS point, which can also be identified by marking a tree as a reference (focal tree). The stake that will form the plot centre can be placed next to it. To avoid inconveniences during field work, for example when the GPS loses signal due to interferences, it is possible to use other procedures to locate them in the field. One of them is to find a known point (e.g. focal tree) and from there locate the other points using tape and compass or to orient the direction of advance.

### **Diametric measurements**

Each pool will be measured following the methodology procedures and IPCC Good Practice Guidance for LULUCF (2003).

The measurements of biometric variables such as diameter and height of the trees, for the determination of volumes and growth, will be carried out annually, on a predetermined date, which should be done at approximately the same time (date) each year. Although winter is considered a favourable season for measurements, because the trees do not grow due to the physiological recess in which they find themselves in, and access is facilitated, it is important to consider evaluating other variables such as planting date, logistics, verification dates, among others.

#### Diameter measurement at breast height (DBH)

By convention, the diameter is measured at 1.30 m above ground level, which is why it is called DBH. This measurement is standardized independently of the operator and his height, and at this height the measuring instrument is easy to handle. The DBH is measured with measure tape or forceps according to individual's size. Woody stems with a DBH equal to or greater than 2 cm should be measured, always approaching them in the same orientation (N-S). Those individuals with less than 1.3m height will not be measured.

#### Height measurement

The height of a tree or portion of a tree is the linear distance along its main axis, from the ground to the apex or to another reference point, always in accordance with the type of height to be measured. The height serves essentially for the calculation of volume and for the calculation of increments in height and volume. Total height will be measured for carbon credits monitoring.

For height measurement the base of the plant to be measured is cleaned. The operator is then positioned at a minimum distance equivalent to twice the height of the plant. The device is turned on and the laser automatically appears; Trigonometry key is pressed 3 times, then the operator aims at the base of the plant as close to the ground; and after pressing the Trigonometry key again it raises the laser pointer until it points to the apex of the plant. If, due to light impairment, or other, the plant apex cannot be seen, zoom lens 1x, 2x or 4x can be used.

#### Area of measurement:

To locate the plot centre, the operator will navigate with the GPS until the planned waypoint is found and wait until the margin of error of the satellite location is 2 meters or less. Then the centre of the plot is determined in such a way that it is in the middle of 4 surrounding trees. A cairn or rustic stake is installed there. After, all the perimeter trees are marked with paint.

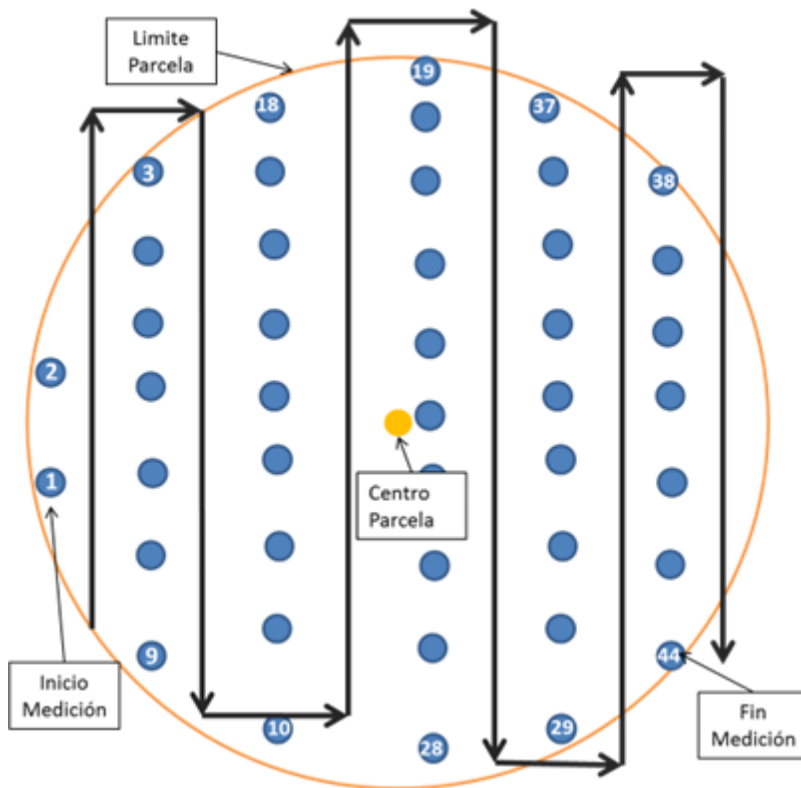
### **Measurement**

The area of sample plot must be properly delimited and identified to be located easily and without incurring errors in subsequent measurements. In this case the plots will be installed and located with the help of a Global Positioning System (GPS) equipment. The use of GPS makes it possible to efficiently and accurately locate or relocate the plots, particularly in places with few roads. The

boundaries of the sampling plots will be visible, as no management or treatment (silvicultural and cultural) will take place throughout the project.

