

# 'FORTEKO' AFFORESTATION ON DEGRADED GRASSLANDS UNDER EXTENSIVE GRAZING MONITORING REPORT



Document Prepared By  **ProSustentia**

|                                     |                                                                                                                                                                                                                                                                                     |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Project Title</b>                | 'Forteko' afforestation on degraded grasslands under extensive grazing project                                                                                                                                                                                                      |
| <b>Project ID</b>                   | 962                                                                                                                                                                                                                                                                                 |
| <b>Version</b>                      | Version 5.2                                                                                                                                                                                                                                                                         |
| <b>Report ID</b>                    | 1                                                                                                                                                                                                                                                                                   |
| <b>Date of Issue</b>                | 04-Jul-2024                                                                                                                                                                                                                                                                         |
| <b>Project Location</b>             | Uruguay, Cerro Largo & Treinta y Tres Department                                                                                                                                                                                                                                    |
| <b>Project Proponent(s)</b>         | Agroempresa Forestal S.A.<br>Dan Guanpurá; <a href="mailto:dguapura@af.com.uy">dguapura@af.com.uy</a> ; +598 2916 2020<br>EF Asset Management Administradora de Fondos de Inversión S.A<br>Leonardo Isoardi; <a href="mailto:efam@ferrere.com">efam@ferrere.com</a> ; +598 29001000 |
| <b>Prepared By</b>                  | ProSustentia, Federico Moyano; <a href="mailto:fmoyano@prosustentia.com">fmoyano@prosustentia.com</a> ; (+549)1136338125                                                                                                                                                            |
| <b>Validation/Verification Body</b> | AENOR INTERNACIONAL, S.A.U José Luis Fuentes Perez, <a href="mailto:jfuentes@aenor.com">jfuentes@aenor.com</a> , (+34) 914 326 000                                                                                                                                                  |

|                                         |                                                    |
|-----------------------------------------|----------------------------------------------------|
| <b>GHG Accounting/ Crediting Period</b> | 31 July 2007 – 30 July 2107; 100 year total period |
| <b>Monitoring Period of this Report</b> | 26 March 2013 – 25 September 2021                  |
| <b>History of CCB Status</b>            | -                                                  |
| <b>Gold Level Criteria</b>              | -                                                  |

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## 1 SUMMARY OF PROJECT BENEFITS

### 1.1 Unique Project Benefits

| Outcome or Impact                                                                                                                  | Achievements during the Monitoring Period                                                                                                                                                                                                                                                                                                                      | Section Reference | Achievements during the Project Lifetime                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) Provide experience of forest planting and forest management in degraded grasslands in connection to HCV areas                   | The project aims to improve labor conditions and increase workers' technical capacity in line with HCV areas conservation. At present, several hundreds of workers have been trained on sustainable forest operational activities                                                                                                                              | 4.1.1 and 5.1.3   | The project aims to improve labor conditions and increase workers' technical capacity in line with HCV areas conservation. At present, several hundreds of workers have been trained on sustainable forest operational activities |
| 2) Improve the ecological environment of the planted areas and the native forest surrounding the forest plantations                | Biodiversity monitoring is a key element in the Forteko project. Project sites have been categorized with high biodiversity value, according to standardized methodologies.                                                                                                                                                                                    | 5.1.1 and 5.1.4   | Biodiversity monitoring is a key element in the Forteko project. Project sites have been categorized with high biodiversity value, according to standardized methodologies.                                                       |
| 3) Create net positive benefits to the community and stakeholders of the project based on a comparison with the baseline scenario. | Communities are being benefited with the project's activity from multiple points of views.<br><br>Local business have increased direct and indirectly because of project activity (hotel, restaurants, garages, etc.)<br><br>Compared with baseline scenario, there are more than 600 medium to highly qualified job positions generated. Landscape beauty has | 4.1.1 and 4.3.1   | Communities are being benefited with the project's activity from multiple points of views.<br><br>Local business have increased direct and indirectly because of project activity (hotel, restaurants, garages, etc.)             |

|                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                       |       |                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                            | been improved with the establishment of forest.                                                                                                                                                                                                                                                                                                       |       | Compared with baseline scenario, there are more than 600 medium to highly qualified job positions generated. Landscape beauty has been improved with the establishment of forest.                                                                                                                                                                     |
| 4) Create an economic activity with exceptional community communication and participation throughout the Project lifetime. | Community participation and communications are a key point for the project so constant interaction takes place seeking to maintain a good valuation of the project within the impact community. All claims have been responded in time, and the valuation for community communication has been above 65% good/very good during its monitoring period. | 4.3.1 | Community participation and communications are a key point for the project so constant interaction takes place seeking to maintain a good valuation of the project within the impact community. All claims have been responded in time, and the valuation for community communication has been above 65% good/very good during its monitoring period. |

## 1.2 Standardized Benefit Metrics

| Category                           | Metric                                                                                                                                        | Achievements during Monitoring Period | Section Reference | Achievements during the Project Lifetime |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------|------------------------------------------|
| GHG emission reductions & removals | Net estimated emission removals in the project area, measured against the without-project scenario                                            | 3,710,011tn CO <sub>2</sub> -e        | 3.2               | 4,534,914 tCO <sub>2</sub> e             |
|                                    | Net estimated emission reductions in the project area, measured against the without-project scenario                                          | Not applicable                        | -                 | Not applicable                           |
| Forest <sup>1</sup> cover          | For REDD <sup>2</sup> projects: Number of hectares of reduced forest loss in the project area measured against the without-project scenario   | Not applicable                        | -                 | Not applicable                           |
|                                    | For ARR <sup>3</sup> projects: Number of hectares of forest cover increased in the project area measured against the without-project scenario | 14,413ha                              | 2.1.7             | 16,181.5ha                               |
| Improved land management           | Number of hectares of existing production forest land in which IFM <sup>4</sup> practices have occurred as a result of                        | Not applicable                        | -                 | Not applicable                           |

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

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

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

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

|             |                                                                                                                                                                             |                |       |                |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|----------------|
|             | the project's activities, measured against the without-project scenario                                                                                                     |                |       |                |
|             | Number of hectares of non-forest land in which improved land management has occurred as a result of the project's activities, measured against the without-project scenario | Not applicable | -     | Not applicable |
| Training    | Total number of community members who have improved skills and/or knowledge resulting from training provided as part of project activities                                  | 666            | 4.1.1 | 666            |
|             | Number of female community members who have improved skills and/or knowledge resulting from training provided as part of project activities                                 | 27             | 4.1.1 | 27             |
| Employment  | Total number of people employed in of project activities, <sup>5</sup> expressed as number of full time employees <sup>6</sup>                                              | 666            | 4.1.1 | 666            |
|             | Number of women employed in project activities, expressed as number of full time employees                                                                                  | 27             | 4.1.1 | 27             |
| Livelihoods | Total number of people with improved livelihoods <sup>7</sup> or income generated as a result of project activities                                                         | 1,036          | 4.1.1 | 1,036          |

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

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

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

|           |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                   |       |                                                                                                                                                                                                                                                                                                   |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | Number of women with improved livelihoods or income generated as a result of project activities                                                                                          | 45                                                                                                                                                                                                                                                                                                | 4.1.1 | 45                                                                                                                                                                                                                                                                                                |
| Health    | Total number of people for whom health services were improved as a result of project activities, measured against the without-project scenario                                           | 666                                                                                                                                                                                                                                                                                               | 4.1   | 666                                                                                                                                                                                                                                                                                               |
|           | Number of women for whom health services were improved as a result of project activities, measured against the without-project scenario                                                  | 27                                                                                                                                                                                                                                                                                                | 4.1   | 27                                                                                                                                                                                                                                                                                                |
| Education | Total number of people for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario                        | 454                                                                                                                                                                                                                                                                                               | 4.3.1 | 454                                                                                                                                                                                                                                                                                               |
|           | Number of women and girls for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario                     | 222                                                                                                                                                                                                                                                                                               | 4.3.1 | 222                                                                                                                                                                                                                                                                                               |
| Water     | Total number of people who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario | Not applicable. However, forestry practices applied in BDU are the latest available technology and practices that prevent the laminar erosion or diminishes the leakage of fertilizers, preventing the translocation of sediments or nutrients into the river, which are used as drinkable water. | -     | Not applicable. However, forestry practices applied in BDU are the latest available technology and practices that prevent the laminar erosion or diminishes the leakage of fertilizers, preventing the translocation of sediments or nutrients into the river, which are used as drinkable water. |

|                           |                                                                                                                                                                                                             |                                                                                       |                 |                                                                                      |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------------------------------|
|                           | Number of women who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario                           | Not applicable.                                                                       | -               | Not applicable.                                                                      |
| Well-being                | Total number of community members whose well-being <sup>8</sup> was improved as a result of project activities                                                                                              | 12,558                                                                                | 4.1.3           | 12,558                                                                               |
|                           | Number of women whose well-being was improved as a result of project activities                                                                                                                             | 6,524                                                                                 | 4.1.3           | 6,524                                                                                |
| Biodiversity conservation | Change in the number of hectares significantly better managed by the project for biodiversity conservation, <sup>9</sup> measured against the without-project scenario                                      | 16,181.5                                                                              | 5.1.1           | 16,181.5                                                                             |
|                           | Number of globally Critically Endangered or Endangered species <sup>10</sup> benefiting from reduced threats as a result of project activities, <sup>11</sup> measured against the without-project scenario | No endangered species from IUCN list found, but 3 birds from the country's SNAP list. | 5.1.1 and 5.3.1 | No endangered species from IUCN list found, but 3 birds from the country's SNAP list |

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

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

<sup>10</sup> Per IUCN's Red List of Threatened Species

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

## 2 GENERAL

### 2.1 Project Description

#### 2.1.1 Implementation Description

The project comprises a productive area totaling 16,181.5 ha<sup>12</sup> of land previously under extensive grazing by beef cattle on which afforestation for obtaining high-value, long-lived timber products and for sequestering large amounts of carbon dioxide from the atmosphere was established.

Forests were initially based on long term rotation Loblolly Pine (*Pinus taeda*) and to a lesser extent Hybrid Pine (*caribea x elliotti*). In 2017, and after the properties were sold to BDU III Trust Fund, a change in the species was implemented on up to 12% of total planted area, only on some of the properties. This replacement took place from 2017 to 2021 with the plantation of *Eucalyptus grandis* (74.6%) plantations and *dunnii* (25.4%). Rotation periods for these new species is 18-20 and 10 years respectively and forest plantations will be replanted after clear-cut harvest. Practices are still certified with FSC standard.

The baseline study determined that continuation of extensive grazing is the most likely use of the land. Additionality is demonstrated through a barriers analysis and common practice analysis which showed that afforestation in the area of the proposed project activity is not likely to occur without carbon financing and only previous land use activity (cattle breeding) presents no barriers.

Regarding leakage, it is estimated as zero, given the fact that Forteko project combines forestry and beef cattle breeding in its premises, working together with previous owners or neighbors through contracts. Non-permanence risk factors are analyzed in the corresponding report to be handed together with this monitor report, and where the project has demonstrated to be in good health and implementing mitigation measures in order to limit external, internal or natural risks.

Planted forests are removing carbon dioxide from the atmosphere and storing it in different carbon pools (living above-ground and below-ground biomass, soil, litter and dead wood). In this second monitoring event the carbon stock in different pools is measured in all 14,413ha planted areas, resulting in 3,710,011tn CO<sub>2</sub>-e for this verification period. At the same time the project is monitoring and identifying high conservation areas and implementing sustainable management practices.

The project has contributed to the sustainable development of Uruguay, and specifically the project zone by:

- Increasing labor demand from the local population
- Adding value to wood products and diversifying the regional production leading to higher economic revenues for the region

- Promoting an integrated management scheme with the ecosystem, achieving HCV conservation
- Creating and developing a new mechanism to finance projects in the forestry sector

### 2.1.2 Project Category and Activity Type

- Sectorial scope: 14 (Agriculture, Forestry, Land Use)
- Category: Afforestation, Reforestation and Revegetation (ARR)
- Activity type: establishment of forests on land that had previously been under grassland for more than 50 years.
- Forteko Project is a single GHG Project.

### 2.1.3 Project Proponent(s)

|                   |                                          |
|-------------------|------------------------------------------|
| Organization name | Agroempresa Forestal S.A. (AF)           |
| Contact person    | Dan Guapurá                              |
| Title             | Country Manager                          |
| Address           | Juncal 1437 Of. 501; Montevideo -Uruguay |
| Telephone         | +598 2916 2020                           |
| Email             | dguapura@af.com.uy                       |

|                     |                                                                            |
|---------------------|----------------------------------------------------------------------------|
| Organization name   | EF Asset Management Administradora de Fondos de Inversión Sociedad Anónima |
| Role in the project | Trustee of Bosques del Uruguay Trust Fund                                  |
| Contact person      | Leonardo Isoardi                                                           |
| Title               | Partner                                                                    |
| Address             | Juncal 1392                                                                |
| Telephone           | +598 29001000                                                              |
| Email               | efam@ferrere.com                                                           |

### 2.1.4 Other Entities Involved in the Project

|                     |                                                                                |
|---------------------|--------------------------------------------------------------------------------|
| Organization name   | ProSustentia                                                                   |
| Role in the project | Advice on the certification of the ARR project according to the VCS guidelines |
| Contact person      | Federico Moyano                                                                |
| Title               | Director                                                                       |
| Address             | San Martín 543, 3i, Ciudad Autónoma de Buenos Aires, Argentina                 |
| Telephone           | (+549)1136338125                                                               |
| Email               | fmoyano@prosustentia.com                                                       |

#### 2.1.5 Project Start Date (G1.9)

The project start date is 31 July 2007, when the activities that lead to the generation of GHG emission removals (preparing land for planting) were first implemented.

#### 2.1.6 Project Crediting Period (G1.9)

Project crediting period: 100 years

Start date: 31 July 2007

End date: 30 July 2107

#### 2.1.7 Project Location

The map in Figure 1 shows the project zone and project area (14,413ha of planted area for the monitoring period) as part of the Forteko's project<sup>13</sup>.

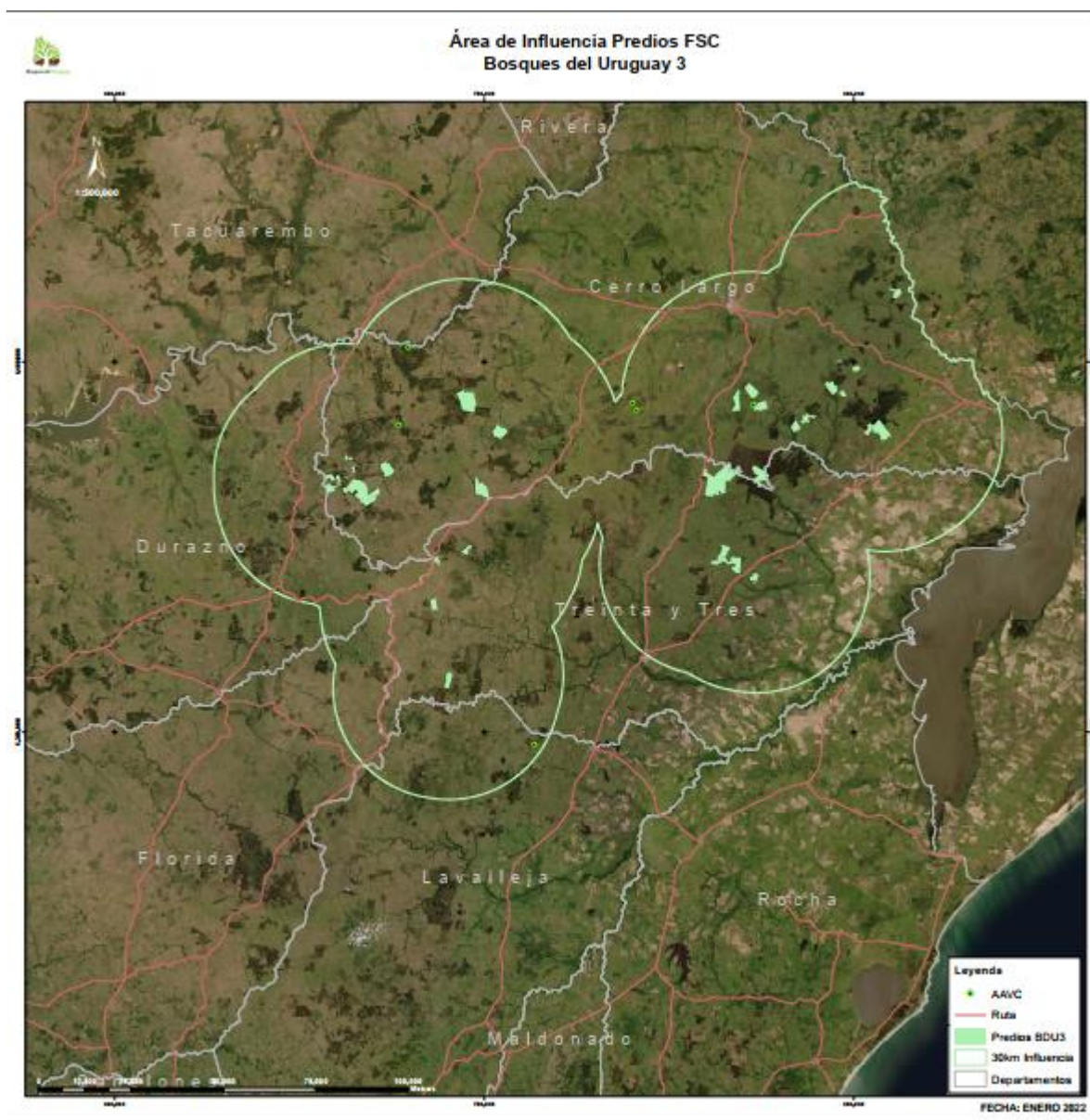


Figure 1. Map of Uruguay showing the location of the properties included in the proposed project activity and the project zone for the project.

Table 1: Indicators for unique identification of all project properties and productive area (ha)

| Property name      | ID predio | Cadastral Unit N°                                   | Productive Area (ha) | Latitude   | Longitude  |
|--------------------|-----------|-----------------------------------------------------|----------------------|------------|------------|
| Cerros del Chircal | 3036      | 10925<br>10926                                      | 483,06               | -54,815739 | -32,698516 |
| Canito             | 3038      | 864                                                 | 698,12               | -54,126382 | -32,983834 |
| Italiano           | 3016      | 844                                                 | 428,26               | -54,173493 | -32,971565 |
| Carricoche         | 3040      | 15602<br>15603<br>15604<br>15605                    | 41,84                | -53,849297 | -32,497303 |
| El Chuncho         | 3034      | 8481<br>8482<br>8483<br>10276<br>13076              | 310,97               | -53,759063 | -32,649083 |
| La Roja            | 3029      | 12481<br>12482<br>12483                             | 172,17               | -53,806162 | -32,512506 |
| Las Palmas         | 3037      | 1792                                                | 369,13               | -53,676918 | -32,325000 |
| Los Teros          | 3043      | 9646<br>9648                                        | 132,4                | -53,836266 | -32,576564 |
| Santa Mariana      | 3042      | 15952<br>15953                                      | 1147,92              | -53,731703 | -32,641681 |
| Tronco Perez       | 3039      | 2070<br>8470                                        | 452,82               | -53,861587 | -32,570453 |
| El Nacho           | 3026      | 15669<br>15670<br>15673<br>15675                    | 354,53               | -53,943433 | -32,639056 |
| El Chico           | 3014      | 729<br>3194<br>4351<br>4381<br>4439<br>7948<br>8594 | 177,28               | -55,245309 | -32,794134 |
| Jotapé             | 3031      | 4246<br>4497<br>4504<br>4513                        | 47,59                | -55,253800 | -32,761136 |
| El Huaso           | 3019      | 7502                                                | 520,99               | -55,134788 | -32,780785 |
| Pudú               | 3027      | 706<br>15669<br>15670<br>15674<br>15572<br>15675    | 21,83                | -55,282061 | -32,824159 |

|               |      |                                                                             |         |            |            |
|---------------|------|-----------------------------------------------------------------------------|---------|------------|------------|
| Las Flacas    | 3017 | 736<br>738<br>7482<br>7484<br>8591<br>15883                                 | 348,86  | -55,318759 | -32,809483 |
| El Ombu       | 3009 | 791<br>9321<br>1181<br>1206<br>6325<br>9317<br>9318<br>9319<br>9320<br>9322 | 2287,67 | -54,218982 | -32,786487 |
| La Hacienda   | 3013 | 901<br>904<br>956<br>3682                                                   | 711,45  | -54,086460 | -32,580314 |
| La Loma       | 3012 | 954                                                                         | 484,25  | -54,148503 | -32,994603 |
| Los Azules    | 3033 | 15039                                                                       | 343,38  | -53,969551 | -32,651964 |
| Los Condores  | 3024 | 7758<br>12379<br>12380<br>13357<br>14216                                    | 683,78  | -54,076646 | -32,774885 |
| Mique Mique   | 3030 | 3000                                                                        | 277,02  | -54,076564 | -33,028931 |
| Manolete      | 3010 | 12574<br>12575<br>12576<br>12577                                            | 2042,81 | -55,186477 | -32,860535 |
| Pesadilla     | 3007 | 557<br>558<br>7517                                                          | 977,1   | -54,879613 | -32,843058 |
| Quebra Yugo   | 3015 | 13161<br>13162<br>13167<br>13168<br>15489                                   | 316,25  | -55,261895 | -32,838695 |
| Santa Hildara | 2019 | 4110<br>13449<br>13450                                                      | 1410,37 | -54,930094 | -32,602918 |
| El Enzo       | 3041 | 9405                                                                        | 224,55  | -54,997109 | -33,120374 |
| La Gordi      | 3032 | 3878                                                                        | 185,5   | -54,913232 | -32,979052 |
| Las Mimadas   | 3023 | 4109                                                                        | 176,67  | -55,000160 | -32,999848 |
| Matador       | 3028 | 4891<br>4893                                                                | 352,89  | -54,957786 | -33,291158 |

### 2.1.8 Title and Reference of Methodology

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

In line with previous verification, the methodologies and tools used, to which the selected methodology refers to, are used:

Table 2. Summary of used methodological tools and changes observed.

| Methodological tool registered with Forestal Tekoayhu (Forteko)                                                                                              | Comments                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Version 01 of “Procedures to demonstrate the eligibility of lands for afforestation and reforestation CDM project activities”;                               | The tool is not used in the last version of the methodology (V 5.2.0), however, it is used to demonstrate the eligibility of lands in Forteko project. |
| Version 01 of “Combined tool to identify the baseline scenario and demonstrate the additionality in A/R CDM project activities”;                             | The tool used in the PD corresponds to the list of tools cited by the Methodology AR ACM 0001 at the moment of Forteko registration.                   |
| Version 01 of “Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities”;                     | Correct, the tool used in the PD corresponds to the list of tools cited by the Methodology AR ACM 0001 at the moment of Forteko registration.          |
| Version 03.1 of “Estimation of non-CO2 GHG emissions from burning of biomass attributable to a CDM A/R project activity”;                                    | Correct, the tool used in the PD corresponds to the list of tools cited by the Methodology AR ACM 0001 at the moment of Forteko registration.          |
| Version 01 of “Estimation of the increase in GHG emissions attributable to displacement of pre project agricultural activities in A/R CDM project activity”; | Correct, the tool used in the PD corresponds to the list of tools cited by the Methodology AR ACM 0001 at the moment of Forteko registration.          |
| Version 01.1 of “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities”;                       | Correct, the tool used in the PD corresponds to the list of tools cited by the Methodology AR ACM 0001 at the moment of Forteko registration.          |

|                                                                                                                                              |                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Version 02.1.0 of “Calculation of the number of sample plots for measurements within A/R CDM project activities”;                            | The tool is not used in the last version of the methodology (V 5.2.0), nor this verification period, however, it is used to calculate the number of sample plots for measurements of carbon in Forteko project description. |
| Version 01 of “Guidance on application of the definition of the project boundary to A/R CDM project activities”.                             | The tool is not used in the last version of the methodology (V 5.2.0), however, it is used as a guidance of the definition of the project boundary in Forteko project                                                       |
| Version 01 of “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity”                      | Correct, the tool used in the PD corresponds to the list of tools cited by the Methodology AR ACM 0001 at the moment of Forteko registration.                                                                               |
| Version 01 of “Estimation of carbon stocks and change in carbon stocks in deadwood and litter in A/R CDM project activity”                   | Correct, the tool used in the PD corresponds to the list of tools cited by the Methodology AR ACM 0001 at the moment of Forteko registration.                                                                               |
| Version 02 of “Guidance on conservative choice and application of default data in estimation of the net anthropogenic GHG removals by sinks” | Correct. This tool is cited in version 5.2.0 of the methodology.                                                                                                                                                            |

### 2.1.9 Other Programs (G5.9)

GHG removals generated by the project will not be used for compliance with binding limits to GHG emissions since such limits are not enforced in Uruguay. There are no emissions trading programs in place in the country. ‘Forteko’ is a new afforestation project and is not registered in any GHG program other than the VCS. The project will only generate credits from the storage of carbon in forest pools, and these are claimed only under the VCS program.

### 2.1.10 Sustainable Development

The Uruguayan government has approved its first Nationally Determined Contribution<sup>14</sup> by Executive Decree number 310 on November 3rd, 2017, in the framework of the Paris Agreement. It establishes a conservative goal to maintain 100% of the native forest area of year 2012, forest plantation net area under management of year 2015 and shade and shelter forest plantation of year 2012. In a more optimistic scenario, conditional on additional specific means of implementation,

<sup>14</sup>[https://www.gub.uy/ministerio-ambiente/sites/ministerio-ambiente/files/2021-04/Uruguay\\_Primer\\_Contribucion\\_Determinada\\_a\\_nivel\\_Nacional\\_0.pdf](https://www.gub.uy/ministerio-ambiente/sites/ministerio-ambiente/files/2021-04/Uruguay_Primer_Contribucion_Determinada_a_nivel_Nacional_0.pdf)

the government's goal is to increase 5% in the native forests area of year 2012 and 25% in the shade and shelter forest plantation area of year 2012, including silvopastoral systems. Forteko will contribute to achieve the government's goal by the continuation of the project.

At the same time, Uruguay is among the 150 countries that adopted the 2030 Agenda for Sustainable Development, including the Sustainable Development Goals (SDGs)<sup>15</sup> at the United Nations Sustainable Development Summit on 25 September 2015. The 17 SDGs aim to end poverty, hunger and inequality, take action on climate change and the environment, improve access to health and education, build strong institutions and partnerships, and more.

In this regard, Forteko project contributes to the achievement of the country's goals defined to reach the SDGs by:

- Increasing labor demand from the local population: the common activity developed in the project region is cattle breeding. Besides the forestry plantation activities, the project will maintain the cattle rising both on the unplanted area and under its plantations from year 2 to the end (many local researchers support cattle breeding inside forests as animals suffer less temperature stress and for storm protection). This will generate a much larger demand for labor when compared to these activities being developed separately.
- Adding value to wood products and diversifying the regional production will lead to higher economic revenues for the region.
- Promoting an integrated management scheme with the ecosystem. In this sense, it has already obtained the necessary approval from the DINAMA (National Directorate of Environment)<sup>16</sup> and the plantations are certified under the FSC standard.
- Creating and developing a new mechanism to finance projects in the forestry sector.
- Generating net anthropogenic CO<sub>2</sub> removals by sinks.

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<sup>15</sup> <http://www.eg.undp.org/content/undp/en/home/mdgoverview/post-2015-development-agenda/>

<sup>16</sup> By the time of submission of this Monitor Report the Ministry of Environment was recently created (July 2020), replacing all legal responsibilities of the DINAMA.

Plantations under Forteko project are FSC certified<sup>17</sup> and thus, social, economic and environmental impacts are monitored. Please, refer to section 3.1, 4.3 and 5.3 below for further information about Forteko's monitoring system<sup>18 19</sup>.

The generation of net anthropogenic CO<sub>2</sub> removals by sinks will be monitored as part of the present CCB and VCS project.

## 2.2 Project Implementation Status

### 2.2.1 Implementation Schedule (G1.9)

| Date         | Milestone(s) in the project's development and implementation                                              |
|--------------|-----------------------------------------------------------------------------------------------------------|
| Jan-Dec 2006 | Forest projects presented to the Forest Directorate and EIA to the Environment Office with public comment |
| Jul 2007     | Project start date with land preparation for plantation over degraded grassland.                          |
| Aug 2008     | First environmental characterization of farms with stakeholder's participation                            |
| Nov 2009     | Properties were first certified FSC                                                                       |
| Nov 2009     | Annual biodiversity survey reports of the projects                                                        |
| Jul 2010     | Silvicultural activities started (pruning and thinning)                                                   |
| Jan-Dec 2011 | Community activities were performed                                                                       |
| Mar 2013     | First productive project created with rural communities                                                   |
| Jan 2013     | Project was VCS validated                                                                                 |
| Apr 2017     | Forteko lands are bought by BDU III Trust Fund                                                            |
| May 2017     | First verification took place for period (2007-2013)                                                      |
| Jun 2017     | First <i>Pinus taeda</i> plantation area harvested and replaced by <i>Eucalyptus</i>                      |
| Sep 2019     | New environmental characterization of farms                                                               |
| Sep 2022     | Project seeks CCB validation                                                                              |

<sup>17</sup> FSC certification report and certificate available for the VVB. Farms El Italiano, Las Mimadas, Las Flacas, Manolete, La Loma and El Matador are certified FSC at the time of verification, varying through project lifetime.

<sup>18</sup> BDU Forestry management plan public summary, which includes the monitoring system, available at: [https://www.bosquesdeluruguay.com/media/2022/03/GAF\\_PM\\_-\\_Resumen\\_Publico\\_del\\_Plan\\_de\\_Manejo\\_Grupo\\_AF\\_2021.pdf](https://www.bosquesdeluruguay.com/media/2022/03/GAF_PM_-_Resumen_Publico_del_Plan_de_Manejo_Grupo_AF_2021.pdf)

<sup>19</sup> 2020 Monitoring public summary available at:

|          |                                 |
|----------|---------------------------------|
| Jul 2107 | End of project crediting period |
|----------|---------------------------------|

## 2.2.2 Methodology Deviations

No methodology deviations were applied during this monitoring period.

## 2.2.3 Minor Changes to Project Description (*Rules 3.5.6*)

After a change in land ownership, a change in species used was implemented in some of the farms of the Forteko project. In this sense, the introduction of *Eucalyptus grandis* and *dunnii* took place, in replacement of *Pinus taeda* and other hybrid species. These changes include variations in the biodiversity section: 5.2.5, 5.2.6 and 5.2.7 of the PDD.

Details are included below for section 5.2.5 on Species used. The details regarding non-native species is included in section 5.1.5 and 5.1.6 of this monitoring report. No other changes in community or biodiversity are expected to have taken place due to the change in species used.

### **Section 5.2.5 Species used**

The Forteko project is now an afforestation project on extensive cattle grazing pastures areas using exotic species *Pinus taeda*, *Eucalyptus grandis*, and to a lesser extent *Eucalyptus dunnii*.

Conifers in general, and Pines in particular, have traditionally been considered undemanding in their nutrient requirements and soil fertility. Within the *Pinus* genus, the most widely used species in Uruguay is *Pinus taeda*, it is an arboreal species of the Pinaceae family, genus *Pinus*, native to the southeastern United States. Currently there are approximately 155 thousand planted hectares located mainly in the departments of Rivera (42%), Tacuarembó (33%) and Cerro Largo (9%)<sup>20</sup>. *Taeda* wood is widely known in international markets for having good technical properties. The main destination of *Pinus taeda* in Uruguay is the obtaining of solid wood products through the industrial processing of wood<sup>21</sup>.

*Pinus taeda* plantations, are based on 22-25 year forest rotation managed with pruning (to a height of 5.6 m) and two thinning operations, to obtain knot-free, high-diameter logs suitable for saw-milling. Plantation will be completed by year 5 of project and forests will be replanted after clear-cut harvest. Practices are certified with FSC standard.

After the first rotation, and with land ownership changes, a percentage of the planted area with *Pinus* was replaced with *Eucalyptus*. This area is planted mostly with *Eucalyptus grandis* and, to a lesser extent, *Eucalyptus dunnii* (in lower areas where *Eucalyptus grandis* can be affected by frost

<sup>20</sup> División Evaluación e Información, DGF-MGAP (2021) Cartografía forestal de bosques plantados 2021- Table 3. Available at: <https://www.gub.uy/ministerio-ganaderia-agricultura-pesca/comunicacion/publicaciones/anuario-opypa-2021/estudios/cartografia-forestal-bosques-plantados-2021>

<sup>21</sup><https://www.bosquesdeluruguay.com/media/2022/03/Prospecto-de-Emission-BDU-3.pdf>

damage), which are not native to the area. The choice of species is due primarily to the fact that they ensure an adequate productivity level and a market access for the products to be obtained, which would not be possible if other native species were used.

It is worth mentioning that there are no trees where forests will be established (project area), since the original vegetation is grassland<sup>22</sup>. Native forests, located on low areas at the margins of an extensive network of rivers and minor water streams, cover less than 5% of Uruguay's territory. Does found within the project's premises are monitored. Specific sampling is performed on native forests in order to evaluate growth, sanitary status and number of species.

Native tree species have usually short, contorted stems, and very slow growth rates. Because of these features, there are currently no native tree species suitable for large-scale commercial plantations. A few species with potential commercial uses have been identified, but there is very limited knowledge on their management. Also, their feasibility would largely depend on finding a market value for their wood products.

## **2.2.4 Project Description Deviations (Rules 3.5.7 – 3.5.10)**

### **Land ownership**

Since the last VCS verification, changes in the project's land ownership took place from previous owner Forestal Tekoayhu S.A to BDU III Trust Fund. The corresponding notarial documents are available for VVB during verification<sup>23</sup>.

Regarding the project's authority, the corresponding deed of accession and deed of partial release<sup>24</sup> were signed by previous project proponent -Forestal Tekoayhu SA-, granting EF Asset Management (EFAM), Administradora de Fondos de Inversión S.A the issuance representor capacity.

BDU III (and Forteko Project) is operated and administered by Agroempresa Forestal (AF) on behalf of "Fideicomiso Financiero Forestal Bosques del Uruguay III" (the trust fund). Besides being the project administrator and manager, AF is the trust fund administrator. Through a Service Agreement, the Trustee (EFAM) appoints the Administrator (AF), to fulfill the task of managing the trust assets and carry on the implementation of the Business Plan. Notwithstanding this, the Trustee maintains responsibility for the management of the Administrator tasks outsourced to it. This is reflected on the BDU III Trust Fund Prospect<sup>25</sup> document.

<sup>22</sup> Evidence provided during validation of project were no forests or native ecosystems have been replaced by the project

<sup>23</sup> Property certifications available to VVB

<sup>24</sup> Documents available for VVB during verification

<sup>25</sup> BDU III Trust Fund Prospectus; 10/2016; Available at: <https://www.bosquesdeluruguay.com/media/2022/03/Prospecto-de-Emission-BDU-3.pdf>

Besides this document, the Trustee EFAM has granted a special power of attorney to the Administrator AF to act in the name of EFAM to carry on all operational and commercial activities related to the project. Among these activities are the necessary tasks to certify the carbon credits that could be generated with Forteko project. Once issued, the carbon credits will belong to the Trust Fund as the project harvested wood does.<sup>26</sup>

AF is the manager of the business and the legal entity of the group, it is a Uruguayan company founded in 2000, leader in forestry services and in field administration. The company also provides services to financial forest trusts Bosques del Uruguay I, II, IV and Gutiérrez Zaldivar. AF guarantees the development of the forests and the entire enterprise, under a strict business plan and a system for reporting results and permanent audits, which assure the investor a participation profitable in this productive project.

The fiduciary of Bosques del Uruguay I, II, III and IV is EF Asset Management, Administradora de Fondos de Inversión S.A. It was created in 2003 by Ferrere Abogados and CPA Ferrere in Uruguay. It is about the biggest private trust administrator in the country, and has issued the largest number of financial trusts in the Uruguayan market, such as UTE 2004, Urban Collective Transport of Montevideo, CFP, NZFSU I and Pronto! among others.

Contact detail for project proponents is included in the title page of this document and the CCB PD under validation. Corresponding non-permanence risk assessment was completed in the corresponding template.

The outcome of this deviation has no impact on baseline nor additionality analysis. AF is registered in VERRA under other VCS certified projects: BDU and BDU II, with a recognized career in forest management.

### **Project boundary**

The forest area of the project slightly changed from 16,553.31 to a productive area of 16,181.5ha. The difference are explained by cartographic adjustments and changes in the productive area due to adjustment to legislation during reforestation activities. The total project area was modified, but without changes in the project boundary, thus the new total area is presented in this verification with a detailed explanation of the modification, but the project boundaries will always be the same. The reduction in the forest area does not represents a reversal (according to the VCS document Program Definitions) or a catastrophic event, and then the project participant did not communicate this to the VCS nor monitored the loss. None of these situations have occurred within Forteko's project boundaries.

Table 3. Deviations in productive areas of the project

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<sup>26</sup> The power of attorney is available to the VVB at validation.

| Farm               | Area at last verification (ha) | Current productive area (ha) | Area planted (ha) | Area difference (Ha) | Area difference (%) |
|--------------------|--------------------------------|------------------------------|-------------------|----------------------|---------------------|
| Carricoche         | 42.71                          | 41.84                        | 39.81             | -0,87                | -2,04%              |
| El Chunchu         | 314.7                          | 310.97                       | 289.97            | -3,73                | -1,19%              |
| La Roja            | 179.52                         | 172.17                       | 156.90            | -7,35                | -4,09%              |
| Las Palmas         | 383.56                         | 369.13                       | 357.32            | -14,43               | -3,76%              |
| Los Teros          | 136.71                         | 132.40                       | 120.43            | -4,31                | -3,15%              |
| Santa Mariana      | 1163.5                         | 1147.92                      | 1118.44           | -15,58               | -1,34%              |
| Tronco Perez       | 476.05                         | 452.82                       | 433.38            | -23,23               | -4,88%              |
| Canito             | 673.05                         | 698.11                       | 679.84            | 25,06                | 3,72%               |
| El Italiano        | 437.83                         | 428.26                       | 415.23            | -9,57                | -2,19%              |
| El Nacho           | 368.89                         | 354.53                       | 338.45            | -14,36               | -3,89%              |
| Cerros del Chircal | 523.49                         | 483.06                       | 461.16            | -40,43               | -7,72%              |
| El Chico           | 178.33                         | 177.28                       | 104.27            | -1,05                | -0,59%              |
| Jotape             | 48.58                          | 47.59                        | 43.75             | -0,99                | -2,04%              |
| El Huaso           | 509.81                         | 520.99                       | 498.87            | 11,18                | 2,19%               |
| El Pudú            | 20.67                          | 21.83                        | 21.75             | 1,16                 | 5,61%               |
| Las Flacas         | 335.03                         | 348.86                       | 326.05            | 13,83                | 4,13%               |
| El Ombu            | 2475.3                         | 2287.67                      | 2254.31           | -187,44              | -7,57%              |
| La Hacienda        | 751.3                          | 711.45                       | 703.29            | -39,85               | -5,30%              |
| La Loma            | 496.07                         | 484.25                       | 475.49            | -11,82               | -2,38%              |
| Los Azules         | 355.14                         | 343.38                       | 316.70            | -11,76               | -3,31%              |
| Los Cóndores       | 705.1                          | 683.78                       | 682.09            | -21,32               | -3,02%              |
| Mique Mique        | 285                            | 277.02                       | 270.52            | -7,98                | -2,80%              |
| Manolete           | 1889                           | 2042.81                      | 1906.01           | 153,81               | 8,14%               |
| Pesadilla          | 966.54                         | 977.10                       | 54.57             | 10,56                | 1,09%               |
| Quiebra Yugo       | 315.23                         | 316.25                       | 289.11            | 1,02                 | 0,32%               |
| Santa Hildara      | 1455.41                        | 1410.37                      | 1357.83           | -45,04               | -3,09%              |
| El Enzo            | 303.88                         | 224.55                       | 28.48             | -79,33               | -26,11%             |
| La Gordi           | 205.07                         | 185.50                       | 185.53            | -19,57               | -9,54%              |
| Las Mimadas        | 194.63                         | 176.67                       | 155.70            | -17,96               | -9,23%              |
| Matador            | 363.21                         | 352.89                       | 327.68            | -10,32               | -2,84%              |
| Total general      | 16,553.31                      | 16,181.5                     | 14,413            | -371,81              | -2,25%              |

The major difference are at El Ombú (-187.44ha) and Manolete farm (153.81ha). In the case of El Ombú, the difference is explained by cartographic adjustment in the productive area. In the second case, the difference is explained, as anticipated in previous verification, that Manolete property area was referring to an effective planted area during last verification and that the rest of the farm would appear in future verifications within a new strata. Its project boundary (Manolete's) at validation was 2,176ha. *"The current value corresponds to the net area under forestry. It is worth*

to remark that the farm suffered a forest fire before validation and the area used now is the actual forest remaining after the incident. The rest of Manolete farm will appear in the following verification events but in a different strata.”