The operator will start by measuring the leftmost row in relation to the access road to the plot. Then, will move along the line to the end and return in the opposite direction. And so on. The first tree will be identified with the number 1 painted on it. All measured plants will be painted with a spray mark at 1.3m.

The procedure includes the measurement of all trees with Diameter at Breast height (DBH) greater than or equal to 2 cm, starting from the north radius and moving clockwise. The dendrometric variables of all the trees covered by the Area of Sample Plot are measured and recorded. Trees within the boundaries of the plot should be measured if more than half of the trunk falls within the plot.



The data to be collected and entered in the field form includes:

Measurement date: day/month/year

Polygon

Plot number

Plot Size (m<sup>2</sup>) and Slope (%) of the plot.

Plot Location: Latitude and Longitude.

Management Characteristics

Regarding individual measurement:

N° of tree: corresponding to the correlative measurement number.

Quality: it is measured for all trees

Code	Quality
0	Normal
1	Fault
2	Stump
3	Dead
4	Fork < 1,3m
5	Fork > 1,3m
6	Fork in last third
7	Simple smooth sinuosity
8	Simple severe sinuosity in the first third
9	Double severe sinuosity in the first third
10	Double severe sinuosity in the second or third third
11	Inclined
12	Broken, usable
13	Broken, non-usable
14	Atacked by plage
15	Others

Once the measurement stage is finished, on the entrance road, a stake with the upper part painted in white will be placed, and the permanent plot number marked on a tree (if the diameter allows it).

According to the measuring equipment used the configuration of the measuring team shall be defined. In general, measurements take place with 2 to 3 qualified operators: one crew foreman and two assistants, of which one will be the planner in charge of recording all the variables of

interest in spreadsheet, the other will measure height and determine the plot limits with it, and the other will measure diameters and other variables of interest.

### **List of Materials**

Forest inventory and biomass sampling procedures manual.

Field plans, aerial photographs, thematic charts.

Field sheets

Plastic/aluminum labels

Spray paint (orange, yellow)

Colored plastic tapes preferably biodegradable

Permanent markers

Stakes

Machete

First aid kit

Security equipment

### **Measurement plots maintenance:**

All plots should be maintained at least once per year to avoid losing the data or the accuracy of the measurements, in some cases even the plot can be lost. Stakes (placement and numbering), tree numbering and DBH lines will be checked. They should be in perfect condition and the trees should be well identified, otherwise they should be fixed immediately. The ideal time to do the maintenance is during the measurement.

During installation, a reference tree is marked, from which the bearing and distance from the plot centre is taken. If the plot centre stake is lost, the reference tree is used to relocate the stake.

### **Quality assurance and Quality control**

The implementation of the monitoring plan includes a QA/QC system to minimize errors in measurement and data analysis, and to provide documentation and consistency in data archiving. Quality Assurance measures are implemented, to verify that data quality objectives are met, and in general, to support the effectiveness of the QC system.

QA/QC plan includes procedures such as (1) hiring experienced third-party contractors, if needed (2) assuring reliable field measurements, (2) documenting data entry and analysis techniques and (3) data maintenance and archiving.

### **Operating procedure**

There is an operating procedure in place for permanent sample plots<sup>160</sup>. Compliance with this Operating Procedure will be verified through the recording of nonconformities and their corresponding corrective action. For verification of compliance with this procedure the Head of Forestry Planning Area, Forestry Supervisor or a quality control contractor company may conduct audits of the permanent plots installed and/or measured in the current year or previous years. If a deviation from what is expressed in this Operating Procedure is found, it will be recorded as a Nonconformity.

Non-Conformity for the purposes of this procedure is understood as any action that contradicts or does not comply with the precepts established in this procedure. Corrective Action is understood as the actions that correct the deviations registered in the Nonconformity. The Corrective Action shall be carried out within a reasonable period.

### **Data records**

The system area of Garruchos S.A. will be in charge of the safekeeping and security of the data files.

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, to verify that data quality objectives are met, and in general, to support the effectiveness of the QC system.

As mentioned, Garruchos S.A. is a forestry company with over 20 years of experience. This company has highly professional and qualified personnel with experience for the realization of all the tasks of measurements in the field and for the realization of the data entry necessary for this type of project.