### **Plantation and forestry cultural activities**

In June of year 2017, the first pinus plantation was harvested and later replaced, in the same year, by *Eucalyptus dunni* in Manolete property. During 2019 and 2020, other properties would follow (El Chico, El Pudú, Jotape, Matador, La Gordi y Las Mimadas). As of June 2017, harvest of *Pinus taeda* took place and 1.738ha (12% of total project area) was planted with *Eucalyptus*, both *grandis* (74.6%) and, to a lesser extent (25.4%), *Eucalyptus dunni*. The main purpose of this change was to benefit soil productivity, demand and market opportunities, as well as to increase carbon fixation due to better standing volumes obtained. The main destiny of the wood is still high quality timber. Solid wood of *Eucalyptus grandis* allows an excellent growth rate and final volume, added to the fact that it is recognized as a less invasive species than Pinus.

These modifications to the project does not change additionality condition given the rotation periods are still long-termed (since *Eucalyptus grandis* is planted in a higher percentage than *Eucalyptus dunni*) and original baseline and additionality analysis still apply (see further analysis below in this section “Baseline and additionality” and in Appendix 1). On the other hand these deviations have an impact on the long-term average, and for this verification period it has been recalculated and resulted in 4,534,914 tCO<sub>2</sub>e (with a total GHG benefit of 453,491,421 tCO<sub>2</sub>e). For this reason, information on the new parameters considered are included in section 3.1.1 of Data and parameters at validation and 3.1.2 of Data and parameters at verification, and the updated spreadsheet available to VVB. In this sense, a new Pinus’ growth projection was used, based on local growth parameters. Moreover, for the new ex-ante estimation, the Root-shoot ratio for tree species used was the one provided by IPCC Guidelines 2003, further explained in the aforementioned section (while equation for R value is used for ex-post calculations).

In the case of Pinus silvicultural activities, AF implemented changes regarding the thinning year, from 5 and 10 to year 3 and 12. On the other hand, the plantation with Eucalyptus species will be managed according to the forest management plan detailed below:

### **Eucalyptus**

#### **1. Site preparation and plantation**

Plantation site is prepared by ploughing the soil on strips where the trees will be planted. This will be done in a certain manner that reduces the risk of erosion and degradation. The objective of ploughing is to favor the establishment and initial development of plants by increasing the aeration, infiltration and nutrient availability of the soil, and controlling weeds. Soil disturbance is limited to the width of the strips and is carried out only once throughout the rotation cycle.

Weed control is performed by using glyphosate. Two applications are carried out some days before tillage and/or plantation. In addition, grazing is used as an effective method to control the vegetation before planting. Generally, the last row (4th row) and the last intermediate row (3rd row) are applied

with glyphosate. The rest of the rows are made with selective and pre-emergent herbicides which do not contain glyphosate. Burning is not practiced as a weed control technique.

Planting is performed mainly manually during spring or fall. The planting stocking are 1450 trees per hectare for *Eucalyptus dunnii* and 1100 and 650 tree per hectare for seed and clone *Eucalyptus grandis* respectively.

Seedlings are bought from nurseries renowned for their quality. Seed sources for the production of these seedlings are selected based on assessments made by institutions or companies in Uruguay, South Africa and Australia which ensure good performance in the region. Evaluation criteria to select the genetic origin takes into account desirable features for solid wood production (e.g. trunk straightness, production, health, density).

On the first year of the plantation, activities are carried out before and after planting. Ant control is systematically performed over the whole area using chlorine-free insecticides with reduced permanence in the ecosystem 15-30 days before sowing. Afterwards insecticides are selectively applied on ant paths and nests. Regarding fertilization, this manually applied around each tree after plantation (NP) with slow-release fertilizer (20 g per tree).

Plants establishment, survival control, reposition and quality is monitored within the first few weeks after planting, checks are performed to identify and replace lost plants.

## 2. Pruning and Thinning

High quality timber plantations, that is the case of *Eucalyptus grandis* for this project, require a more intensive silviculture than those for the production of wood for energy or pulp (*Eucalyptus dunnii* in this case), being necessary several treatments such as pruning and thinning along the rotation. These treatments allow logs to reach greater diameter and quality increasing their market value.

Pruning and thinning interventions are not carried out for *Eucalyptus dunnii*, ending with a final density of around 1,200-1450 trees in year 10.

For *Eucalyptus grandis* pruning interventions are carried out at the following heights, ages and number of trees per hectare (for seedlings):

| Pruning | Height | Age   | Trees/ha |
|---------|--------|-------|----------|
| First   | 3 m    | 1.5-2 | 500-550  |
| Second  | 6 m    | 3     | 350      |

|        |      |       |     |
|--------|------|-------|-----|
| Third  | 9 m  | 3.5-4 | 250 |
| Fourth | 11 m | 4-5   | 250 |

For *Eucalyptus grandis* three thinning interventions are performed in the case of seed, and two interventions when it is a clone. The first thinning, carried out at year 2, removes half of the stocked volume but it does not generate revenues (waste thinning). Its goal is to eliminate the competence and remove the bad shaped and weak individuals and only applies when it is seed. In the second thinning, between year 7-8, all harvested trees goes for pulp industry leaving a total of 350 individuals per ha. Finally, in the third thinning (year 11-12) about a third becomes saw timber and two thirds pulpwood. This last thinning leaves a final density of 250 trees/ha of the highest quality.

Cattle grazing will be carried out all over the project area before plantation takes place and after plantations have reached 2 years of age so the individuals are not damaged. Within the unplanted areas cattle will continue grazing. Grazing agreements with external cattle producers will be signed throughout the project life.

### 3. Final Harvest

Final felling is at year 10 in the case of *Eucalyptus dunnii* and year 18-20 for the *Eucalyptus grandis*. In both cases, pre-harvest inventory is conducted. In *Eucalyptus dunnii* coppice are managed after harvest for the second rotation cycle. At this stage stump from thinning are controlled in *Eucalyptus grandis*.

### Monitoring plan

Due to changes in the operation authorities, and the impossibility to access information from previous owners, there has been changes in the definition of strata. In this case instead of region, soil classification is considered, along with plantation year and species, to define monitoring strata. Soil classification is considered as robust as region in order to define a monitoring stratum, especially taking into account the project is limited to two departments in the same country's region.

At the same time, the replacement of 12% of *Pinus* with *Eucalyptus* demanded the increase in the number of stratum for monitoring. The new classification and number of plots monitored are detailed in table 4.

Table 4: Stratum and plots during verification

| Species | Year plantation | Soil (CONEAT) | Area (ha) | No plots |
|---------|-----------------|---------------|-----------|----------|
|---------|-----------------|---------------|-----------|----------|

|                    |      |       |          |    |
|--------------------|------|-------|----------|----|
| <i>Pinus taeda</i> | 2007 | 2     | 571.65   | 5  |
|                    | 2008 | 2     | 3,510.30 | 81 |
|                    | 2008 | 8     | 1,079.59 | 9  |
|                    | 2008 | Otros | 74.52    | 3  |
|                    | 2009 | 2     | 1,618.04 | 25 |
|                    | 2009 | 8     | 209.30   | 3  |
|                    | 2010 | 2     | 3,254.60 | 68 |
|                    | 2011 | 2     | 2,293.81 | 16 |
|                    | 2012 | 8     | 3.27     | -  |
|                    | 2013 | 2     | 32.15    | -  |
|                    | 2013 | 8     | 3.36     | -  |
|                    | 2013 | G     | 24.86    | -  |
| <i>dunnii</i>      | 2017 | 2     | 29.20    | 1  |
|                    | 2018 | 2     | 194.67   | 6  |
|                    | 2018 | G     | 45.42    | -  |
|                    | 2019 | 2     | 7.92     | -  |

|                |       |       |        |                   |
|----------------|-------|-------|--------|-------------------|
|                | 2019  | 8     | 163.44 | -                 |
| <i>grandis</i> | 2017  | 2     | 391.91 | 13                |
|                | 2018  | 2     | 256.00 | 9                 |
|                | 2019  | 2     | 171.64 | 6*                |
|                | 2019  | 8     | 149.95 | 5*                |
|                | 2019  | G     | 1.19   | -                 |
|                | 2019  | Otros | 0.12   | -                 |
|                | 2020  | 2     | 4.11   | -                 |
|                | 2020  | 8     | 6.45   | -                 |
|                | 2021  | 2     | 315.47 | 11*               |
|                | TOTAL |       | 14,413 | 260 <sup>27</sup> |

\*projected plots to be installed after 3 years from plantation, as well as for those planted in year 2018.

Due to the addition of a new species to the plantation plan, additional variables and default values are added to the “parameters at validation and parameters detailed at monitoring tables (all parameters now listed in section 3.1)

This changes are also embodied in a new LTA estimation based on changes in surface area for *Pinus*, and new species, as of 2017. This new LTA value equals 4,534,914 tn CO<sub>2</sub>e<sup>28</sup>.

### Quality assurance and Quality control

<sup>27</sup> 21 of those (\*) will be installed in years 2022 to 2024.

<sup>28</sup> Calculation spreadsheet available to VVB

Although not considered a deviation further information on QA/QC process is included in the present document in section 3.1.3 stating:

Once field measurements have been collected, the contractor sends them by email specifying the type of inventory carried out, establishment surveyed, number of plots and location in kmz format. It is important to clarify that all those doubts or modifications that were carried out in the field are clarified in the column called "observations".

All the information sent is reviewed by the head of inventories. In case of finding any inconsistency or doubt, a field check is performed. Once the data has been reviewed, it is processed using the data processing system Caliper [<https://webapp.avlchile.cl/caliper/caliper.dll>]. It is a software for processing forest inventories that calculates dasometric variables and delivers a cut of the forest according to the defined products. In addition, it has a module called "Validator", which allows a review of the consistency of the data, detecting possible inconsistencies in the values that could affect the results. In case of detecting inconsistencies, these are analyzed and evaluated prior to processing.

The Vtree equation used in last verification was changed for the *smalian* volumetric equation using data from a regression equation by Bruce et al. (1968)<sup>29</sup>, extensively used in forestry sector.

The parameters for the regression equation are obtained from studies conducted within the project area, farms owned by BDU and neighboring companies, with variables derived from a data set of more than 50 trees and in line with the conditions stated in A/R Methodological Tool "Demonstrating appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities" V. 1. Information on the procedures are detailed in the Agroempresa Forestal Forest Inventory Manual, section 11<sup>30</sup>.

The equation and parameters used by species are as follow:

$$dwb_{(b)}^2/DBHwb^2 = b_1 X^{1.5} + b_2 (X^{1.5} - X^3) DBHwb + b_3 (X^{1.5} - X^3) HT + b_4 (X^{1.5} - X^{32}) HT DBHwb + b_5 (X^{1.5} - X^{32}) HT^{0.5} + b_6 (X^{1.5} - X^{40}) HT^2$$

Where,

$dwb_{(b)}^2$  =Diameter (cm) without bark, measured at trunk height (m)

DBHw  
b =Diameter (cm) with bark, measured at 1,3 mts from soil

HT =Total height (m)

<sup>29</sup> Bruce, D. Curtis, R.O, Vancoeving, C. 1968. "Development of a system of taper and volume tables for red alder", For. Sci. 14(3): 339-350.

<sup>30</sup> Forest Inventory manual and associated information available for VVB during verification on request.

$h_j$  = Height (m) from soil till diameter  $d_j$  ( $j= 1, \dots, n$ )

$X$  =  $(HT - h_j) / (HT - 1,3)$

$b_i$  = Parameters to be estimated ( $i=1, \dots, 6$ )

Where, parameters to be estimated for each species are<sup>31</sup>:

|       | <i>Eucalyptus grandis</i> | <i>Eucalyptus dunnii</i> | <i>Pinus elliotti</i> |
|-------|---------------------------|--------------------------|-----------------------|
| $b_1$ | 0.88612                   | 0.79307                  | 0.796790              |
| $b_2$ | -0.01139                  | -0.01139                 | -0.011734             |
| $b_3$ | 0.01628                   | 0.01645                  | 0.015011              |
| $b_4$ | -0.00008                  | -0.00002                 | -0.000041             |
| $b_5$ | -0.00137                  | 0.00272                  | 0.013051              |
| $b_6$ | 0.00004                   | -0.00006                 | -0.000145             |

The universal volumetric equation by *Smalian* used is:

$$V_{tree} = DBH \cdot DBH \cdot 0.785 \cdot H$$

Where,

$V_{tree}$  = Total volume without bark (m<sup>3</sup>)

$DBH$  = Diameter (cm) extracted from Bruce et al. equation

$H$  = Height (cm) equal to 1cm

The next step is to add each section calculated and applied factor to include total volume with bark.

#### Data and Parameters Available at Validation

New ex-ante estimations were conducted given the lack of access to previous estimations when the properties were bought. This estimations are based on new growing estimations, and minor changes in default values during ex-ante estimations. Even though different from the validation values, they are default values provided and recommended by methodology:

<sup>31</sup> A large set of data is available, so the parameters value may vary according to the area involved or project. Detail to be discussed with VVB during verification.

Dj: same values are used for Pinus, new values provided for Eucalyptus, as it was not included in ex-ante estimations during validation.

Rj: originally, ex-ante was estimated based on the equation provided in methodology, in this case, default values are used during ex-ante estimation and same equation during ex-post estimations

Bark volume: same values are used for Pinus, new values provided for Eucalyptus, as it was not included in ex-ante estimations during validation.

FiNi: Understanding that the 0,7 value during validation was incorrect, given all grassland without input of fertilizers is assigned an input factor of 1 according to methodology.

In more detail, with the planting of Eucalyptus, new data and parameters had to be added, which are detailed below and in the corresponding section 3.1.1 in this document. Moreover, default values are updated for ex-post estimations:

|                                                                                              |                                                                                                                                                                |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 or group of species j                                         |
| Source of data                                                                               | IPCC default values (e.g. Table 3A.1.10 of IPCC GPG-LULUCF 2003) for ex-ante estimation, and default value 1.15 from CDM AR TOOL 14 for ex-post estimations.   |
| Value applied                                                                                | Ex-ante<br>From 1.15 to 3.4, depending on the tree age for Pinus<br>From 1.15 to 3.2 depending on the tree age for Eucalyptus<br>Ex-post<br>1.15 default value |
| Justification of choice of data or description of measurement methods and procedures applied | Default value for pinus and broadleaf species in temperate climate.                                                                                            |
| Purpose of the data                                                                          | N/A                                                                                                                                                            |
| Comments                                                                                     | Ex-ante: BEF varies with age, being the highest values for young                                                                                               |

|  |                                                                                                                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | plantations and the lowest for mature plantations. A conservative approach was taken varying the BEF very quickly, reducing it to a half by year 5 and considering the forest as mature at the age of 10 years. |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                              |                                                                                                                                                      |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | CF <sub>j</sub>                                                                                                                                      |
| Data unit                                                                                    | t C t <sup>-1</sup> d.m.                                                                                                                             |
| Description                                                                                  | Carbon fraction of tree biomass for species or group of species j                                                                                    |
| Source of data                                                                               | Table 4.3 in IPCC 2006 Guidelines for National Greenhouse Gas Inventories - Volume 4 - Agriculture, Forestry and Other Land Use (no 2019 refinement) |
| Value applied                                                                                | 0.47                                                                                                                                                 |
| Justification of choice of data or description of measurement methods and procedures applied | Default value                                                                                                                                        |
| Purpose of the data                                                                          | Calculation of project emissions                                                                                                                     |
| Comments                                                                                     | N/A                                                                                                                                                  |

|                  |                                                                                                                                                                                                                                                                                      |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter | D <sub>j</sub>                                                                                                                                                                                                                                                                       |
| Data unit        | t d.m. m <sup>-3</sup>                                                                                                                                                                                                                                                               |
| Description      | Basic wood density for species or group of species j                                                                                                                                                                                                                                 |
| Source of data   | Table 4.14 Basic wood densities (D) of selected temperate and boreal tree taxa from IPCC 2006 Guidelines for National Greenhouse Gas Inventories - Volume 4 - Agriculture, Forestry and Other Land Use (no 2019 refinement).<br><br>For Eucalyptus: ACHUGAR, L.; SCAGLIONE, G. 2003. |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                              | Evaluación de propiedades de la madera en clones de <i>Eucalyptus grandis</i> Hill (ex Maiden). Thesis Ing.Agr. Montevideo, Uruguay, Universidad de la República-Facultad de Agronomía                                                                                                                                                                                                                                                                                                                             |
| Value applied                                                                                | 0.44 for Pinus<br>0.38 to 0.49 (depending on the tree age) for Eucalyptus                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Justification of choice of data or description of measurement methods and procedures applied | Default value for Pinus<br><br>For Eucalyptus:<br><br>1) basic density values are taken from results of a thesis investigation work (national and local data)<br><br>2) the values used are the ones from the bottom of the confidence interval of 95%, to be conservative<br><br>3) values are plotted and tendency line is added, the tendency line with the highest $r^2$<br><br>4) power function is used to estimate the density values for the whole period<br><br>5) real and calculated values are plotted |
| Purpose of the data                                                                          | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Comments                                                                                     | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                  |                                                                                                                                                           |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter | $R_j$                                                                                                                                                     |
| Data unit        | Dimensionless                                                                                                                                             |
| Description      | Root-shoot ratio for species or group of species $j$                                                                                                      |
| Source of data   | Ex-ante: Table 3A.1.8 of IPCC GPG-LULUCF 2003<br><br>Ex- post: AR Tool 14 - "Estimation of carbon stocks and change in carbon stocks of trees and shrubs" |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Value applied                                                                                | <p>Ex-ante</p> <p>Pinus: 0.23 to 0.46 depending on aboveground biomass;</p> <p>Eucalyptus: 0.20 to 0.45 depending on biomass values</p> <p>Ex – post</p> <p>Varies depending on an equation which used the aboveground biomass as an input (specific values are presented in the ex-post carbon estimations)</p>                                                                                                                                                                                                                                                                                                                                                              |
| Justification of choice of data or description of measurement methods and procedures applied | <p>Default values according to the range of biomass will be used during ex-ante calculations. According to IPCC 2003, the value of R depends on aerial biomass (t / ha) for Eucalyptus/Pinus. For values less than 50 tonnes / ha 0.45/0.46 was used, for values between 50 and 150t/ha 0.35/0.32 was used and for over 150 0.2/0.23 was used respectively.</p> <p>During ex-post calculations, the value arising from the equation corresponding to Tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs" will be used as follows:</p> $R_j = \frac{e^{(-1.085+0.9256 \times \ln b)}}{b}$ <p>where b in the above-ground biomass calculated</p> |
| Purpose of the data                                                                          | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Comments                                                                                     | Specific values will be calculated in the ex-post carbon estimations based on corresponding equation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|                  |                                                                                                                                                                                     |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter | $V_{TREE\ j\ p\ i}$                                                                                                                                                                 |
| Data unit        | m <sup>3</sup>                                                                                                                                                                      |
| Description      | Stem volume of trees of species or group of species j in plot p in stratum i                                                                                                        |
| Source of data   | <p>Local Growth Models:</p> <p>Growth projections from local growth model using local parameters from AF Group for same species and silvicultural activity in the project zone.</p> |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Value applied                                                                                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Justification of choice of data or description of measurement methods and procedures applied | In all cases local data is used, based on projections generated by AF for farms under similar conditions to project area by species, using average projection values.                                                                                                                                                                                                                                                          |
| Purpose of the data                                                                          | Value used to determine the project ex – ante carbon sequestration                                                                                                                                                                                                                                                                                                                                                             |
| Comments                                                                                     | In case of ex-ante calculation, growth was estimated based on average growth according to specific site conditions presented in the project site. Local growth models were used for ex-ante estimation to describe the yield curve and determine the Long Term Average of available carbon credits. Local growth models will not be used for ex-post estimation which were based on field measurements: tree's DBH and height. |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | Bark volume                                                                                                                                                                                                                                                                                                                                                                                       |
| Data unit                                                                                    | m <sup>3</sup> /ha                                                                                                                                                                                                                                                                                                                                                                                |
| Description                                                                                  | Bark volume of trees of species j                                                                                                                                                                                                                                                                                                                                                                 |
| Source of data                                                                               | Methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs" V.1 for Pinus. For Eucalyptus, a tendency line is calculated by AF group based on a local survey on diameter with and without bark in project zone.                                                                                                                                             |
| Value applied                                                                                | Pinus: 15% of total stem volume<br><br>Eucalyptus: varies according to age with values of 24.15% during first year and 10.88% at year 18.                                                                                                                                                                                                                                                         |
| Justification of choice of data or description of measurement methods and procedures applied | Default value is used in the case of Pinus. For Eucalyptus the procedure is detailed below:<br><br>1) SAG software is used to calculate the volume of trees in a plot in different years (3, 6, 9, 12, 15 and 16), based on the growth simulation model of AF group project with same characteristics.<br>2) Volume with and without bark is provided as a result, bark percentage is calculated. |