Garruchos S.A maintains accurate, complete, up-to-date, accessible records and reports, which are maintained for at least 5 years, covering all aspects of the Project. The records are managed by the CWA system, in real time, through a cumulative database.

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<sup>160</sup> Procedure available to VVB during validation/verification in shared folder "Monitoring plan>PO 010 Permanent sample plots"

Data entry, record and report management are performed by managers who log into the program exclusively by means of user ID and password.

The CWA database is recorded daily on magnetic tape and preserved for 7 days. Copies are made automatically, at a preset time (11:00 p.m.). The tapes are archived at the offices of Garruchos S.A. In addition, a monthly copy is made at the accounting-administrative closing and the tape is archived in the security box.

**Organizational structure, responsibilities and competencies.**

The organizational structure and responsibilities of the forestry team with regards to the monitoring system are as follow:

Managers: Provide the necessary economic and human resources for compliance with this procedure.

Area Managers: To enforce compliance with this procedure in their respective Operational Areas.

Supervisors: Control the application of the operating procedure by the service providers.

Contractors: To apply the stipulations of this procedure, having to train their personnel and adapt to the requirements of current legislation.

Field operators: Apply all the directives given in this procedure.

# 7 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

## 7.1 Data and Parameters Monitored

<b>Data / Parameter</b>	A <sub>i</sub>
<b>Data unit</b>	ha
<b>Description</b>	Area of stratum I

<b>Value applied:</b>	<table border="1"> <thead> <tr> <th>Stratum &amp; substratum</th> <th>Genus &amp; species</th> <th>Tree density (plants/ha)</th> <th>Homogeneity</th> <th>Surface (ha)</th> </tr> </thead> <tbody> <tr> <td>6.1</td> <td><i>E. grandis</i></td> <td>625</td> <td><i>homogeneous</i></td> <td>15.61</td> </tr> <tr> <td>7.1</td> <td><i>E. grandis</i></td> <td>1,250</td> <td><i>homogeneous</i></td> <td>63.64</td> </tr> <tr> <td>7.2</td> <td><i>E. grandis</i></td> <td>1250</td> <td><i>heterogeneous</i></td> <td>65.32</td> </tr> </tbody> </table>	Stratum & substratum	Genus & species	Tree density (plants/ha)	Homogeneity	Surface (ha)	6.1	<i>E. grandis</i>	625	<i>homogeneous</i>	15.61	7.1	<i>E. grandis</i>	1,250	<i>homogeneous</i>	63.64	7.2	<i>E. grandis</i>	1250	<i>heterogeneous</i>	65.32
Stratum & substratum	Genus & species	Tree density (plants/ha)	Homogeneity	Surface (ha)																	
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7.2	<i>E. grandis</i>	1250	<i>heterogeneous</i>	65.32																	
<b>Comments</b>	<p>Stratum numbers were assigned considering projected stratum – 1. Pinus hybrid 833 density, 2. Pinus hybrid 1250 density, etc. As only stratum with individuals with a minimum height of 1.5mts were measured, the stratum shown in the table above do not follow a linear numbering. The total number is expected in 11 stratum.</p> <p>Moreover during this monitoring period a higher heterogeneity was observed in the measured plots, for this reason new substratum were created, this is expected to be homogenised over time.</p>																				

<b>Data / Parameter</b>	A <sub>PLOT,i</sub> ,																
<b>Data unit</b>	ha																
<b>Description</b>	Total area of sample plots in stratum i																
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6.1	15.61	7	0,04														
7.1	63.64	12	0,04														
7.2	65.32	13	0,04														
<b>Comments</b>	During this first monitoring period 32 plots were measured, representing 0,9% of surface area for the analysed stratum																

<b>Data / Parameter</b>	DBH
<b>Data unit</b>	cm
<b>Description</b>	Diameter at breast height of tree
<b>Value applied:</b>	Varies with plot, see file “Forest inventory - Verification I”

<b>Comments</b>	N/A
-----------------	-----

<b>Data / Parameter</b>	R <sub>j</sub>
<b>Data unit</b>	dimensionless
<b>Description</b>	Root-shoot ratio for tree species j
<b>Value applied:</b>	Varies with measuring plot depending on biomass see “Forest inventory – Verification I”
<b>Comments</b>	N/A

<b>Data / Parameter</b>	H
<b>Data unit</b>	m
<b>Description</b>	Height of tree
<b>Value applied:</b>	Varies with measuring plot. See file “Forest inventory - Verification I”
<b>Comments</b>	N/A

<b>Data / Parameter</b>	W <sub>i</sub>																																																																								
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<b>Comments</b>	N/A
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<b>Data / Parameter</b>	Si <sup>2</sup>
<b>Data unit</b>	(t d.m. ha-1 ) <sup>2</sup>
<b>Description</b>	Variance of tree biomass per hectare across all sample plots in each stratum
<b>Value applied:</b>	See file “Forest inventory - Verification I”
<b>Comments</b>	N/A

<b>Data / Parameter</b>	T
<b>Data unit</b>	Year
<b>Description</b>	Time period elapsed between two successive estimations of carbon stock
<b>Value applied</b>	September 1 <sup>st</sup> , 2022, to November 16 <sup>th</sup> , 2023. This is the first monitoring period and T1 considered is project start date.
<b>Comments</b>	N/A

## 7.2 Baseline Emissions

Since continuation of cattle breeding in moderately degraded land has been demonstrated as baseline scenario, an activity that has been applied without changes for more than 20 years, predominately in the whole project area, 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.

## 7.3 Project Emissions

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

$$\Delta C_{\text{ACTUAL}} = \Delta C_{\text{P}} - \text{GHG}_{\text{E}}$$

Where,

$\Delta C_{\text{ACTUAL}}$  = Actual net greenhouse gas removals by sinks; tCO<sub>2</sub>-e

- $\Delta C_p$  = Sum of the changes in above-ground and below-ground tree biomass, dead wood, litter and soil organic carbon stocks in the project scenario; tCO<sub>2</sub>-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; tCO<sub>2</sub>-e

**GHG emissions:**

According to methodology AR-ACM 0003 v.2.0, section 5.5, GHG emissions resulting from removal of herbaceous vegetation, combustion of fossil fuel, fertilizer application, use of wood, decomposition of litter and fine roots of N-fixing trees, construction of access roads within the project boundary, and transportation attributable to the project activity shall be considered insignificant and therefore accounted as zero<sup>161</sup>.

The use of fire for site preparation and/or to clear the land of harvest residue prior to replanting will not take place as the project does not include harvesting, thus excluded from the project management. Hence, project emissions are estimated as zero.

$GHG_{E,t} = 0$

**Carbon stock changes:**

$\Delta C_p$  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. Calculations are described below:

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

Where,

- $\Delta C_p$  = Change in carbon stock in all selected carbon pools in the project scenario, tCO<sub>2</sub>-e
- $\Delta C_{TREE}$  = 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”; tCO<sub>2</sub>-e
- $\Delta C_{DW}$  = 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”; tCO<sub>2</sub>-e
- $\Delta C_{LI}$  = 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”; tCO<sub>2</sub>-e

<sup>161</sup> Project emissions calculations include fuel used in machinery. This value is equal to 0,12tCO<sub>2</sub>/ha. Estimation is included in ex-ante spreadsheets available to VVB during validation/verification.

$\Delta C_{SOC}$  = Change in carbon stock in SOC in project, in areas of land meeting the applicability conditions of the tool “Estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities”, as estimated in the same tool; tCO<sub>2</sub>-e

Neither ex-ante estimations, nor this monitoring period estimations accounted for dead wood, litter and soil organic carbon pools in the project. Following is presented the equation used for the estimation of  $\Delta CP$ :

$$\Delta C_p = \Delta C_{TREE}$$

Where:

$\Delta C_p$  = Change in carbon stock in all selected carbon pools in the project scenario; tCO<sub>2</sub>-e

$\Delta C_{TREE}$  = Change in carbon stock in tree 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”; tCO<sub>2</sub>-e

### Biomass carbon pools

Above and below ground biomass have been estimated according to the AR TOOL 14 “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity Version 4.2”. Carbon estimations in trees are based on field measurements of monitored parameters, described in section 7.1 for this monitoring period. Calculations are archived as part of the project verification and will be available for the verification team<sup>162</sup>.

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 result, the starting point of the crediting period is zero carbon.