|                     |                                                                                                                                                                                                                                                                                                                                     |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <p>3) Results are copied into this worksheet sorted by age and plotted.</p> <p>4) Tendency line is estimated (with the highest <math>r^2</math>)</p> <p>5) According to the tendency line, bark percentage is inter and extrapolated until year 30</p> <p>6) Both bark percentage is plotted using real and extrapolated values</p> |
| Purpose of the data | Value used to determine the project ex – ante carbon sequestration and project emission capture                                                                                                                                                                                                                                     |
| Comments            | The bark volume is a variable used in the ex-ante calculation. During field measurement, the volume of trees is estimated with bark when diameters are measured over bark                                                                                                                                                           |

|                                                                                              |                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $f_{MG,i}$                                                                                                                                                                                                                                                                                        |
| Data unit                                                                                    | Dimensionless                                                                                                                                                                                                                                                                                     |
| Description                                                                                  | Relative stock change factor for baseline management regime in stratum i of the areas of land.                                                                                                                                                                                                    |
| Source of data                                                                               | Table 6 of “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM Project” activities. V1.1.                                                                                                                                                           |
| Value applied                                                                                | 0.70                                                                                                                                                                                                                                                                                              |
| Justification of choice of data or description of measurement methods and procedures applied | Default value for Severely degraded grassland.                                                                                                                                                                                                                                                    |
| Purpose of the data                                                                          | Calculation of project emissions                                                                                                                                                                                                                                                                  |
| Comments                                                                                     | The ex-ante calculation for SOC change was modified in the verification, corrected by the modified total areas. Lands have been identified as degraded lands using the “Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities”. |

Regarding data and parameters monitored, given the changes in total planted area, changes to the parameters are expected for each monitoring period, nevertheless, these changes are included below and the corresponding section 3.1.2:

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $A_i$                                                                                                                                                                                                                                                                                                                                                                                    |
| Data unit                                                       | Ha                                                                                                                                                                                                                                                                                                                                                                                       |
| Description                                                     | Area of stratum i                                                                                                                                                                                                                                                                                                                                                                        |
| Source of data                                                  | Monitoring of strata and stand boundaries was done using a Geographical Information System (GIS)                                                                                                                                                                                                                                                                                         |
| Description of measurement methods and procedures to be applied | Strata area were measured based on cartography documents, related with GIS.                                                                                                                                                                                                                                                                                                              |
| Frequency of monitoring/recording                               | Every time the project boundaries are modified. when disturbances events take place, the project participants shall re-built the stratum and add the area of the project under disturbance in the GIS                                                                                                                                                                                    |
| Value monitored                                                 | Total area: 16,181.5 ha                                                                                                                                                                                                                                                                                                                                                                  |
| Monitoring equipment                                            | Garmin GPS, model eTrex Legend.                                                                                                                                                                                                                                                                                                                                                          |
| QA/QC procedures to be applied                                  | N/A                                                                                                                                                                                                                                                                                                                                                                                      |
| Purpose of the data                                             | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                         |
| Calculation method                                              | The value was used in equations N° 3, 12 y 24 of the Methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" (Version 03.0.0), Equations N° 7 and 13 of the Methodological tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities" (Version 02.0.0) |
| Comments                                                        | N/A                                                                                                                                                                                                                                                                                                                                                                                      |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | DBH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Data unit                                                       | Cm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Description                                                     | Diameter at Breast Height of tree                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Source of data                                                  | Field measurements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Description of measurement methods and procedures to be applied | DBH is measured at 1.3 m above ground, over the bark. In case of stem deformation at this level, measurement was done over the deformation once the stem took its normal shape, with the purpose of being conservative. DBH was measured in all trees within the plots.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Frequency of monitoring/recording                               | Every tree within sample plots                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Value monitored                                                 | Varies with stratum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Monitoring equipment                                            | In most of the cases, the instrument used for measuring DBH was a caliper model "Mantax Blue" of Haglof, Sweden. Also, for the minority of trees, it was used a diametric tape for measuring DBH.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| QA/QC procedures to be applied                                  | <p>A quality control procedure consisted in qualified personnel conducting the measurements in the first place, and the first control is conducted by contractor.</p> <p>Secondly, a random control of 5% of the plots measured is made by AF personnel, using the same data collection sheet, where unsupported errors include:</p> <ul style="list-style-type: none"> <li>- a difference of more than 3% in the DBH measured with caliper</li> </ul> <p>Instruments were checked and tested before starting the verification process. Items checked:</p> <ul style="list-style-type: none"> <li>-Correct visualization if numbers in the calliper.</li> <li>-The straightness of the calliper and the lack of mechanical problems.</li> </ul> <p>The calliper length is not a problem since it is impossible the equipment stretches.</p> <p>Bark that is not stick to the stem was removed before</p> |

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | measuring.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Purpose of the data | Calculation of project emissions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Calculation method  | <p>The trees are considered to be inside the plot if more than 50% of DBH is inside the plot.</p> <p>Diameters were measured by taking one measure, always pointing the instrument's shaft in direction to the middle of the plot.</p> <p>Parameter used indirectly in Equation N° 1 of the Methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" (Version 03.0.0); for calculation of basal area and then volume..</p> |
| Comments            | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Data unit                                                       | m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Description                                                     | Height of trees within sample plot                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Source of data                                                  | Field measurement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Description of measurement methods and procedures to be applied | <p>All trees within the plot in the case of permanent plots.</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> </ol> |

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   | <p>3. Trees that are dead, burned, or broken will be excluded from the measurement.</p> <p>In order to always measure the heights from the same location and thus avoid bias or errors, height records must always be made in the same direction. For this, the face of the tree where the measurement took place will be marked and identified with paint</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Frequency of monitoring/recording | During every monitoring, for every plot within different stratum.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Value monitored                   | Varies according to tree classes in plot                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Monitoring equipment              | Haglöf ECII-D Electronic Clino/Height Meter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| QA/QC procedures to be applied    | <p>A quality control procedure consists in qualified personnel conducting the measurements in the first place, and the first control is conducted by a contractor.</p> <p>Secondly, a random control of 5% of the plots measured is made by AF personnel, using the same data collection sheet, where unsupported errors include:</p> <p>Height measurements will not be made on those days where the wind speed exceeds scale 5 of Beaufort (30-38 km / hr), causing a great movement of the trees top (NOAA, 2020).</p> <p>- In the same way as with the DAP record, the height values will be expressed in decimeters, avoiding errors in the register.</p> <p>When referring to this electronic device, it is recommended to check the correct visualization of the display. The clinometer was always kept in safe places in order to avoid display rupture. The equipment was always full charged batteries and back up batteries were always available in case of emergency. At the same time it must previously be calibrated before each daily measurement activity.</p> <p>Make control measurements using all involved equipment (human error should be minimized at minimum with well training and cross-checked control measurement activities).</p> |

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Purpose of the data | Calculation of project emissions.                                                                                                                                                                                                                                                                                                                                                                                                          |
| Calculation method  | <p>Once the plot is delimited and all trees to be included are defined, all tree heights are measured in permanent plots. According to the measurement description.</p> <p>In order to avoid over- and under-estimations, every tree was considered inside the plot when the mark of 9.77/12.62/15.95m (radius of a circular plot of 300/500/800m<sup>2</sup>) of the measuring plot overpassed the 50% of the diameter of every tree.</p> |
| Comments            | Parameter used indirectly in Equation N° 1 of the Methodological tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities” (Version 03.0.0); for volume calculation.                                                                                                                                                                                                                |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | Ap,i                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Data unit                                                       | m <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Description                                                     | Area of sampling plot                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Source of data                                                  | Field measurement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Description of measurement methods and procedures to be applied | The center of the plot was marked with the assistance of a GPS. One staff member stayed at the center of the plot taking notes of the diameters and heights measured while the other expert of the team walked inside the plot measuring them. Both experts were always connected with a measuring tape, and every tree measured was previously checked in order to determine if the distance to the center was minor to 9.77/12.62/15.95 m (radius of a circular plot of 300/500/800m <sup>2</sup> ). |
| Frequency of monitoring/recording                               | Every plot measured in Forteko, 239 in total.                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Value monitored                                                 | Varies with every plot                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Monitoring equipment                                            | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                                |                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| QA/QC procedures to be applied | <p>In order to avoid over and under-estimations, every tree was considered inside the plot when the mark of 12.62 m (and equivalent for Eucalyptus) overpassed the 50% of the diameter of every tree.</p> <p>A minimum of 15 trees must be included per plot, if this is not so, the contractor communicates with the forest manager to define action which may include increasing plot size.</p>     |
| Purpose of the data            | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                                      |
| Calculation method             | $500m^2 = r^2(12.62) \cdot \pi$ ( <i>Pinus</i> )<br>$300m^2 = r^2(9.77) \cdot \pi$ ( <i>E. dunnii</i> )<br>$800m^2 = r^2(15.95) \cdot \pi$ ( <i>E. grandis</i> )                                                                                                                                                                                                                                      |
| Comments                       | <p>Sample plots are permanent and circular. The plots were laid down in a shapefile, positioned systematically with a random start.</p> <p>The location of the plots within the forest plantation was done with a GPS.</p> <p>The area of each plot is not a variable but a fixed value, but must be measured by its radius in order to determine the variable "number of trees within the plot".</p> |

### Baseline and additionality

The change of species for this project does not affect the project's additionality as the conclusions from the "Combined tool to identify the baseline scenario and demonstrate the additionality in A/R CDM project activities v. 0.1" are maintained. Specifically, when the barrier analysis of alternative baseline is revised (step 2 barrier analysis), there are no significant changes to alternative 2 if analyzed per paragraph (see further evidences in Appendix 1):

*(1) Forest plantation with the characteristics applied by 'Forteko' is not a common practice in the region. In fact, this production system in terms of local tradition is not well known. This forestry activity in the NE region of Uruguay started to develop in the 1990's, initially in a very different way as compared to 'Forteko's case, as a result of the forest policy implemented in 1987. In comparison with cattle grazing (more than 300 years from its introduction) it is a new form of production. Therefore, knowledge and technology for its implementation is starting to be developed and diffused in the region. There is a noticeable difference between the return periods considered by livestock producing landowners -who are used to expect a yearly income from their production-, even with earlier forest producers, who had to expect for periods of 10 or more years for return on*

*the investment. In addition, landowners in the region generally lack the capacity and equipment for conducting forestry activities.*

No changes as the analysis is forestry vs. cattle breeding activities

*(2) This alternative is also prevented by remoteness of land area, which imposes high transportation cost for wood products (developed in the investment analysis section). In terms of technology, the adoption of a 22 to 25 year rotation imposes uncertainties about wood productivity and quality; wind damages; and harvesting of thick logs, which are additional to other uncertainties applicable to shorter-rotation plantations (e.g., even longer terms for returns on investment and possible pest and disease outbreaks, among others).*

No changes. Although since the project start date the forestry industry has grown in the country, this was focused on pulp wood industries, but in the region, hard wood products still present barriers related to remoteness. The project area is located 350 km, on average, from industries (both pulp and sawmills).

*(3) There are uncertainties related to the productivity that can be reached, particularly considering that the soils in the project area are of lower quality than those soils in the North and West regions in Uruguay where most long-rotation plantations have been developed. The only growth model in Uruguay available is for Eucalyptus plantations (INIA SAG-grandis and SAG-globulus), and no models for pine plantations are available. In addition, the mentioned Eucalyptus models were validated for rotations up to 16 years, and growth rates for ages higher than that had to be estimated with a large degree of uncertainty. Adopting a long rotation implies sticking to the same genotypes for long periods, thus missing the opportunity of capitalizing on progress through plant breeding, which would be achieved by more frequent replanting. Finally, the quality of the wood to be obtained (i.e., whether it would be suitable for the high-price market it is targeted for) is also subjected to uncertainty. The underlying assumption in the design of the project activity is that logs to be obtained at clear-cut harvest will be of a quality at least similar to that of logs that could be obtained in shorter rotations.*

The area planted with *Eucalyptus* represents less than 12% of the project in the current monitoring period. The progressive replacement projected does not include a 100% replacement of pinus (see Appendix 1). Anyway, the rotation period expected for *Eucalyptus grandis* is 18-20 years, which means there were also no reliable growth models by the time. Understanding 18-20 year rotations to be long time for investment (as 22 years considered for pine plantations), same risks apply.

*(4) Another uncertainty relates to an eventual increase in felling off or damage to trees by wind storms. Intensive thinning of pine plantations is known to increase the risk of wind damage due to the opening of wide spaces within the forest that may channel the wind and increase its speed, aggravated by the vulnerability of tall trees. There is no information on an eventual increase in this vulnerability in thinned stands with very tall trees such as those with ages 20 or more, but there have been some cases of plantations losses due to strong wind storms.*

Applies both to Pinus and Eucalyptus species with similar age (18 and 22 years)

(5) *Risk of erosion within the location area is moderate to high, with moderately steep slopes which could reach 30-40%, resulting in high vulnerability of soils. Besides, considering overgrazing history during summers in the region, this alternative is subject to uncertainty about wood productivity due to the degradation process suffered by soils in the project area which, as discussed in the section above about “assessment of applicability conditions”, have lost a fraction of their net primary productivity due to grazing, aggravated by the gully erosion process.*

Applies both to Pinus and Eucalyptus species.

When additionality was analyzed in the validated PD, it concluded that only one baseline scenario was possible, and according to “Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities” that was enough proof and further steps included the common practice analysis. Still, an investment analysis was conducted to “reinforce the conclusion that forest activity in the area was not meant to be developed without being registered in a carbon scheme and generating carbon certifies”. In this sense, the results still apply today, where the IRR for the project with Eucalyptus species is still below a Benchmark IRR for the region (see Appendix 1 with detail information on variables and results).

Regarding the common practice analysis, it is stated in the PD that: “Throughout the analysis it is concluded that there are similar forest activities (in terms of scale, species, etc) in the area. However, 94% of those companies established in the area are seeking carbon finance. There was no identification of similar forest activities without requiring carbon finance (paragraph 33 of the tool). Therefore, there is no need to compare the proposed project activities to others (paragraph 34 of the tool). In conclusion, similar activities cannot be observed, then the project activity is not the baseline scenario, and hence it is additional.” This statement is not modified by the fact that Eucalyptus is replacing part of the pinus area. The additionality analysis is pertinent, with the same investment restrictions and activity uniqueness.

It can be concluded that all the deviations previously mentioned do not impact additionality, nor the appropriateness of the baseline scenario.

In conclusion, all the deviations previously mentioned do not impact neither the applicability of the methodology and/or additionality, nor the appropriateness of the baseline scenario. The changes are expected from a change in authorities and financial sustainability of the project which provide an explanation for the outcome.

### **2.2.5 Grouped Projects**

This project is not a grouped project

### **2.2.6 Risks to the Project (G1.10)**

Uruguay is one of the countries in the world with lowest risks of natural disasters. This small Nation is home to few, if any, natural disasters. There is occasional flooding, but not the sort of thing that

makes international headlines for its massive destruction. There are no earthquakes, hurricanes, volcanic activity, etc. There are also no nuclear plants in the country. The main risks identified include:

- Natural: fire, diseases and insects, wind and frost
- Human-induced risks: water and soil contamination due to agrochemicals use, natural and artificial habitats affected.
- Economic and market risks: Internal and external demand for products and national legislation changes.

Human-induced risks and impacts are considered of low significance in the Environmental Impact Assessment due to the mitigation measures in place to deal with them. No negative impacts to climate and atmosphere were identified due to the project.

All project risks are detailed in Appendix 2 in the Project Risks Table.

#### 2.2.7 Benefit Permanence (G1.11)

Forteko project will be established with a long-term perspective. The ultimate purpose is achieving long-term sustainability and improving soil quality in line with national objectives. Thus, it is important to stress that the project has not been implemented to generate GHG emissions for the purpose of their subsequent reduction, removal or destruction. 'Forteko's long term perspective and sustainability is guaranteed by FSC certification. All the project properties are covered by management plans, as stated in the project documents submitted to Uruguayan government.

There are many reasons to ensure that once a pasture land is converted into forestry in Uruguay it will remain that way in the long term. And this is even more evident for the region where the project is being developed (center-east) wherein most of the land soil was categorized by the national government as forestry priority, as well as the experience in the case of this project itself, where changes in land owner did not mean a change in economic activity.

The country has maintained for the last 30 years a state policy to incentivize the forestry sector and it is determined to continue reinforcing this path of development. These policies attracted very important investments in the forestry sector, mostly by foreign capital. Forteko's project will bring about a number of socio-economic benefits that will mostly impact its surrounding area, which is currently one of the less developed ones in the country. This would decentralize economic activity creating a development pole away from Montevideo, and other areas currently concentrating most of the economic activity in the country.

Creation of employment is one of the main social benefits of the project, together with regional economic development. Beyond an increased number of jobs, the project is expected to contribute to the development of the region in line with Uruguayan government's priority: promotion of small family businesses, increase in exports, eradication of rural poverty, incorporation of technology,

increased nationally added value, development of new productive chains and geographic decentralization of development. Forteko's project activity has already generated several job opportunities, creating nearly 600 job positions during the monitoring period. The vast majority of employees are hired by contractors. The majority of the outsourced contractor companies currently working with BDU III, are registered in Uruguay as "PYMES" (small and medium sized companies), mostly family companies hiring local workers.

Moreover, most of the production of Forteko project (wood, meat and carbon credits) will have the international market as the final destination. The main contribution of Forteko's project activity to the eradication of rural poverty will be through the generation of high quality and stable employment, in a region of Uruguay with elevated levels of poverty. A study by Carámbula and Piñeiro (2006)<sup>32</sup>, demonstrates that forestry projects oriented to the production of high quality logs, generates high positive impacts in the eradication of poverty in rural areas and reverting the process of internal migration to big cities. Another study by CPA Ferrere<sup>33</sup> done in 2017, informed that the total number of direct employees per hectare in forestry is 32 employees every 1000 hectares, while in beef production, the number of employees every 1000 hectares is 6<sup>34</sup>.

The Forteko project will produce timber that can be used for high-value products. Even though the area of planted forest grew very fast during the last decade in Uruguay, the forest industry did not follow the same trend. Most of these industries are located in the North, West and South regions, where most plantations were established and away from the project site. For the Central East region, the fact of being away from the forest industries and from the export ports are main reasons to explain the limited development of forestry plantations in the area. However, the presence of Forteko and of other similar initiatives in the area which have already secured (Guanaré, Posco Uruguay) or are also seeking carbon finance (BDU and others) will be able to induce the establishment of industries in the region. And even in the case that no industries are developed, the saw logs and veneer logs produced by Forteko could be exported through Montevideo harbour at prices which will be higher than those that could be obtained by selling pulpwood, which is the traditional wood product exported from Uruguay.

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

In terms of biodiversity, it should be noted that Uruguay has plans for the responsible use and management of soils, which have as objective the prevention and control of soil erosion and degradation. This regulation contributes for Uruguay to have sustainable agricultural production systems. Moreover, the project promotes an integrated management scheme with the ecosystem.

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<sup>32</sup> Carámbula, M. y Piñeiro, D. La Forestación En Uruguay: Cambio Demográfico y Empleo en Tres Localidades

<sup>33</sup> CPA Ferrer website: <https://www.cpaferre.com/en/>

<sup>34</sup>

[http://www.camaramercantil.com.uy/uploads/cms\\_news\\_docs/Informe%20Impacto%20Cadena%20Forestal%20CPA%20Ferrere%2022-11-17.pdf](http://www.camaramercantil.com.uy/uploads/cms_news_docs/Informe%20Impacto%20Cadena%20Forestal%20CPA%20Ferrere%2022-11-17.pdf)

In this sense, it pursues FSC standard certification, demonstrating the commitment to implement forest management practices in the long term.

The fields where Agroempresa Forestal (AF) operates, environmental assessments and impact surveys are carried out by a team of experts and communicated to communities in order to define mitigation actions. A wide range of ecosystems can be found in several parts of the country, from different types of native forests, wetlands, grasslands, stony fields, among others. Forteko carries out a characterization of the environment in each of the facilities locations and assesses the environmental features, flora and fauna, and defines the conservation areas and the necessary measures for their protection. Based on the results obtained in these studies and consultation processes, management and monitoring plans have been developed for the restoration of natural systems which may have been affected by previous practices (agricultural, farming, forestry or other activities), the conservation of natural resources and values in the influence areas (flora, fauna, soils and hydric resources) and the prevention or mitigation of environmental impact caused by forestry operations. Monitoring tasks are core to the company's management and include, in particular, regular assessments of the effects of forestry operations on the soil, water, pollution, ecosystems, as well as HVC areas impacts. In this line, studies of the fauna are carried out with the purpose of determining the effect of these operations in the species composition and distribution in the area and the possibility of controlling invasive species -such as the wild boar-.

Communities' wellbeing and communication within the project zone are part of the company's aims. Since 2011, Forteko has been involved in several presentations related to the fauna and flora of Uruguay, based on monitoring reports, including endemic diseases and mitigation actions related to ophidians located in the area, as well as rational use of resources and other subjects requested, carried out in rural schools for communities<sup>35</sup>, expected to improve education and general knowledge in children in rural schools. Moreover, work with women in the communities takes place through productive projects where Cambium monthly assisted and accompanied different projects, expecting them to become independent and able to continue in time. An example is the productive project Mujeres de La Micaela, which started in 2015. It is made up of five women who formed a committee of neighbors in charge of promoting and providing information on projects and plans for producers, worked as facilitators and started working on small scale preserved food manufacture.

In summary, the type of soils where the project was implemented, were categorized by law, as "Forest Priority Soils". Because of that, the best productive activity to perform there is forestry. Species selected (*Pinus* and *Eucalyptus*) have previously proven to be adapted to the agro-ecological conditions of the project zone<sup>36</sup>, and the financial profitability produced by the project is very likely to get the project owner to extend the project, to continue management practices that protect the credited carbon stocks beyond the length of the project crediting period (100 years). All establishments within project area are privately owned by the fund and no ongoing enforcement or disputes have been raised in the past and until now, relating to the protection of the planting area. In addition, the farms are demarcated by fences, and are correctly

<sup>35</sup> Resumen público de monitoreos ambientales y sociales (2016) Cambium Forestal Uruguay S.A; Resumen público de monitoreo BDU III. Available for VVB during validation (reference n°19).

<sup>36</sup> Porcile Maderni (2007) Crónicas del desarrollo forestal en Uruguay. p. 25-32

marked as private land. This limits external risks that could hinder the continuation of the forest when the project is over.

This means that the community benefits will be maintained beyond the lifetime of the project mainly because long rotation forest plantations, which is the main productive activity of the project, will be maintained for the lifetime of the project, and almost certainly, beyond the lifetime of the project. Moreover, all the skills and trainings that direct workers and local contractors will learn during project lifetime, will help these workers to continue working in the forestry sector and in the project region. GHG ERRs will continue beyond the lifetime of the project and probably sequestered carbon stocks will be higher than the ones presented in this report, mainly because future genetics improvements and improved planting/silvicultural technologies. Regarding biodiversity, all the protected areas that today are part of this project will have richer and better-known biodiversity after lifetime of the project, so it is expected that after project lifetime, these areas will be of much higher interest to communities and stakeholders.

## **2.3 Stakeholder Engagement**

### **2.3.1 Stakeholder Access to Project Documents (G3.1)**

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

Also, the full project description, and monitor reports are published, in Spanish, on the BDU III website for public access.

Regarding internet access, Uruguay has 88% of population with access to internet and is the only Latin America country who has secured one laptop per child and teacher in all public schools of the country. There are difference among household income, where 84% of lower income households (Quintil 1) have internet access while high income households' (Quintil 5) internet connection reach 95%. Since 2010 to 2020 the gap between high and low income households' internet connection in the country went from 66% to 11%, being technology access one of the countries' main objectives towards equality. Moreover, in the project zone there are present the "MEC centers". These are public training centers for, among others, IT technology and providing infrastructure for public access to internet, the same as public schools, where internet access is free<sup>37</sup>.

Given access to internet may still be limited within local communities, the project has also been presented to the community during FSC and VCS validation. Given its FSC certification, public

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<sup>37</sup> Total list of centers including those within project zone available at: <https://www.gub.uy/ministerio-educacion-cultura/listado-de-centros>; <https://www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/sites/agencia-gobierno-electronico-sociedad-informacion-conocimiento/files/2020-09/Informe%20EUTIC%2009%202020.pdf>

summary reports of the mentioned certification are also available to public access<sup>38</sup>. Other instances include local newspaper interviews, news programs and events where the main objective of the forestry activity are detailed<sup>39</sup>.

Monitoring reports are also published online for all stakeholders to access, and presented to communities during face-to-face training and communications.

### 2.3.2 Dissemination of Summary Project Documents (G3.1)

Along with the project's listing, the summary of project documentation has been published on VCS and CCB website for all stakeholders, so that they can obtain concise project information and development progress. Also, a summary of project description in local language is disseminated to local communities through personal contact (email) or presented in face-to-face meetings

Moreover, during annual surveys, project information is also provided. But mainly, this information is accessible through the BDU's website. These include both the Forest Management Plan, for public access, together with specific brochures describing the project characteristics and benefits. Last, FSC monitoring reports are also publicly available in the web.

### 2.3.3 Informational Meetings with Stakeholders (G3.1)

Both AF and Cambium have an active presence in the project area, communicating with the community through meetings organized at rural schools, mayor office, with community groups such as Forestry association, as well as cattle breeders in the farms, among others. These events are publicized using local media, direct contact information (telephone, WhatsApp, email) or informed during face-to-face interviews.

Regarding neighbors, part of the actions taken include the visit-or digital contact-, once a year or as demanded, of BDU's employees to neighbors living close to the project area and other stakeholders within the project zone. During these visits, after BDU employees explain the process, self-conducted interviews are complete with the form shown in Figure 2, where information on areas considered of HCV is collected from the interviewed, while contact information of the organization and future meetings is provided. Also, during these visits, stakeholders can complete the "complaints and claims section" to inform discomfort over actions implemented by the project (the complaints and claims are resolved based on specific resolution procedures detailed in section 3.1.9, and active throughout the year).

The information is collected, processed and recorded by Cambium and now AF and published in the annual monitoring report available online (both Cambium Uruguay and BDU III website)

<sup>38</sup> Public summary FSC reports  
<https://info.fsc.org/details.php?id=a023300000WS9bAAAT&type=certificate> (see reference 17)

<sup>39</sup> Available to VVB during verification

Also, the installation of signage is used as a communication tool with people passing through the areas of influence of the project and associated communities, such as "slow- down in populated areas", "do not litter" and warning signs of dangers, areas of interest (HCVs) or information signs.

|                                                                                                                           |           |                                           |  |
|---------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------|--|
|                                          |           | <b>FORMULARIO DE VISITA A VECINOS</b>     |  |
| FECHA DE VISITA                                                                                                           |           | / /                                       |  |
| PREDIO DE AF S.A. (EN ZONA DE INFLUENCIA)                                                                                 |           |                                           |  |
| NOMBRE Y APELLIDO DEL ENTREVISTADO                                                                                        |           |                                           |  |
| NOMBRE DEL ESTABLECIMIENTO/ INSTITUCIÓN/ COMERCIO                                                                         |           |                                           |  |
| DIRECCIÓN / UBICACIÓN                                                                                                     |           |                                           |  |
| LOCALIDAD / DEPARTAMENTO                                                                                                  |           |                                           |  |
| TELÉFONO/S DE CONTACTO                                                                                                    |           |                                           |  |
| DIRECCIÓN DE E-MAIL                                                                                                       |           |                                           |  |
| CONSIDERA UD. IMPORTANTE LA CONSERVACIÓN DE ÁREAS NATURALES Y/O ELEMENTOS DE VALOR PATRIMONIAL (HISTÓRICOS O CULTURALES)? |           |                                           |  |
|                                                                                                                           |           |                                           |  |
| ¿CONOCE UD. EN LOS PREDIOS DE LA EMPRESA EN LA ZONA, ALGUN LUGAR O ELEMENTO DE ESPECIAL INTERÉS PARA SU CONSERVACIÓN?     |           |                                           |  |
|                                                                                                                           |           |                                           |  |
| QUIERE UD. REALIZAR ALGUNA SUGERENCIA, OBSERVACIÓN, COMENTARIO O RECLAMO?                                                 |           |                                           |  |
|                                                                                                                           |           |                                           |  |
| <b>Información complementaria</b>                                                                                         |           |                                           |  |
| Se entregan datos de contacto de AF S.A.?                                                                                 | <b>SI</b> | <b>NO</b>                                 |  |
| Se entrega información de presentación de AF S.A.?                                                                        | <b>SI</b> | <b>NO</b>                                 |  |
| <b>ENTREVISTADO (FIRMA Y ACLARACIÓN)</b>                                                                                  |           | <b>ENTREVISTADOR (FIRMA Y ACLARACIÓN)</b> |  |
|                                                                                                                           |           |                                           |  |

Figure 2. Visit form to be completed annually by project neighbors.

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

As it is described in section 2.1.5. of PD local communities in Uruguay are not entirely depending on forest, they reside in populated centers with different businesses. Communities are not asked

to participate directly with the project. Projects' potential risks, costs and benefits are, for example, indirectly transmitted to communities through the increase of labor demand for particular activities (forest implantation). Also through ecosystem services protection (e.g. erosion control) and different In other words, communities can perceive project costs, risks and benefits in an indirect way, through market.

Only cattle breeders and beekeepers community groups are invited to use the area. The company offers grazing to neighbors or previous owners who own cattle with the aim of reducing the amount of fuel in firebreak areas and therefore the risk of fires. In addition, grazing is a way of integrating local livestock producers into the project and involving them in firefighting in the area as well. These and other risks and benefits are discussed with cattle breeders before formalizing their participation. The activity is controlled by contracts ranging from 1 to 11 months and renewed on expiry<sup>40</sup>. The conditions under which grazing takes place is recorded in each grazing contract, including information on number of animals/ha allowed, area within the farm, responsibilities of each party. During environmental assessments, the areas where cattle racing is allowed is defined, as well as the need to limit domestic animal presence related to cattle breeding culture. Moreover, communications regarding fire mitigation are presented to the community group.

The inclusion of beehives is authorized as a means of promoting the production of non-timber forest products from forests. The beekeepers are generally local. The activity is controlled by contracts ranging from 3 to 6 months, where conditions are detailed prior meeting among parties.

Then, in the case of communities, although not directly impacted by the project, communication to communities on cost, risks and benefits take place. In this line, and as mentioned in section 2.3.7, an Environmental Impact Assessment is requested by public authorities before establishing the forest for those projects affecting more than 100ha. These EIA's were presented in the DINAMA web page. Any person, company or entity from the project area or not, had the opportunity to comment and influence the project design.

Moreover, different formal and informal meetings take place with the community, and other stakeholders, throughout the projects lifetime in order to present the project's risk and benefits analysis. In particular, during the public consultation during FSC validation. In the case of that which took place in December 2019 the evaluation was presented before a wide group of stakeholders<sup>41</sup>, who were also asked for their views on the forest management issues that were considered relevant as well. Other informal meeting, where cost, risk and benefits are presented include, as mentioned in section 2.3.3, meetings organized at rural schools<sup>42</sup>, mayor office, with community groups such as Forestry association, as well as cattle breeders in the farms, among others.

In terms of risks, the project organizes training and communication campaigns around fire risks in the area, in order to, not only tackle project's own risks, but neighbours' usual practices which can

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<sup>40</sup> Contract examples available to VVB with the detail on cost, risk and benefits specified

<sup>41</sup> Evidence available for VVB during validation

<sup>42</sup> Forestry impact presentation available to VVB

jeopardize the communities safety. Regarding workers, there are impact assessments in place to identify and monitor risks for workers, and training to communicate and mitigate them<sup>43</sup>.

Costs, risks and benefits of the project's activities are analysed annually during the community survey which also allow the company to share information on the project and receive comments from communities. In this sense, impacts are anticipated to communities in order to work mitigation or correction actions. One example is the case of transport impact on rural roads, where a letter is provided to each neighbour impacted during high circulation season (harvest season, for example) to anticipate on possible risks of the activity. All impacts are mitigated or later corrected. This is evidenced in the community survey results<sup>44</sup>.

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

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

However, the company decides to actively communicate about this process, so any stakeholder can be informed and comment about it. The description of the validation and verification process was informed in detail to all staff members of the company through internal communication. Monitoring results are communicated to stakeholders both through documentation accessible at the website and in person, during monitoring report presentations.

During both, validation and verification process, stakeholders will be informed with due anticipation prior to the date of the process and invited to participate through one on one, and group interviews with the verification team.

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

The local stakeholders identified within project zone in section 2.1.6 of PD and listed in 2.1.7, will be informed in advance of the VVB visit, regarding the validation and verification process. As long as the audit plan has been settled, the project owner will arrange a stakeholder meeting with the auditor during the site visit.

Invitation will be done using appropriate means of communication, all the stakeholders will be informed via phone, mail or WhatsApp regarding the project process and the auditor's visit. Stakeholders identified in section 2.1.6 of PD will be contacted and specifically invited those selected by the VVB in each case.

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<sup>43</sup> Complete documentation on work risk assessment and training available to VVB

<sup>44</sup> Annual results available to VVB (see reference 19)

### 2.3.7 Stakeholder Consultation (G3.4)

The project was first implemented by Cambium Forestal Uruguay SA in 2007. It must be noted that all the forestry plantations were done based on the National Forestry (Law No. 15.939 of December, 1987). Forteko forest plantations are done entirely on private land. An Environmental Impact Assessment is requested by public authorities before establishing the forest for those projects affecting more than 100ha<sup>45</sup>. These EIA's were presented in the DINAMA web page. Any person, company or entity from the project area or not, had the opportunity to comment and influence the project design. All the plots submitted for environmental approval have been classified as category A, therefore, their negative environmental impacts are considered non-significant by the national regulations. Anyway, all the planted areas must meet local regulations on maximum size of plantations, distance to water streams, neighbors' fences, power lines, etc. established by national regulation (public sector's stakeholder).

In the case of previous owners, Cambium Forestal Uruguay SA, being FSC certified as well, all the certification requirements were met, including a stakeholder consultation. At first, although regular stakeholder consultations took place, there was no documentation of these. In 2009 after an FSC negative evaluation of these, Cambium developed a spreadsheet of public consultation in which supervisors would report all findings during these events (according to the FSC Public Summary Report 2009<sup>46</sup>).

Cambium Forestal also had a Social Management Plan in place which included procedure 7.8: claims, consultation and request management. The company registered them all in electronic spreadsheets where each farm supervisor could update information on each comment situation and mitigation plan implemented.

Since the beginning of 2015, AF has in place a mechanism for on-going communication with local stakeholders and implemented with the Forteko project once owned. The mechanism consists in local communities' surveys to identify their perception of forestry activity' negative impacts and to analyze the actions to be taken to mitigate these impacts. To implement the surveys', AF personnel organize talks at schools project' lands and invite the community to assist and to ask questions on forestry activities and its impacts in the region. The assistants receive the survey asking about the social, economic and environmental impacts they perceive. At the end of the talk, the surveys are collected and later analyzed to establish a negative impact mitigation action plan.

As it is explained above, stakeholder's participation in the project is done through formal and informal channels<sup>47</sup>. There are some types of stakeholders -such as forest contractors' enterprises, beef cattle breeders or rural communities- that can be affected (positively or negatively) by the project. Forest contractors' enterprises hire personnel from the surrounding areas, and beef cattle breeders are sometimes previous land owners living in the area.

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<sup>45</sup> Environmental and forestry approvals available for VVB

<sup>46</sup> Available at: <https://fsc.secure.force.com/servlet/servlet.FileDownload?file=00P40000003dInuEAE>

<sup>47</sup> Community surveys on project's impact available (see reference 19)

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

Another example worth commenting is BDU's approach to transport impacts in the community. After identifying mitigation measures priority defined were not enough to reduce transport impacts in the area, both communication strategy and measures taken were changed. First, mapping of identified project zone most impacted by the activity was conducted and special attention to communicate future increase in transport circulation to community was paid (especially during harvest seasons). This communication was first conducted through written letters<sup>48</sup>, and now is in the process of being updated to Whatsapp groups with local representatives. Regarding measures, apart from watering the roads to avoid dust increase in the area, after each high circulation season, rural roads are repaired.

Regarding High Valued Conservation areas, within the project area, the definition of these areas is done together with the community and experts consulted, in line with FSC standards<sup>49</sup>. In this line both, annual surveys and specific community consultation, are conducted to listen to the community, community groups and other stakeholders in terms of HCV areas definition. In the case of historic sites, the community in the project zone is consulted annually about the knowledge, usage, and value of the site in order to define the category of conservation.

Another example is when communities or a community group, together with Forteko project, identify a need which the company can help with and analyze the best way forward. Examples include rural roads construction, productive project guidance for small rural community groups, monuments installation, materials and workforce to paint or maintain rural schools, among others activities where main inputs are provided by the companies<sup>50</sup>.

### **2.3.8 Continued Consultation and Adaptive Management (G3.4)**

As already shown in the previous chapter, there are permanently open channels to communicate with the project developer. A Community Monitoring Plan is carried out, mainly assessing the evolution of the local communities with regard to the forestry sector in general, and in relation to the project's actions in particular. This monitoring is aimed at identifying the positive and negative impacts of the activity on the social environment, and is carried out based on the direct and sustained link between company employees and members of the local communities.

As it is described in section 2.3.3, stakeholders can raise their comments or suggestions in the "Neighbors visit form" and the "complaints and claims" section (Figure 2). The project owner will

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<sup>48</sup> Letter shared to VVB during verification

<sup>49</sup> Public consultation on HCV areas documentation available to VVB

<sup>50</sup> List of projects and activities with communities available for VVB in shared Google folder.

check the forms regularly and collect all the comments received and adapt the Management Plan if necessary. All project documents available in BDU III's website are updated regularly according to need.

The Forest Management Plan<sup>51</sup>, which is available online, specifies the Sustainable Forestry Policy for the company which includes the following items related to the relationship with the communities and communication:

- Seeks minimum negative impacts from project processes for their employees and the surrounding environment by complying with applicable regulations and requirements.
- Seeks to contribute to the economic and social development of local communities through the generation and valorization of forestry work
- Make sure that our employees are trained in a way that they are responsible and feel committed to the environment and their daily jobs.
- Provides employees, adjacent communities and other interested groups with relevant and appropriate information about the environmental and social quality with which the operations are conducted.
- Encourage the essential suppliers of the AF GROUP to comply with the Sustainable Forest Management Policy.