The following equations were used in order to estimate above and below ground biomass ex-post measurements, avoiding volume to biomass conversion as the allometric equation results in dry biomass value (kg):

$$BTREE_{j,p,i,t} = VTREE_{j,p,i,t} * DJ * BEF_{2,J} * (1 + R_j)$$

$$TAGB_{j,p,i,t} = VTREE_{j,p,i,t} * DJ * BEF_{2,J}$$

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<sup>162</sup> See calculation spreadsheet in shared folder “Monitoring plan>Forest Inventory-Verification I”

Where,

$B_{TREE,j,p,i,t}$  = Biomass of trees of species j in sample plot p of stratum i at late 2023. (t d.m)

$TAGB_{j,p,i,t}$  = Total above-ground biomass of species j in sample plot p of stratum i at late 2023. (t d.m)

Above-ground biomass is calculated using allometric equations:

For *Eucalyptus*, the equation used is the one recommended for Northeast region by the National Institution of Agricultural Technology (INTA) from Winck, R.A; et al. (2015) <sup>163</sup>

$$\ln(\text{total biomass (kg)}) = -3.32 + 2.12 * \ln(\text{DBH}) + 0.65 * \ln(\text{H})$$

$R_j$  = 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":  $R = e^{x[-1.085 + 0.9256 \times \ln(A)]} / A$ . Where A is aboveground biomass content (t.d.m./ha). The aboveground biomass was calculated per year of plantation and different values were obtained.

According to this method, mean carbon stock in trees within the tree biomass estimation strata and the associated uncertainty will be estimated as follows:

$$C_{TREE} = \frac{44}{12} \times C_{F_{TREE}} \times B_{TREE}$$

$$B_{TREE} = A \times b_{TREE}$$

$$b_{TREE} = \sum_{i=1}^M w_i \times b_{TREE,i}$$

$$u_C = \frac{t_{VAL} \times \sqrt{\sum_{i=1}^M w_i^2 \times \frac{s_i^2}{n_i}}}{b_{TREE}}$$

<sup>163</sup>Winck, R.A; et al. (2015) Modelos predictivos de biomasa aérea de *Eucalyptus grandis* para el Noreste de Argentina. *Ciencia Florestal*, vol. 25, núm. 3, julio-septiembre, pp. 595-606. Universidade Federal de Santa Maria.

Where,

$C_{TREE}$  = Carbon stock in trees in the tree biomass estimation strata; tCO<sub>2</sub>-e

$CF_{TREE}$  = Carbon fraction of tree biomass; t C (t.d.m)<sup>-1</sup>

A default value of 0.47 is used unless transparent and verifiable information can be provided to justify a different value.

$B_{TREE}$  = Tree biomass in the tree biomass estimation strata; t.d.m

$A$  = Sum of areas of the tree biomass estimation strata; ha

$b_{TREE}$  = Mean tree biomass per hectare in the tree biomass estimation strata; t.d.m ha<sup>-1</sup>

$w_i$  = Ration of the area of stratum  $i$  to the sum of areas of tree biomass estimation strata (i.e.  $w_i=A_i/A$ ); dimensionless

$b_{TREEi}$  = Mean tree biomass per hectare in stratum  $i$ ; t.d.m. ha<sup>-1</sup>

$U_c$  = Uncertainty in  $C_{TREE}$

$T_{val}$  = Two-sided Student's t-value for a confidence level of 90 percent and degrees of freedom equal to  $n-M$ , where  $n$  is total number of sample plots within the tree biomass estimation strata and  $M$  is the total number of tree biomass estimation strata

$s_i^2$  = Variance of tree biomass per hectare across all sample plots in stratum  $i$ ; (t.d.m. ha<sup>-1</sup>)<sup>2</sup>

$n_i$  = Number of sample plots in stratum  $i$

Mean tree biomass per hectare in a stratum ( $b_{TREE}$ ) and the associated variance ( $s_i^2$ ) will be estimated as follows:

$$b_{TREE,i} = \frac{\sum_{p=1}^{n_i} b_{TREE,p,i}}{n_i}$$

$$s_i^2 = \frac{n_i \times \sum_{p=1}^{n_i} b_{TREE,p,i}^2 - (\sum_{p=1}^{n_i} b_{TREE,p,i})^2}{n_i \times (n_i - 1)}$$

Where,

$b_{TREE,p,i}$  = Tree biomass per hectare in plot  $p$  of stratum  $i$ ; t.d.m. ha<sup>-1</sup>

$n_i$  = Number of sample plots in stratum  $i$

Finally, according to Appendix 1 (Methods of plot biomass measurement) of the tool, the plot biomass value will be determined as follows:

$$b_{TREE,p,i} = \frac{B_{TREE,p,i}}{A_{PLOT,i}}$$

$$B_{TREE,p,i} = \sum_j B_{TREE,j,p,i}$$

$$B_{TREE,j,p,i} = \sum_l B_{TREE,l,j,p,i}$$

Where,

$b_{TREE\ p,i}$  = Tree biomass per hectare in sample plot  $p$  of stratum  $i$ ; t.d.m. ha<sup>-1</sup>

$B_{TREE\ p,i}$  = Tree biomass in sample plot  $p$  of stratum  $i$ ; t.d.m.