In the same line, the "General Manual for Forest Management", which is available and communicated to all employees includes specific items as well:

- At all times you should try to be good neighbors, maintain fluid channels of communication and respect patterns of coexistence.
- Promote the harmonious integration of the company in the short and long term in local communities.
- Improve the level of information of local communities regarding forestry activity in general and the management of Forteko in particular.
- Prevent or mitigate undesirable impacts of forestry activity in the social environment.
- Keep updated the lists of interested parties and contact forms. Ensure that interested parties know ways of communicating with the company.
- All communications received (complaints / claims, requests, invitations, thanks or other interested parties) must be reported to the respective management.

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<sup>51</sup> Sustainable Forest Policy in section 1.3 of Forest Management Plan

-It is important to take care of the deadlines between when a complaint or complaint is received, and the corresponding follow-up is given. For the first contact and / or first response should not have been more than two weeks, or less, if the case requires speed. In the following instances of the handling of the matter, one must act in a responsible manner, trying to minimize the time until the resolution of the conflict.

-The management of the company, or whoever it designates, will be responsible for the resolution of all the communications that have to be answered.

-To resolve conflicts, proceed in accordance with INS 03 -PROCEDIMIENTO DE RESOLUCIÓN DE CONFLICTOS, and complete the corresponding internal form.

Throughout the year, activities are carried out in the communities by the Company's personnel, which allow to:

- a) Maintain an updated information base on relevant actors identified by the company.
- b) Get to know and adapt to the customs of local communities.
- c) Make the company known as a "neighbor" and maintain this link.
- d) Detect communities' basic needs that can be met by the company, especially those related to training.
- e) Support local initiatives when possible.

The registration of complaints from the Forteko project' neighbors, contractors, etc. is also used as an on-going communication system with local stakeholders. The External Adviser in charge of AF Management System is in charge of registering the complaints in the corresponding form. Once a complaint is registered, its treatment and deadlines are defined and the complainant is notified about the treatment that will be given in line with the detailed "Procedure to solve social and/or illegal activities conflicts or complaints"<sup>52</sup> that AF has in place since 2015, and is described in the FSC Certification Report. This procedure applies to any social complaint including lands' right of use.

### **2.3.9 Stakeholder Consultation Channels (G3.5)**

Part of the communication with communities consist in verbal communication from the company' workers towards them. Forteko's workers are permanently present in the project area and they communicate with communities and stakeholders. Contact data of the referenced authority for the project's area are publicly available in the properties. Evidence of the effectiveness of this

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<sup>52</sup> Available to VVB during verification

communication channels can we found in the FSC summary reports where all the interviews are familiar with activities taking place and communication channels<sup>53</sup>.

Both Cambium and BDU III web page includes information regarding each project, and is annually updated with its monitor reports which include different indicators, including the analysis of internal auditing and the information from the neighbor's survey forms. In the case of BDU web page it contains a special section for comments. Moreover all communications and claims are to be reported to the manager within 10 days and a meeting is scheduled within 30 days.

Last, AF has also implemented a mechanism to prevent complaints. It consists in analyzing the impact of future actions that will be taken by AF. For example, harvesting of a certain area will increase truck circulation in a public road, generating modifications to the regular activity of the zone. AF staff anticipates this situation by visiting the neighbors that could be affected, explaining the activities that will be implemented and leaving a contact telephone to contact them in case of need, followed by different mitigation measures to reduce negative impacts.

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

Forteko project has open channels to enable the effective participation of all communities. The "complaint form" and "visit to neighbor form" is a way for communication to communities and community groups. These channels are open to any culture and gender. Stakeholder identification is based on the level of relation to the project so no discrimination in terms of culture or gender is done. Nevertheless, taking into consideration the capacity to access or use electronic devices, for example, printed options are always available at the time of conducting surveys and communicate.

As previously mentioned, regarding HCV areas, these are defined together with the community, starting with a professional consultancy of the area, but also following any comment raised by neighbors regarding an important site/area for them. Then a community consultation takes place in order to communicate findings and define the category of conservation.

At the same time, the company's active regular monitoring report meetings take place, providing an opportunity for the community to raise concerns or comments. Also, when AF conducts capacitations and presentations at rural schools, regarding endemic diseases -or other requested subjects-, or during community work activities such as painting a school, employees are trained to receive and formalize requests/claims.

The program to support and assist local communities, public schools, public entities (firefighters, police) among other stakeholders in need, is based on identifying together problems solvable by the company, with donations of various types<sup>54</sup>: from materials goods (firewood, tools, and school supplies), to staff time (educational presentations in schools, technical assistance and participation in productive projects). These are needs and projects identified and designed by the community. Both Cambium and AF are committed to promote and enhance the well-being of the community

<sup>53</sup> FSC reports available with the corresponding section and public comments (see reference 17).

<sup>54</sup> A complete and detailed list of donations is available for VVB during validation, under reference 52.

### 2.3.11 Anti-Discrimination Assurance (G3.7)

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

According to International Labour Convention (ILC) 190: "Each Member shall adopt laws and policies which guarantee the right to equality and non-discrimination in employment and occupation, including women as well as men workers (...)"

National Law No 15903 states, in Article 289, that "violations of international labour conventions, laws, decrees, resolutions, awards and collective agreements, whose control corresponds to the General Inspectorate of Labour and Social Security (IGTSS) are punishable by reprimand, fine or closure of the establishment".

Article 6 of Decree 186/004 states as very serious offences "actions or omissions involving discrimination in working conditions on grounds of sex, nationality, marital status, race, social status, political and religious beliefs and membership or non-membership of trade unions" and states in Article 13 that "very serious offences are punishable in their minimum degree with a fine of 100 to 110 day's wages; at the medium level, from one hundred and eleven to one hundred and twenty-five daily wages, and at a maximum level, from one hundred and twenty-six to one hundred and fifty daily wages, for each worker affected".

Lay No 17.817 also declares the fight against racism, xenophobia and all other forms of discrimination to be of national interest.

Forteko has an Operating Framework Guide <sup>55</sup> where it is clearly explained that discrimination attitudes are totally forbidden both internally and among its contractors: "any type of discrimination must be avoided in any instance by reason of gender, race, religion, political or other orientation".

### 2.3.12 Grievances (G3.8)

For the first period of the project, claims have been registered by Cambium Forestal, these have shown an important reduction over the years, leading to no grievances recorded by AF since 2017. The procedure described in PD was implemented solving conflicts raised by neighbors.

The registration of complaints from the Forteko project' neighbors, contractors, etc. is also used as an on-going communication system with local stakeholders. The procedure to solve social and/or illegal activities conflicts or complaints is in place since 2008. This procedure applies to any social complaint including lands' right of use, fires, illegal activity. It clearly explains how to proceed once they receive or detect a conflict with any third party. In the case of BDU the procedure details:

-If complaints or disputes are received, either directly or through third parties or communication means, BDU will act according to the conflict resolution procedures described in the manual.

-Complaints or complaints transmitted in the field have to be transmitted to forest managers in written within 10 days, who will attend them according to their powers.

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<sup>55</sup> This is detail in the section "Code of ethics" available to VVB

-If needed, a meeting between the forest manager and impacted stakeholder/s will be scheduled within 30 days.

-In the meeting pertinence of the claim and possible solutions are defined, seeking to reach a positive answer for all the parties involved.

-Resources needed to implement the proposal are analyzed and deadlines and responsibilities for the tasks are established

-Proposal is presented to the Director for its approval

-Proposal is implemented

-In the case the claim is not pertinent, a written response is sent and the claim is archived.

-If the dispute cannot be resolved, for example land tenure, the activity is stopped till the conflict is solved.

-A neutral third party takes part in order to moderate between parties, seeking to solve the conflict before trial. In Uruguay, by law, prior to the resolution of a labour dispute, there is always a conciliation between both parties, where a third party, in this case the Ministry of Labour, acts as moderator, and if an agreement is not reached, the dispute goes to trial. In the same line, for other conflicts types, the organization has the same policy and seeks for third party participation to reach an agreement before going to trial. This third party is usually a stakeholder with knowledge on the subject of conflict, for example, researchers from INIA or university, among others.

The General Manager will designate a person responsible for collecting and processing the information regarding all the complaints received by the company, who will keep record of them and their resolution status. The External Adviser in charge of AF Management System is in charge of registering the complaints in the corresponding form. Once a complaint is registered, its treatment and deadlines are defined and the complainant is notified about the treatment that will be given. Once the treatment is finished, the complainant is consulted about his satisfaction with the result. If he agrees with the result, the complaint is closed. Otherwise, the procedure is repeated until the complainant is satisfied. <sup>56 57</sup>

In the case of illegal activity, there is a monitoring plan in place. Once noticed, the activity must be instantly reported to the harvest manager in charge. Depending on the type of activity, it is first resolved within the parties involved (if it is people fishing, for example) and if it cannot be resolved, a report will be made at the nearest police station. If the activity threatens the integrity of AF assets, a report is made to the police.

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<sup>56</sup> The surveys and complaints mechanisms are established in Chapter 11 (Monitoring System) of BDU' Forestry Management Plan (see reference 53)

<sup>57</sup> The survey form, the 2017 surveys analysis and BDU social monitoring plan and registries available for the VVB at validation (see reference 19)

### 2.3.13 Worker Training (G3.9)

The project owner and group of experts provide technical advice and technical training to project staff and personnel from forest contractors companies (these last when the contractor has no capacity to manage it itself). These companies usually contract people from the surrounding areas, belonging to the neighboring communities to the project area.

All the workers related to the project must be trained in order to perform the activities with adherence to the Principles & Criteria of the Forest Stewardship Council ® (FSC ®) for forest management and chain of custody. Both, direct employees and contractors working in Forteko project are included. The company's "Annual Capacitation Plan" includes the following training courses, among others (list in figure 3):

- Induction for new contractors: Orientation and training activities to inform and establish the AF-BDU management guidelines to those responsible for the contractor companies and their health and safety services
- AF Security and General Policy: AF-BDU Management Policy; Continuous improvement; FSC Principles & Criteria; Occupational Health and Safety; Care of the environment; Social Responsibility, Labour Rights and Duties.
- Security commission: safety and continuous improvement
- Health and First Aid
- Investigation of incidents contractors supervisors
- Procedures during emergencies
- Risks
- FSC Principles and criteria
- Fire control

Every training is recorded in a template, with information about the topic, date, responsibility, etc. The Annual Training Plan and the complete list of trained people in the different topics (biodiversity, FSC, etc.), in the last years, will be available for the VVB if necessary.

Direct AF-BDU employees are also trained in other topics. The following is a list of the courses taken by personnel of different areas<sup>58</sup>:

- Communication skills

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<sup>58</sup> Complete capacitation plan available for VVB during validation (see reference n° 45).

- English as a second language
- Leadership
- Negotiation

|  |                                                 | PLAN ANUAL DE CAPACITACION A CONTRATISTAS |                                      |                           |                | Cód.: Reg049<br>Rev: 0<br><br>AÑO 2021 |                  |                 |
|-----------------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------------|--------------------------------------|---------------------------|----------------|----------------------------------------|------------------|-----------------|
| PLANIFICADO                                                                       |                                                 |                                           |                                      |                           |                | REALIZADO                              |                  |                 |
| CONTRATISTA<br>COMUNIDAD                                                          | CURSO/ACTIVIDAD                                 | DURACION (HORAS)                          | CANT. ASISTENTES                     | CAPACITADOR               | FECHA PREVISTA | DURACION (HORAS)                       | CANT. ASISTENTES | FECHA REALIZADO |
| Todos                                                                             | Inducción en Seguridad                          | 1                                         | 100 %<br>personal del<br>contratista | Técnico<br>Prevencionista | Enero          |                                        |                  |                 |
| Todos                                                                             | Difusión del Plan de Seguridad y Política de AF | 1                                         | 100 %<br>personal del<br>contratista | Técnico<br>Prevencionista | Febrero        |                                        |                  |                 |
| Todos                                                                             | Comisión de Seguridad                           | 1                                         | 100 %<br>personal del<br>contratista | Técnico<br>Prevencionista | Marzo          |                                        |                  |                 |
| Todos                                                                             | Primeros auxilios Basico                        | 1                                         | 100 %<br>personal del<br>contratista | Técnico<br>Prevencionista | Abril          |                                        |                  |                 |
| Todos                                                                             | Investigacion de Accidente                      | 1                                         | 100 %<br>personal del<br>contratista | Técnico<br>Prevencionista | Mayo           |                                        |                  |                 |
| Todos                                                                             | Procedimiento Ante Emergencias                  | 1                                         | 100 %<br>personal del<br>contratista | Técnico<br>Prevencionista | Junio          |                                        |                  |                 |
| Todos                                                                             | Riesgo a los que se esta expuesto               | 1                                         | 100 %<br>personal del<br>contratista | Técnico<br>Prevencionista | Julio          |                                        |                  |                 |
| Todos                                                                             | Riesgo a los que se esta expuesto               | 1                                         | 100 %<br>personal del<br>contratista | Técnico<br>Prevencionista | Agosto         |                                        |                  |                 |
| Todos                                                                             | Riesgo a los que se esta expuesto               | 1                                         | 100 %<br>personal del<br>contratista | Técnico<br>Prevencionista | Setiemb<br>re  |                                        |                  |                 |
| Todos                                                                             | Riesgo a los que se esta expuesto               | 1                                         | 100 %<br>personal del<br>contratista | Técnico<br>Prevencionista | Octubre        |                                        |                  |                 |
| Todos                                                                             | Principios y criterios FSC                      | 1                                         | 100 %<br>personal del<br>contratista | Técnico<br>Prevencionista | Noviem<br>bre  |                                        |                  |                 |
| Todos                                                                             | Incendios                                       | 1                                         | 100 %<br>personal del<br>contratista | Técnico<br>Prevencionista | Diciemb<br>re  |                                        |                  |                 |
| Aprobado por: Dan Guapura<br>Fecha: 18/01/2021                                    |                                                 |                                           |                                      |                           |                |                                        |                  |                 |

Figure 3: 2021 Capacitation plan for contractors

### **2.3.14 Community Employment Opportunities (G3.10)**

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

All people from the region are given an equal opportunity to fill all work positions if the job requirements are met. A transparent system of contracts is available, through price calls to award long-term contracts and permanent evaluations of suppliers are carried out.

According to the records corresponding only for the years 2016 – 2020 during the implementation of the project, forestry activities (plantation, harvest, sawmills and road works) conducted by contracted companies, translates into a labor of more than 100 new workers per year.

From the total number of contractors working for Forteko, it is estimated that around 82% of these contractors are living in the project area departments<sup>59</sup>.

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

Since 2015, the company has a formal system to record and centralize the information of subcontracted companies, where all the data provided is available, based on the number of operators per company, which allows the documentation of the activity, as well as the training history carried out by the Operators, both by the contracting companies and by BDU III.

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

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

Forestry in the country has its own regulation for labor conditions (Decree 372/99), on top of a large number of norms which affect any activity. This decree was developed with the active participation of the forest producers, and basically defines several rules for safety, health and living conditions of forest workers. It establishes the norms that must be considered in the performance of the different tasks in order to cover all aspects related to the health and safety of forestry employees. It regulates the use of personal protective equipment in accordance with each task (including agrochemicals), the conditions that must be met by forest workers' accommodation, and the characteristics of canteens when they are used in the forest area, among others.

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<sup>59</sup> EIS Terena S.A (2018) Relevamiento de empleados. Survey conducted by the company who previously owned some of AF's farms within its employees but can be extrapolated to BDU employees given the same employment conditions.

Uruguay also has a National Code of Good Forestry Practices applicable to the forestry sector, which is a set of prescriptions and work guidelines for forestry workers. This code is of voluntary implementation, but it is enforceable at the level of the FSC certification standard.

Another important regulation relates with the minimum wage regime. In Uruguay, the law promotes the appointment of sectorial three-party committees<sup>60</sup> (government, workers and companies) to discuss worker categories and minimum wages applicable to each category. The agreements reached by these committees are mandatory for all the companies in the corresponding sector. Historically, rural activities were not included in these committees, and minimum wages were fixed by decrees. In 2005, the forest companies, the forest workers and the government reached the first ever agreement for a minimum wage regime in rural activity.

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

Forest industry workers are organized in a specific union. SOIMA (Uruguay's Wood Industries Workers Union). As of 2014, the Union is presented as one of the strongest in the country and has negotiated significant improvements in wage conditions.

*As the Project follows FSC standards (as demonstrated), the working conditions are achieved as the different FSC annual summary reports show<sup>61</sup>.* Both Cambium and FSC summary reports show that the companies monitor, report and comply with these measures. Moreover, they request same compliance to all the contractors involved. As mentioned in the previous section, a system is in place to monitor the compliance of the legal standards in the sector, including contractors' workers<sup>62</sup>. Moreover, AF and FSC principles and policies (communicated during training to all workers) include code of ethics, anti-discrimination, security, among other rights for workers<sup>63</sup>.

### **2.3.16 Occupational Safety Assessment (G3.12)**

Forteko project considers the Safety and Health of the people, and of everyone directly or indirectly related to the activities, to be of the utmost importance. The company has implemented a system, coordinated by prevention technicians, oriented to the care of occupational safety, well-being and health risks of the personnel who work in the field. The system encompasses, each and every one of the employees and contractors are committed to take care of their own safety as well as their co-workers'.

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<sup>60</sup> These committees are called "Consejos de Salarios" in Spanish.

<sup>61</sup> All FSC annual summary reports available to VVB during validation (see reference 17)

<sup>62</sup> Third party service scope of work available to VVB

<sup>63</sup> Principles and policies available to VVB during validation

Safety management is treated as a continuous self-improvement process which materializes in a systematic process of risks identification, assessment and control which requires the participation of everyone. In this line risk assessments are conducted for the different activities in the project, with the corresponding evaluation in line with the safety plan. Contractors are also evaluated through a registry they are requested to fill<sup>64</sup>.

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

### **Safety training and dissemination**

In Forteko, strong emphasis on the training and awareness of the personnel and the people living in the area where it develops its activities is implemented. A continuous follow-up of the work conditions and facilities is performed in all the sites where the company operates. Continuous training and teaching is done and the exchange of experience among contractors is promoted. All observations and incident records are processed systematically in order to obtain statistics which allow the detection of issues which require special attention<sup>65</sup>. If there are accidents, a relevant investigation is carried out to reduce future risks.

The project has a Continuous Training Program structured according to the detected needs. The objective is clear: self-protection; the company wants every individual involved to embrace safety measures as a value. The project owner implemented health and safety practices to protect workers from occupational safety and health hazards. These practices shall, proportionate to scale, intensity and risk of management activities, meet or exceed the recommendations of the ILO Code of Practice on Safety and Health in Forestry Work.

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

### **Risk assessment**

The environmental impacts assessment conducted in the properties identifies those impacts on workers related to forestry activity. Moreover, a specific impact assessment regarding agrochemicals use was conducted and results are available to VVB during verification (see figure below). In this line, only trained employees in specific agrochemicals application procedures are authorized to manipulate them.

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<sup>64</sup> All information available for VVB during verification (risk assessments including agrochemicals) see reference n° 45

<sup>65</sup> Annual Monitoring Report includes an indicator on accidents per year, results for 2017-2020 available for VVB

All accidents are reported and monitored in the annual summary report. During the verification period accidents related mainly to pruning activities are reported.

|                                                                                        |                                      |                                             |                     |
|----------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------|---------------------|
| CÓDIGO ID                                                                              | Fipronil                             | Principio activo                            |                     |
| FECHA                                                                                  | 15-mar-21                            | Fipronil                                    |                     |
| Tasas de aplicación (base producto comercial)                                          | Unidades                             | Tasas de aplicación (base principio activo) | Unidades            |
| 5,00E+00                                                                               | kg producto comercial / ha efectiva* | 1,50E-04                                    | kg p.a. / ha        |
| CÓDIGO ID                                                                              | Fipronil                             |                                             |                     |
| ID Riesgo                                                                              | Indicadores riesgo                   | Grupo receptor                              | Datos del escenario |
| SALUD OCUPACIONAL - OPERACIÓN NORMAL                                                   |                                      |                                             |                     |
| Código                                                                                 | Nº                                   | HI                                          | HI cáncer           |
| SON                                                                                    | 1                                    | Se HI-0.8-0.9<br>HI-0.1                     |                     |
| SALUD OCUPACIONAL - ACCIDENTES LABORALES                                               |                                      |                                             |                     |
| Código                                                                                 | Nº                                   | HI Superior                                 | HI Central          |
| SO-Ac                                                                                  | 1                                    | Todos los HI-1                              |                     |
| SALUD DE POBLACIÓN - OPERACIÓN NORMAL - EXPOSICIÓN AGUDA (concentración máxima diaria) |                                      |                                             |                     |
| Código                                                                                 | Nº                                   | HI Superior                                 | HI Central          |
| SPN-A                                                                                  | 1                                    | Todos los HI-1                              |                     |

Figure 4. Part of the risk analysis conducted for Fipronil use.

## 2.4 Management Capacity

### 2.4.1 Required Technical Skills (G4.2)

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

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

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

All the workers (both own personnel as well as contractors) will be trained in order to perform the activities with adherence to the Principles & Criteria of the Forest Stewardship Council® (FSC®) for forest management and chain of custody. More than 660 employees (direct employees and contractors) work in Forteko project. These are specialized in engineering, forestry, administrative and technical. All these employees are included in the company's "Annual Capacitation Plan"<sup>66</sup>.

<sup>66</sup> Documentation available to VVB see reference n° 45

AF has a team dedicated to the implementation and monitoring of the FSC principles regarding social and environmental aspects, in line with project implementation plans (see personnel qualifications in reference folder).

Regarding forest inventory monitoring, third party team of experts is hired to conduct the monitoring, while Forteko project has a technical team, within the planning area, in charge of controlling and analyzing data results obtained from a systematic tool which makes biomass estimations.

Moreover, regarding carbon credits, the project team works together with a consultancy firm which provides services and constant support in the climate and carbon aspects of the project.

#### **2.4.2 Management Team Experience (G4.2)**

Forteko project is proposed, designed, implemented, operated and administered by Agroempresa Forestal (AF) on behalf of "Fideicomiso Financiero Forestal Bosques del Uruguay" (BDU, the trust fund). AF has a long track record in managing forests. It started its activities in Uruguay in 2000 as a forestry services company, and expanded to Chile and Brazil in 2007 and 2010 respectively. Currently AF offers services throughout the forest growth stages from consulting to forest lands management services. The company supervises more than 50,000 hectares per annum only in Uruguay, plus another 50,000 hectares in Chile and Brazil. Its main clients are responsible for more than 80% of Uruguay's afforested area (UPM, Weyerhaeuser, Montes del Plata, Arauco, etc).

AF has a professional, highly specialized and fully independent team composed by 8 agricultural engineers, 19 foresters and field supervisors and 8 administrative staff. Also 40 forestry services companies are associated with AF employing 600 people. This makes AF a market leader in the provision of forest services.

The project owner has many years in sustainable forest management projects, having been certified under FSC, for which it has developed capacities to interact with different types of actors, and as a result, it has established cooperation agreements with local governments, companies, producer organizations and local communities. It has also developed a system applicable to environmental projects, which has effective tools and methodologies to have effective control over the interventions carried out.

The company manages its forest plantations integrated with other land uses, optimizing the management of natural resources in a responsible manner in accordance with the companies' sustainable forest management policy:

✓ *The Forests that make up the "GRUPO AGRO EMPRESA FORESTAL" are committed to the environment, for this reason we make an efficient and rational use of natural resources, minimizing the use of pesticides and not using those that are prohibited.*

✓ *The respect and protection of these resources are in line with our commitment towards continuous improvement.*

- ✓ *We ensure that our operating processes minimize negative impacts on our employees and the environment, safeguarding their health and safety. To this end, we comply with applicable regulations and requirements.*
- ✓ *We seek to contribute to the economic and social development of our local communities through the generation and valorization of forestry work.*
- ✓ *We ensure that our employees are trained so that they are responsible and committed to the environment and their daily work.*
- ✓ *We provide our employees, adjacent communities and other stakeholders with relevant and appropriate information about the environmental and social quality of our operations.*
- ✓ *We encourage the AF GROUP's key suppliers to comply with our Sustainable Forest Management Policy.*

AF GROUP works according to economic, social and environmental principles that demonstrate a long-term commitment to sustainable environmental; complying with the Principles and Criteria of the Forest Stewardship Council <sup>TM</sup> (FSC®).

Previously to AF, Cambium Forestal S.A provided its consultancy and management services to Forestal Tekoayhu. Cámbium Forestal Uruguay S.A. is a company dedicated to manage forestry businesses and assets of national and foreign investors. Cámbium also provides international consulting services in countries such as Argentina, Brazil, South Africa, New Zealand, USA and Australia, in the areas of forestry market, sawmills, plantation management, mapping, economic evaluation, strategic, tactical and operational planning of forestry projects.

In Uruguay, Cámbium Forestal Uruguay S.A. has its head office in Montevideo and manages the ownership of four companies, dedicated to the management of forest plantations with the objectives of solid and pulpwood. In this way, it is the administrator of the Cámbium Forestal Uruguay group, for the purposes of FSC certification, with the FSC certificate. FSC certification, with certificate number: GFA-FM/COC-001693.

In relation to the carbon component of the project, Carbosur SRL is the consultant hired in charge. Carbosur has been hired by *Forteko* as the contractor in charge of managing all aspects related to VCS registration, project validation, monitoring and verification. Carbosur has experience with VCS forest projects, having effectively registered six afforestation projects under the VCS (at the time of Forteko validation). In addition, Carbosur has vast experience with the CDM and VCS, having successfully led the registration of one A/R CDM project (#3845), and having contributed significantly to the development of the first consolidated methodology for A/R CDM projects (ARACM0001), which is the one used for *Forteko* project. Carbosur also proposed to the A/R Working Group of the CDM a tool for accounting soil organic carbon in A/R CDM projects, which was later approved, with modifications, by the CDM Executive Board.

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

Not applicable

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

The project developer is legally registered company in Uruguay, and according to the public information listed in National Enterprise Credit Information Publicity System, none of them were involved in or complicit in any form of corruption such as bribery, embezzlement, fraud, favoritism, cronyism, nepotism, extortion, and collusion.

BDU III Trust's objective is to structure a long-term investment alternative supported by a tangible asset that increases its value throughout time and by a strong management plan<sup>67</sup>. Following the highest productive, environmental and social standards, and aiming to attain a production of high quality timber, the trust will offer pension fund investors reasonable long term profits.

The novelty of this trust lies in the fact of being the first one in the history of the country presenting a public offer at Montevideo stock exchange and the first one that convinces a pension fund (called AFAP in Uruguay) to invest in this type of project with physical assets and productive risks. In general, these funds invest in low risk government bonds which offer similar rates of return but at a much lower risk.

Among the values promoted by the trust are: excellence in the performance, accountability and ethics. In order to convince the pension funds to invest money in the trust many aspect of Forteko project were highlighted, being climate change mitigation, sustainability and carbon credits incomes the most relevant ones. The endeavor was not easy though. In fact, in the last days prior to the certificated issuance the whole process was close to failing given the negative pressure from some of the AFAPs, who were reluctant to commit before the IPO.

In order to become operative, the Trust had to obtain the approval of its business plan from the president of the country and the Central Bank of Uruguay.

The total investment of the project in year zero was 50 million USD. Based on this information it is possible to determine that the project cash flow breakeven point is 11 years and 11.4 months.

Regarding Forestal Tekoayhu, its financial health was demonstrated in the validation process under VCS.

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

Although Uruguay in many aspects already has regulations in line with those established by the anti-corruption Convention, on the one hand of a preventive nature and on the other repressive, there is still no anti-corruption law in Uruguay for the private sector.

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<sup>67</sup> Prospectos and annual risk assessments are available in BDU website:  
<https://www.bosquesdeluruguay.com/bdu-iii/>

Anyway, this project has an Operating Framework Guide where it is clearly explained that corruption and other unethical behaviors are totally forbidden<sup>68</sup>. Moreover, as legally registered companies, the project owner and other involved entities have the obligation to comply with relevant regulations. The annual audit on general legislation compliance makes sure that it operates with full compliance with Uruguay law and regulations<sup>69</sup>.

#### **2.4.6 Commercially Sensitive Information (Rules 3.5.13 – 3.5.14)**

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

### **2.5 Legal Status and Property Rights**

#### **2.5.1 Recognition of Property Rights (G5.1)**

National legislation enshrines different forms of land tenure, use and enjoyment, which, in principle and in general terms, can be divided into two forms: those of a permanent nature and those of a transitory nature. Table 9 detail land tenure according to area farmed (ha) for 2011 in the departments of the project zone.

Moreover, in Uruguay, since 1948, there has been another special form of land tenure, which is part of a public policy called Colonization carried out by the INC (National Institute of Colonization). It is defined as a set of measures to be adopted in accordance with Law No. 11.029, in order to promote a rational subdivision of land and its adequate exploitation, and improvement of the agricultural production and the settlement and welfare of the rural worker.

The INC facilitates access to land with security of tenure, to aspiring settlers through the leasing of land, with a land rental value lower than the market value. Until 2005, there was a second modality: sale of land financed on a term basis (INC 2017). The figure 5 show the INC tenure within the project zone<sup>70</sup>.

In the case of the project area, initially, the land owner was 'Forestal Tekoayhu' S.A, a legally constituted company for investments in Uruguay. All activities related to forest investments, marketing and management were implemented by Cambium Forestal Uruguay S.A., a consultant company highly experienced in forest management.

In 2016, BDU III bought the lands corresponding to Forteko project. The ownership of the lands is legal and are protected by deeds duly registered in the National Registries, with the corresponding

<sup>68</sup> Code of Ethics available to VVB see reference n° 57

<sup>69</sup> This include working conditions, fiscal regulations, environmental legislation, among others.

<sup>70</sup> Source: Proyecto REDD+ Uruguay (2020). Tenencia de tierra y bosque nativo en Uruguay. Chiesa, V., Rodríguez, P., Gasparini, K., García, M.L., Olivera, J., Rama, G. y Martino, D. Ministerio de Ganadería, Agricultura y Pesca - Ministerio de Vivienda, Ordenamiento Territorial y Medio Ambiente. Montevideo.

number for the Real Estate Registry. The establishments included in Forteko project are: Caricohe, El Chunco, La Roja, Las Palmas, Los Teros, Santa Mariana, Tronco Perez, Canito, El Italiano, El Nacho, Cerros del Chircal, El Chico, Jotape, El Huaso, El Pudú, Las Flacas, El Ombú, Manolete, Pesadilla, Quiebra Yugo, La Hacienda, Santa Hildara, EL Enzo, La Gordi, Las Mimadas, Matador, La Loma, Los Azules, Los Cóndores, Mique. These belong to the group of investors that acquired the forests in the year 2017, previously owned by Forestal Tekoayhu S.A

Table 5. Land tenure by department for the project zone based on area farmed (ha)<sup>71</sup>.

| Area farmed by tenure status, according to department |                  |             |         |         |                |          |             |
|-------------------------------------------------------|------------------|-------------|---------|---------|----------------|----------|-------------|
| Departments                                           | Area farmed (ha) |             |         |         |                |          |             |
|                                                       | Total            | Land tenure |         |         |                |          |             |
|                                                       |                  | Property    | Lease   | Grazing | Share cropping | Occupier | Other forms |
| Artigas                                               | 1.144.493        | 777.332     | 285.512 | 18.416  | 1.682          | 32.369   | 29.182      |
| Canelones                                             | 336.805          | 252.574     | 61.937  | 4.011   | 665            | 8.240    | 9.378       |
| Cerro Largo                                           | 1.325.852        | 939.620     | 287.245 | 29.379  | 3.002          | 32.779   | 33.827      |
| Colonia                                               | 563.177          | 327.346     | 196.835 | 2.010   | 6.286          | 6.631    | 24.069      |
| Durazno                                               | 1.098.847        | 636.196     | 323.703 | 43.062  | 7.095          | 38.307   | 50.484      |
| Flores                                                | 502.914          | 296.369     | 162.947 | 5.809   | 4.880          | 8.719    | 24.190      |
| Florida                                               | 973.091          | 594.537     | 303.164 | 14.607  | 2.047          | 27.127   | 31.609      |
| Lavalleja                                             | 944.241          | 643.136     | 203.257 | 33.926  | 2.574          | 36.053   | 25.295      |
| Maldonado                                             | 387.166          | 271.293     | 71.263  | 16.464  | 1.467          | 7.382    | 19.297      |
| Montevideo                                            | 15.363           | 13.268      | 788     | 70      | 201            | 277      | 759         |
| Paysandú                                              | 1.438.706        | 900.115     | 383.057 | 73.621  | 21.660         | 30.333   | 29.920      |
| Rio Negro                                             | 914.414          | 556.597     | 256.624 | 48.261  | 18.625         | 5.797    | 28.510      |
| Rivera                                                | 865.692          | 536.245     | 199.171 | 65.777  | 4.186          | 29.967   | 30.346      |
| Rocha                                                 | 921.189          | 577.840     | 252.730 | 26.129  | 893            | 26.371   | 37.226      |
| Salto                                                 | 1.280.105        | 850.706     | 331.524 | 18.043  | 1.067          | 51.571   | 27.194      |
| San José                                              | 442.926          | 257.308     | 137.908 | 4.283   | 3.735          | 15.722   | 23.970      |
| Soriano                                               | 839.682          | 453.941     | 301.542 | 18.746  | 26.650         | 13.631   | 25.172      |
| Tacuarembó                                            | 1.490.989        | 1.077.350   | 254.586 | 84.088  | 4.117          | 34.258   | 36.590      |
| Treinta y Tres                                        | 871.646          | 521.597     | 290.968 | 12.577  | 1.543          | 29.319   | 15.642      |

<sup>71</sup> Source: General Agriculture survey 2011, (figure 162 translated)

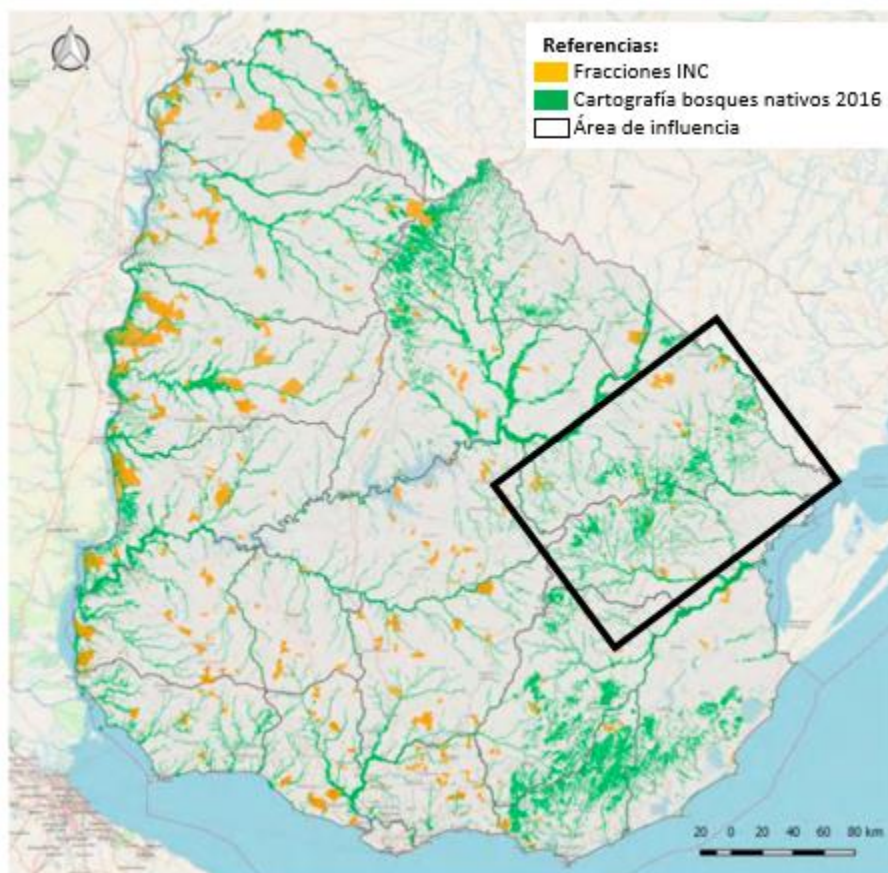


Figure 5. INC tenure and native forests in project zone. Source: adapted from Proyecto REDD+ Uruguay (2020), Map n°2.

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

Prior to the project initiation, all of the project land was owned by Forestal Tekoayhu S.A. Land tenure evidence is provided through notarial certificates of ownership<sup>72</sup> which comply with Uruguayan legislation. To make sure the successful development of the project, the project owner which had the ownership of forest land had presented all the requested documentation to government authorities<sup>73</sup>. So, the project will not encroach uninvited on private property, community property or government property; the ownership is clear, and there is no dispute over land ownership in the project site. Moreover, evidence of complying with principle n°2 Rights and Responsibilities of Tenure and Use of FSC certification are reported in FSC summary reports publicly available<sup>74</sup>.

<sup>72</sup> Land ownership evidence available for VVB during validation, reference n° 23

<sup>73</sup> Documentation available to VVB during VCS validation see reference n° 47

<sup>74</sup> FSC summary reports in reference n° 17

Cattle breeding activity owners are invited to continue the activity within the property once the trees are 2-3 years, to avoid damages. This is done through signed agreements.

### 2.5.3 Property Right Protection (G5.3)

Prior to the project implementation, the project area was degraded grasslands where farmers (private owners) used these lands for extensive beef production. Private owners voluntarily sold the lands to project owners, therefore the project activities will not lead to involuntary removal or relocation of property rights holders from their lands or territories, and does not force rights holders to relocate activities important to their culture or livelihood.

Due to its history, there are no native peoples in Uruguay. Only a new stream of people who have recognized themselves as descendants of indigenous communities, but who currently reside in cities. Roque Roldán's estimate for a paper for the Inter-American Development Bank, presented in Fortaleza in March 2002 based on ILO data, estimated its total number at only 524 (0.02% of the Uruguayan population) even though it is a subject of debate among different historians, the historical reports of the different auditing houses that certify in Uruguay indicate that there is no indigenous population according to the definitions of FSC.

### 2.5.4 Identification of Illegal Activity (G5.4)

The forests are nursed by project staff regularly as a result of the implementation of the project and legal requirements, so there will not be illegal activities or deforestation of native forests inside Forteko farms or surrounding the project boundaries. Furthermore, all farms are gated and a conflict resolution procedure exists, where illegal activities are addressed detailing modo operandis.

The project benefits are gained from legal activities. Therefore, the project's climate, community and biodiversity impacts will not be affected by illegal activities.

### 2.5.5 Ongoing Disputes (G5.5)

Because the project owner signed legal purchase agreements on all the land, the forest land was developed reasonably and legally, so there are neither ongoing or unresolved conflicts or disputes over rights to lands, territories and resources nor any disputes that weren't resolved and recorded.

### 2.5.6 National and Local Laws (G5.6)

The project activity complies with the National law and binding regulations, since forest investment has been approved by the General Forestry Directorate (entity of the Ministry of Agriculture, Livestock and Fishery) and the National Environment Directorate (entity of the Ministry of Housing, Territorial Planning and the Environment at the time of project presentation, since July 2020 in charge of the National Directorate of Quality and Environmental Assessment under the Ministry of Environment). The former ensures that the project activity complies with National Law N° 15.939 and all binding decrees and decisions, while the second grants environmental authorization<sup>75</sup>. This

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<sup>75</sup> Authorization available for VVB during validation see reference n° 47

can also be evidenced with the fulfilment of principle 1.1 of FSC certification<sup>76</sup>. Moreover, AF hires a third party service (Oval) to verify the compliance of labor obligations, documentation control and field audit of its contractors as well<sup>77</sup>.

No changes have occurred regarding the list presented in the PD.

### 3 CLIMATE

#### 3.1 Monitoring GHG Emission Reductions and Removals

##### 3.1.1 Data and Parameters Available at Validation

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | A <sub>i</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Data unit                                                                                    | ha                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Description                                                                                  | Area of stratum i                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Source of data                                                                               | Monitoring of strata and stand boundaries is done using a Geographical Information System (GIS) which allows for integrating data from different sources (including GPS coordinates and Remote Sensing data)                                                                                                                                                                                                                                                                                                                                                                                                          |
| Value applied                                                                                | Variable according to stratum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Justification of choice of data or description of measurement methods and procedures applied | <p>GPS is the most important tool used for measuring geographical variables or parameters: project boundaries and predefined stratum boundaries, forest area, area of disturbances (fires, droughts, harvesting, etc.). All information collected is immediately integrated into the GIS. Each plot coordinates are charged on the GPS before the field visit, in order to reach the exact location of each sample plot.</p> <p>Moreover, the tracks traveled for reaching each plot are also recorded by the GPS, including information about waypoints, time, location and altitude on each point of the route.</p> |
| Purpose of the data                                                                          | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

<sup>76</sup> Area authorizations available for VVB during validation stated in FSC summary reports in reference 17.