$A_{PLOT\ i}$  = Size of sample plot in stratum  $i$ ; ha

$B_{TREE\ j,p,i}$  = Biomass of trees of species  $j$  in sample plot  $p$  of stratum  $i$ ; t.d.m.

$B_{TREE\ l,j,p,i}$  = Biomass of tree  $l$  of species  $j$  in sample plot  $p$  of stratum  $i$ ; t.d.m.

## 7.4 Leakage Emissions

As it has been stated in previous sections of this 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 Project activity does not expect any displacement of agricultural activities present in the Project’s boundary before the beginning of it, as all cattle has been sold to slaughterhouses<sup>164</sup>, thus leakage emissions are considered insignificant and hence accounted as zero.

According to the methodology AR-ACM 0003 v.2.0, section 5.6, leakage emissions shall be estimated as follows:

$$LK_t = LK_{AGRIC,t}$$

Where,

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<sup>164</sup> Sale invoices available to VVB during validation/verification in shared folder “Leakage”

$LK_t$  = GHG emissions due to leakage, in year  $t$ ; tCO<sub>2</sub>-e

$LK_{AGRIC, t}$  = Leakage due to the displacement of agricultural activities in year  $t$ , as estimated in the toll “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity”; tCO<sub>2</sub>-e

According to the “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity” tool v.2, leakage emission attributable to the displacement of agricultural activities due to implementation of an A/R CDM project activity is estimated as the decrease in carbon stocks in the affected carbon pools of the land receiving the displaced activity.

Thus, it is concluded that the displacement of agricultural activities is considered insignificant and hence accounted as zero.

$LK_t = 0$

## 7.5 GHG Emission Reductions and Carbon Dioxide Removals

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 CO<sub>2</sub>-e:

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

Where,

$C_{AR-CDM}$  = Net anthropogenic GHG removals by sinks; tCO<sub>2</sub>-e

$\Delta C_{ACTUAL}$  = Actual net GHG removals by sinks; tCO<sub>2</sub>-e

$\Delta C_{BSL}$  = Baseline net GHG removals by sinks; tCO<sub>2</sub>-e

$LK$  = Total GHG emissions due to leakage; tCO<sub>2</sub>-e

State the non-permanence risk rating (%)	12%
Has the non-permanence risk report been attached as either an appendix or a separate document?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

For ARR and IFM projects with harvesting, state, in tCO <sub>2</sub> e the Long-term Average (LTA).	Not occurring
Has the LTA been updated based on monitored data, if applicable?	<input type="checkbox"/> Yes <span style="margin-left: 150px;"><input type="checkbox"/> No</span> Not estimated
State, in tCO <sub>2</sub> e, the expected total GHG benefit to date	1,161.94
If a loss occurred (including a loss event or reversal), state the amount of tCO <sub>2</sub> e lost:	No loss event or reversal took place

Vintage period	Baseline emissions (tCO <sub>2</sub> e)	Project emissions (tCO <sub>2</sub> e)	Leakage emissions (tCO <sub>2</sub> e)	Buffer pool allocation (tCO <sub>2</sub> e)	Reductions VCUs (tCO <sub>2</sub> e)	Removals VCUs (tCO <sub>2</sub> e)	Total VCU issuance (tCO <sub>2</sub> e)
01-Sep-2022 to 31-Dec-2022	0	0	0	0	0	0	0
01-Jan-2023 to 15-Nov-2023	0	0	0	139.43	0	1,161.94	1,022.51
Total	0	0	0	139.43	0	1,161.94	1,022.51

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-Sep-2022 to 31-Dec-2022	0	0	0	No removals are estimated for this period, considering a very short period since plantation
01-Jan-2023 to 15-Nov-2023	686.66	1,161.94	0.59	Difference can be attributed to difference of age from individuals planted to those used for projection. At young age differences can be significant

Total	686.66	1,161.94	0.59	
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# APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION

No commercially sensitive information

# APPENDIX 2: CATTLE SALES TO SLAUGHTERHOUSE INVOICE

**Colombo y Magliano S.A.**  
*Comigratarios*

Remates Ferias - Consignaciones - Ventas de Campos  
Avda. de Mayo 580 1° Piso - C1064AAN - Bs. As. - Tel.: 4334-9511 - Fax: 4343-3618  
Internet: <http://www.colomboymagliano.com.ar>  
E-Mail: [cym@colomboymagliano.com.ar](mailto:cym@colomboymagliano.com.ar)

I.V.A.: RESPONSABLE INSCRIPTO

<b>A</b>	<b>Nº 1045-00002869</b>	
	Código Nº 180	Fecha: 17/10/2022
	<b>CUENTA DE VENTA</b>	
	C.U.I.T.: 30-50976053-5 Nº INSCRIPCIÓN REG. BRUTOS UNIFICADO CONVENIO MULTILATERAL Nº 901-815292-6	O.N.C.A.: 024620-4 A.N. ADUANAS: 14.991/3-3 INICIO ACTIVIDADES: 22-12-99

<b>GARRUCHOS FORESTACION S.A</b>	Cuenta Nº: 35511
AVDA URUGUAY 4578	
C.P. 3300 POSADAS	N - Misiones
I.V.A. Responsable Inscripto	C.U.I.T.: 33-65810857-9

78º REMATE TELEVISADO DEL N.O.A  
- MIÉRCOLES 21 DE SEPTIEMBRE DEL 2022 -  
TRANSMISION EN VIVO VIA STREAMING Y CANAL RURAL

RAZON SOCIAL	CABEZAS	CLASIFICACION	KILOS	PROM.	PRECIO	IMPORTES PARCIALES
EL VIRACHO S.A.	21	TERNERA/S	4.620	220	375.000	1.732.500,00
TOTAL CABEZAS	21	TOTAL KILOS	4.620	IMPORTE BRUTO	1.732.500,00	



**ADMINISTRACION CENTRAL**  
 Urquiza 454 (3240) Villaguay E.R.  
 03455-421050  
 haciendasvillaguay@viguay.com.ar  
 www.haciendasvillaguay.com.ar

**RESPONSABLE INSCRIPTO**

R.Social: **GARRUCHOS FORESTACION S A**  
 Dirección: **RUTA 12 KM 1346.50 0**  
 Localidad: POSADAS  
 Provincia: MISIONES  
 Cond.IVA: RESPONSABLE INSCRIPTO



**SEDE CORRIENTES**  
 Pellegrini 2072  
 (3400) Corrientes  
 0379-4690697  
 www.umcsa.net

**A**  
180

**CUENTA DE VENTA Y LIQUIDO PRODUCTO SP**  
**0005-00014398**

Fecha: 21/09/2022

**HACIENDAS VILLAGUAY S.R.L.**

C.U.I.T.: 30-58511655-2  
 Ing. Brutos: 30-58511655-2  
 Inicio de Actividades:01/04/1981

CUIT: 33-65810857-9  
**3327**

REMATES TELEVISADOS - INVERNADA						
Razón social	RP	Cabezas	Categoría	Kilos	Precio	Importe
BOLLO Y CIA. S.A.		53	VACAS	22.144	242,0000	5.358.848,00



**ADMINISTRACION CENTRAL**  
 Urquiza 454 (3240) Villaguay E.R.  
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**0005-00014397**

Fecha: 21/09/2022

**HACIENDAS VILLAGUAY S.R.L.**

C.U.I.T.: 30-58511655-2  
 Ing. Brutos: 30-58511655-2  
 Inicio de Actividades:01/04/1981

CUIT: 33-65810857-9  
**3327**

REMATES TELEVISADOS - INVERNADA						
Razón social	RP	Cabezas	Categoría	Kilos	Precio	Importe
MANUEL ALBERTO GIMENEZ		45	VACAS	19.067	242,0000	4.614.214,00

# APPENDIX 3: SD CONTRIBUTIONS EVIDENCE

## 3.1 Example of scholarship costs invoice



PERSONERÍA JURÍDICA - RESOL. N° 000767 - 20/06/67

Ruta Nacional 14 Km 741  
(3342) Gobernador Virasoro, Corrientes / Tel. (3756) 481886  
**I.V.A. EXENTO**

# FACTURA

Nro: C00012-00004519

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( 011

Gobernador Virasoro 23/08/2022

CUIT N° 30-61923865-2  
Ing. Brutos: Exento (Res. 105/78)  
Inicio de Actividades: Febrero 1990

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**SOCORRUCHOS S.A**  
PARAGUAY 1535  
1061 - CIUDAD AUTONOMA

I.V.A.: Responsable inscripto

Condición de Venta 5 CUOTAS

C.U.I.T.: 30-57621005-8

Remito:

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CANTIDAD	ARTICULO	UNIDAD	P. UNITARIO	IMPORTE
5.00	ESTRUCTURA Y GTOS. IAVN	UNI	3000.00	15,000.00
5.00	TRANSPORTE IAVN	UNI	1150.00	5,750.00
5.00	SEGURO IAVN	UNI	50.00	250.00

### 3.2 Social monitoring spreadsheet including training and education on climate change

Cronograma de Actividades - PROGRAMA GESTIÓN SOCIAL 2022																						
Año		<span style="background-color: yellow;">x</span> realizado <span style="background-color: #cccccc;">x</span> pendiente <span style="background-color: #ffcccc;">x</span> no realizado																				
Actividad	Destinatario/s	Lugar	Cantidad de alumnos y/o participantes comunidad	Duración Estimada Días / Plazo presentación	Mes / Quincena																	
					Ene	Feb	Mar	Abr	May	Jun	Jul	Ago	Sep	Oct	Nov	Dic						
					1a	2a	1a	2a	1a	2a	1a	2a	1a	2a	1a	2a	1a	2a	1a	2a		
Programa Escuelas 1* (Más bosques más futuro. Prevención de dengue Mundo Sano)	Alumnos	Garruchos	120	4																	x	
Escuela 1° Garruchos (Escuela N°417 Alejo Camilo Lopez)	Alumnos	Garruchos	40	4																		
Escuela 74	Alumnos	Ruzangó	60	4																		
Escuela Hogar Filadelfia	Alumnos	Ruzangó	5	4																		
<b>Operarios Centros forestales</b>																						
Campaña de prevención de dengue zika chichungüa	Operarios	Campes	92	8																		
Monitoreo general en operaciones (Auditorías int.)	Operarios	Operaciones	8	8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Alimentación	Operarios	Ope y Cocinas	8	8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Recibos haberes	Operarios	EHS/Op	8	8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Capacitación	Operarios	EHS/Op	8	8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Entrega de EPP y Ropa de trabajo	Operarios	EHS/Op	8	8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
ATA xFP	Operarios	EHS/Op	8	8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Examen pre-ocupacional/periódico	Operarios	EHS/Op	8	8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Acreditación bancaria de haberes	Operarios	EHS/Op	8	8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	

### 3.3 Dissertation on climate change and biodiversity and activities with communities during march 2023 reported in the Social summary report 2023

## MARZO

#### Comunidad vecina

En marzo continuamos acompañando a la comunidad vecina continuamos con los aportes en la Escuela del Paraje San Alonso. Realizamos el control de hormigas en el parque de la Escuela primaria 152 de Paraje Colonia Unión.

Nos preparamos para el voluntariado corporativo en los barrios El Provenir 1 y 2 y en la Escuela primaria 222 del Paraje Santa Tecla, donde esperamos la participación de las familias.

#### Participación

Durante marzo participamos de reuniones de Grupo de trabajo de la Comisión de ambiente. Participamos de las reuniones de Consejo Directivo de AFOA y en la Mesa de Carbono forestal. Continuamos con la participación en el Grupo de Trabajo Empresas Forestales FSC.

También participamos de la mesa de mujeres forestales en el panel en la mesa temática "El rol de las mujeres en el sector forestal", en donde compartió su experiencia profesional con otras colegas de América Latina.



Estuvimos en el Congreso Forestal Latinoamericano y Argentino (CONFLAT). Estuvimos como disertantes en el Simposio "Aportes de la sociedad al desarrollo y la conservación forestal", sobre los programas educativos y de monitoreo y conservación de fauna participativa.



### 3.4 Programme "Más bosques, más futuro" evidence with Garruchos community

## Jornada Educativa

Realizamos una jornada presencial del Programa Educativo "Más bosques más futuro" en la Escuela primaria de Garruchos. Participaron un total de 144 alumnos, de los cuales 24 fueron de nivel inicial, 70 de primer ciclo, y 50 de segundo ciclo. Durante la jornada se desarrollaron los tres ejes temáticos del programa en el espacio principal del centro educativo, donde tuvo lugar seguidamente las propuestas de juego para cada tema. El cierre estuvo presidido por la Sra. Directora Liliana Franco, quien nos hizo entrega de ilustraciones y otros presentes elaborados por las niñas y niños, junto con sus Maestras. Pomer hizo entrega de las láminas de ecorregiones, fauna silvestre, e infografías de los temas tratados. Participaron del equipo de Pomer maderas de zona Uruguay con el acompañamiento de la visita de FSC Internacional.