<sup>77</sup> Oval's scope of work available for VVB see reference n° 64

|          |     |
|----------|-----|
| Comments | N/A |
|----------|-----|

|                                                                                              |                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 or group of species j                                                                                                                                                           |
| Source of data                                                                               | IPCC default values (e.g. Table 3A.1.10 of IPCC GPG-LULUCF 2003) for ex-ante estimation, and default value 1.15 from CDM AR TOOL 14 for ex-post estimations.                                                                                                                     |
| Value applied                                                                                | Ex-ante<br>From 1.15 to 3.4, depending on the tree age for Pinus<br>From 1.15 to 3.2 depending on the tree age for Eucalyptus<br>Ex-post<br>1.15                                                                                                                                 |
| Justification of choice of data or description of measurement methods and procedures applied | Default value for pinus and broadleaf species in temperate climate.                                                                                                                                                                                                              |
| Purpose of the data                                                                          | N/A                                                                                                                                                                                                                                                                              |
| Comments                                                                                     | Ex-ante: BEF varies with age, being the highest values for young plantations and the lowest for mature plantations. A conservative approach was taken varying the BEF very quickly, reducing it to a half by year 5 and considering the forest as mature at the age of 10 years. |

|                  |                 |
|------------------|-----------------|
| Data / Parameter | CF <sub>j</sub> |
|------------------|-----------------|

|                                                                                              |                                                                                                                                                      |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data unit                                                                                    | t C t <sup>-1</sup> d.m.                                                                                                                             |
| Description                                                                                  | Carbon fraction of tree biomass for species or group of species j                                                                                    |
| Source of data                                                                               | Table 4.3 in IPCC 2006 Guidelines for National Greenhouse Gas Inventories - Volume 4 - Agriculture, Forestry and Other Land Use (no 2019 refinement) |
| Value applied                                                                                | 0.47                                                                                                                                                 |
| Justification of choice of data or description of measurement methods and procedures applied | Default value                                                                                                                                        |
| Purpose of the data                                                                          | Calculation of project emissions                                                                                                                     |
| Comments                                                                                     | N/A                                                                                                                                                  |

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter | D <sub>j</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Data unit        | t d.m. m <sup>-3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Description      | Basic wood density for species or group of species j                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Source of data   | <p>Table 4.14 Basic wood densities (D) of selected temperate and boreal tree taxa from IPCC 2006 Guidelines for National Greenhouse Gas Inventories - Volume 4 - Agriculture, Forestry and Other Land Use (no 2019 refinement).</p> <p>For Eucalyptus: ACHUGAR, L.; SCAGLIONE, G. 2003. Evaluación de propiedades de la madera en clones de <i>Eucalyptus grandis</i> Hill (ex Maiden). Thesis Ing.Agr. Montevideo, Uruguay, Universidad de la República-Facultad de Agronomía</p> |
| Value applied    | 0.44 for Pinus 0.38 to 0.49 (depending on the tree age) for Eucalyptus                                                                                                                                                                                                                                                                                                                                                                                                             |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Justification of choice of data or description of measurement methods and procedures applied | <p>Default value for Pinus</p> <p>For Eucalyptus:</p> <ol style="list-style-type: none"> <li>1) basic density values are taken from results of a thesis investigation work (national and local data)</li> <li>2) the values used are the ones from the bottom of the confidence interval of 95%, to be conservative</li> <li>3) values are plotted and tendency line is added, the tendency line with the highest <math>r^2</math></li> <li>4) power function is used to estimate the density values for the whole period</li> <li>5) real and calculated values are plotted</li> </ol> |
| Purpose of the data                                                                          | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Comments                                                                                     | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|                  |                                                                                                                                                                                                                                                                                                                               |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter | $R_j$                                                                                                                                                                                                                                                                                                                         |
| Data unit        | Dimensionless                                                                                                                                                                                                                                                                                                                 |
| Description      | Root-shoot ratio for species or group of species j                                                                                                                                                                                                                                                                            |
| Source of data   | Tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs" from Table 3A.1.8 of IPCC GPG-LULUCF 2003                                                                                                                                                                                                  |
| Value applied    | <p><b>Ex – ante</b></p> <p>Pinus: 0.23 to 0.46 depending on aboveground biomass;<br/>Eucalyptus: 0.20 to 0.45 depending on biomass values</p> <p><b>Ex – post</b></p> <p>Varies depending on an equation which used the aboveground biomass as an input (specific values are presented in the ex-post carbon estimations)</p> |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Justification of choice of data or description of measurement methods and procedures applied | <p>Default values according to the range of biomass will be used during ex-ante calculations. According to IPCC 2003, the value of R depends on aerial biomass (t / ha) for Eucalyptus/Pinus. For values less than 50 tonnes / ha 0.45/0.46 was used, for values between 50 and 150t/ha 0.35/0.32 was used and for over 150 0.2/0.23 was used respectively.</p> <p>During ex-post calculations, the value arising from the equation corresponding to Tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs" will be used as follows:</p> $R_j = \frac{e^{(-1.085+0.9256 \times \ln b)}}{b}$ <p>where b in the above-ground biomass calculated</p> |
| Purpose of the data                                                                          | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Comments                                                                                     | Specific values will be calculated in the ex-post carbon estimations based on corresponding equation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|                                                                                              |                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $V_{TREE j p i}$                                                                                                                                                                   |
| Data unit                                                                                    | m <sup>3</sup>                                                                                                                                                                     |
| Description                                                                                  | Stem volume of trees of species or group of species j in plot p in stratum i                                                                                                       |
| Source of data                                                                               | <p>Local Growth Models</p> <p>Growth projections from local growth model using local parameters from AF Group for same species and silvicultural activity in the project zone.</p> |
| Value applied                                                                                | N/A                                                                                                                                                                                |
| Justification of choice of data or description of measurement methods and procedures applied | In all cases local data is used, based on projections generated by AF for farms under similar conditions to project area by species, using average projection values.              |

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Purpose of the data | Value used to determine the project ex – ante carbon sequestration                                                                                                                                                                                                                                                                                                                                                             |
| Comments            | In case of ex-ante calculation, growth was estimated based on average growth according to specific site conditions presented in the project site. Local growth models were used for ex-ante estimation to describe the yield curve and determine the Long Term Average of available carbon credits. Local growth models will not be used for ex-post estimation which were based on field measurements: tree's DBH and height. |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | Bark volume                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Data unit                                                                                    | m <sup>3</sup> /ha                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description                                                                                  | Bark volume of trees of species j                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Source of data                                                                               | Methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs" V.1 for Pinus. For Eucalyptus, a tendency line is calculated by AF group based on a local survey on diameter with and without bark in project zone.                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Value applied                                                                                | Pinus: 15% of total stem volume<br><br>Eucalyptus: varies according to age with values of 24.15% during first year and 10.88% at year 18.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Justification of choice of data or description of measurement methods and procedures applied | Default value is used in the case of Pinus. For Eucalyptus the procedure is detailed below:<br><br>1) SAG software is used to calculate the volume of trees in a plot in different years (3, 6, 9, 12, 15 and 16), based on the growth simulation model of AF group project with same characteristics.<br>2) Volume with and without bark is provided as a result, bark percentage is calculated.<br>3) Results are copied into this worksheet sorted by age and plotted.<br>4) Tendency line is estimated (with the highest r <sup>2</sup> )<br>5) According to the tendency line, bark percentage is inter and extrapolated until year 30<br>6) Both bark percentage is plotted using real and extrapolated values |

|                     |                                                                                                                                                                           |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Purpose of the data | Value used to determine the project ex – ante carbon sequestration and project emission capture                                                                           |
| Comments            | The bark volume is a variable used in the ex-ante calculation. During field measurement, the volume of trees is estimated with bark when diameters are measured over bark |

|                                                                                              |                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | SOC <sub>REF</sub>                                                                                                                                                                                                                                                           |
| Data unit                                                                                    | t C ha-1                                                                                                                                                                                                                                                                     |
| Description                                                                                  | Reference SOC stock corresponding to the reference condition in native lands (i.e. non degraded, unimproved lands under native vegetation, normally forest by climate region and soil type applicable to stratum i of the areas of land under High Activity Clay soils (HAC) |
| Source of data                                                                               | Table 3 of “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM Project” activities. V1.1                                                                                                                                       |
| Value applied                                                                                | 88                                                                                                                                                                                                                                                                           |
| Justification of choice of data or description of measurement methods and procedures applied | Default value for warm temperate climate and HAC soils                                                                                                                                                                                                                       |
| Purpose of the data                                                                          | Calculation of project emissions                                                                                                                                                                                                                                             |
| Comments                                                                                     | The ex-ante calculation for SOC change is modified under this verification, corrected by the modified total areas.                                                                                                                                                           |

|                  |                   |
|------------------|-------------------|
| Data / Parameter | f <sub>IN,i</sub> |
|------------------|-------------------|

|                                                                                              |                                                                                                                                         |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Data unit                                                                                    | Dimensionless                                                                                                                           |
| Description                                                                                  | Relative stock change factor for baseline input regime (e.g. crop residue returns, manure) in stratum i of the areas of land            |
| Source of data                                                                               | Tables 6 of "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM Project" activities. V1.1 |
| Value applied                                                                                | 1                                                                                                                                       |
| Justification of choice of data or description of measurement methods and procedures applied | Low to medium input of fertilizers (All grassland without input of fertilizers is assigned an input factor of 1)                        |
| Purpose of the data                                                                          | Calculation of project emissions                                                                                                        |
| Comments                                                                                     | The ex-ante calculation for SOC change is the same calculation as in the verification, corrected by the modified total areas.           |

|                                                               |                                                                                                                                         |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                              | $f_{MG,i}$                                                                                                                              |
| Data unit                                                     | Dimensionless                                                                                                                           |
| Description                                                   | Relative stock change factor for baseline management regime in stratum i of the areas of land.                                          |
| Source of data                                                | Table 6 of "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM Project" activities. V1.1. |
| Value applied                                                 | 0.70                                                                                                                                    |
| Justification of choice of data or description of measurement | Default value for Severely degraded grassland.                                                                                          |

|                                |                                                                                                                                                                                                                                                                                                   |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| methods and procedures applied |                                                                                                                                                                                                                                                                                                   |
| Purpose of the data            | Calculation of project emissions                                                                                                                                                                                                                                                                  |
| Comments                       | The ex-ante calculation for SOC change was modified in the verification, corrected by the modified total areas. Lands have been identified as degraded lands using the “Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities”. |

|                                                                                              |                                                                                                                                            |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $f_{LU,i}$                                                                                                                                 |
| Data unit                                                                                    | Dimensionless                                                                                                                              |
| Description                                                                                  | Relative stock change factor for baseline land use in stratum i of the areas of land; dimensionless                                        |
| Source of data                                                                               | Tables 6 of “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM Project activities” V.1.1.1. |
| Value applied                                                                                | 1                                                                                                                                          |
| Justification of choice of data or description of measurement methods and procedures applied | Default value for all permanent grassland is assigned a land-use factor of 1                                                               |
| Purpose of the data                                                                          | Calculation of project emissions                                                                                                           |
| Comments                                                                                     | The ex-ante calculation for SOC change is the same calculation as in the verification, corrected by the modified total areas.              |

|                                                                                              |                                                                                                                           |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | Dead Wood                                                                                                                 |
| Data unit                                                                                    | t C ha <sup>-1</sup>                                                                                                      |
| Description                                                                                  | Conservative default factor expressing carbon stock in dead wood as a percentage of carbon stock in tree biomass          |
| Source of data                                                                               | Tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities" V3.1 |
| Value applied                                                                                | 8% of carbon stock in trees biomass                                                                                       |
| Justification of choice of data or description of measurement methods and procedures applied | Default value for temperate/boreal climate regime                                                                         |
| Purpose of the data                                                                          | Calculation of project emissions                                                                                          |
| Comments                                                                                     | N/A                                                                                                                       |

|                  |                                                                                                                            |
|------------------|----------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter | Litter                                                                                                                     |
| Data unit        | t C ha <sup>-1</sup>                                                                                                       |
| Description      | Conservative default factor expressing carbon stock in litter as a percentage of carbon stock in tree biomass              |
| Source of data   | Tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities" V.3.1 |
| Value applied    | 4% of carbon stock in trees biomass                                                                                        |

|                                                                                              |                                                   |
|----------------------------------------------------------------------------------------------|---------------------------------------------------|
| Justification of choice of data or description of measurement methods and procedures applied | Default value for temperate/boreal climate regime |
| Purpose of the data                                                                          | Calculation of project emissions                  |
| Comments                                                                                     | N/A                                               |

### 3.1.2 Data and Parameters Monitored

|                                                                 |                                                                                                                                                                                                       |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $A_i$                                                                                                                                                                                                 |
| Data unit                                                       | Ha                                                                                                                                                                                                    |
| Description                                                     | Area of stratum i                                                                                                                                                                                     |
| Source of data                                                  | Monitoring of strata and stand boundaries was done using a Geographical Information System (GIS)                                                                                                      |
| Description of measurement methods and procedures to be applied | Strata area were measured based on cartography documents, related with GIS.                                                                                                                           |
| Frequency of monitoring/recording                               | Every time the project boundaries are modified. when disturbances events take place, the project participants shall re-built the stratum and add the area of the project under disturbance in the GIS |
| Value monitored                                                 | Total area: 16,181.5 ha                                                                                                                                                                               |
| Monitoring equipment                                            | Garmin GPS, model eTrex Legend.                                                                                                                                                                       |
| QA/QC procedures to be applied                                  | N/A                                                                                                                                                                                                   |

|                     |                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Purpose of the data | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                         |
| Calculation method  | The value was used in equations N° 3, 12 y 24 of the Methodological tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities” (Version 03.0.0), Equations N° 7 and 13 of the Methodological tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities” (Version 02.0.0) |
| Comments            | N/A                                                                                                                                                                                                                                                                                                                                                                                      |

|                                                                 |                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | DBH                                                                                                                                                                                                                                                                     |
| Data unit                                                       | Cm                                                                                                                                                                                                                                                                      |
| Description                                                     | Diameter at Breast Height of tree                                                                                                                                                                                                                                       |
| Source of data                                                  | Field measurements                                                                                                                                                                                                                                                      |
| Description of measurement methods and procedures to be applied | DBH is measured at 1.3 m above ground, over the bark. In case of stem deformation at this level, measurement was done over the deformation once the stem took its normal shape, with the purpose of being conservative. DBH was measured in all trees within the plots. |
| Frequency of monitoring/recording                               | Every tree within sample plots                                                                                                                                                                                                                                          |
| Value monitored                                                 | Varies with stratum                                                                                                                                                                                                                                                     |
| Monitoring equipment                                            | In most of the cases, the instrument used for measuring DBH was a caliper model “Mantax Blue” of Haglof, Sweden. Also, for the minority of trees, it was used a diametric tape for measuring DBH.                                                                       |
| QA/QC procedures to be applied                                  | A quality control procedure consisted in qualified personnel conducting the measurements in the first place, and the first control is conducted by contractor.                                                                                                          |

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <p>Secondly, a random control of 5% of the plots measured is made by AF personnel, using the same data collection sheet, where unsupported errors include:</p> <ul style="list-style-type: none"> <li>- a difference of more than 3% in the DBH measured with caliper</li> </ul> <p>Instruments were checked and tested before starting the verification process. Items checked:</p> <ul style="list-style-type: none"> <li>-Correct visualization if numbers in the calliper.</li> <li>-The straightness of the calliper and the lack of mechanical problems.</li> </ul> <p>The calliper length is not a problem since it is impossible the equipment stretches.</p> <p>Bark that is not stick to the stem was removed before measuring.</p> |
| Purpose of the data | Calculation of project emissions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Calculation method  | <p>The trees are considered to be inside the plot if more than 50% of DBH is inside the plot.</p> <p>Diameters were measured by taking one measure, always pointing the instrument's shaft in direction to the middle of the plot.</p> <p>Parameter used indirectly in Equation N° 1 of the Methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" (Version 03.0.0); for calculation of basal area and then volume..</p>                                                                                                                                                                                                                                             |
| Comments            | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                  |                                    |
|------------------|------------------------------------|
| Data / Parameter | H                                  |
| Data unit        | m                                  |
| Description      | Height of trees within sample plot |
| Source of data   | Field measurement                  |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description of measurement methods and procedures to be applied | <p>All trees within the plot in the case of permanent plots.</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>4. 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>5. 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>6. Trees that are dead, burned, or broken will be excluded from the measurement.</li> </ol> <p>In order to always measure the heights from the same location and thus avoid bias or errors, height records must always be made in the same direction. For this, the face of the tree where the measurement took place will be marked and identified with paint</p> |
| Frequency of monitoring/recording                               | During every monitoring, for every plot within different stratum.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Value monitored                                                 | Varies according to tree classes in plot                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Monitoring equipment                                            | Haglöf ECII-D Electronic Clino/Height Meter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| QA/QC procedures to be applied                                  | <p>A quality control procedure consists in qualified personnel conducting the measurements in the first place, and the first control is conducted by a contractor.</p> <p>Secondly, a random control of 5% of the plots measured is made by AF personnel, using the same data collection sheet, where unsupported errors include:</p> <p>Height measurements will not be made on those days where the wind speed exceeds scale 5 of Beaufort (30-</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <p>38 km / hr), causing a great movement of the trees top (NOAA, 2020).</p> <p>- In the same way as with the DAP record, the height values will be expressed in decimeters, avoiding errors in the register.</p> <p>When referring to this electronic device, it is recommended to check the correct visualization of the display. The clinometer was always kept in safe places in order to avoid display rupture. The equipment was always full charged batteries and back up batteries were always available in case of emergency. At the same time it must previously be calibrated before each daily measurement activity.</p> <p>Make control measurements using all involved equipment (human error should be minimized at minimum with well training and cross-checked control measurement activities).</p> |
| Purpose of the data | Calculation of project emissions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Calculation method  | <p>Once the plot is delimited and all trees to be included are defined, all tree heights are measured in permanent plots. According to the measurement description.</p> <p>In order to avoid over- and under-estimations, every tree was considered inside the plot when the mark of 9.77/12.62/15.95m (radius of a circular plot of 300/500/800m<sup>2</sup>) of the measuring plot overpassed the 50% of the diameter of every tree.</p>                                                                                                                                                                                                                                                                                                                                                                          |
| Comments            | Parameter used indirectly in Equation N° 1 of the Methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" (Version 03.0.0); for volume calculation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

|                  |                       |
|------------------|-----------------------|
| Data / Parameter | Ap,i                  |
| Data unit        | m <sup>2</sup>        |
| Description      | Area of sampling plot |
| Source of data   | Field measurement     |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description of measurement methods and procedures to be applied | The center of the plot was marked with the assistance of a GPS. One staff member stayed at the center of the plot taking notes of the diameters and heights measured while the other expert of the team walked inside the plot measuring them. Both experts were always connected with a measuring tape, and every tree measured was previously checked in order to determine if the distance to the center was minor to 9.77/12.62/15.95 m (radius of a circular plot of 300/500/800m <sup>2</sup> ). |
| Frequency of monitoring/recording                               | Every plot measured in Forteko, 239 in total.                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Value monitored                                                 | Varies with every plot                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Monitoring equipment                                            | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| QA/QC procedures to be applied                                  | <p>In order to avoid over and under-estimations, every tree was considered inside the plot when the mark of 12.62 m (and equivalent for Eucalyptus) overpassed the 50% of the diameter of every tree.</p> <p>A minimum of 15 trees must be included per plot, if this is not so, the contractor communicates with the forest manager to define action which may include increasing plot size.</p>                                                                                                      |
| Purpose of the data                                             | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Calculation method                                              | $500\text{m}^2 = r^2(12.62) \cdot \pi$ ( <i>Pinus</i> )<br>$300\text{m}^2 = r^2(9.77) \cdot \pi$ ( <i>E. dunnii</i> )<br>$800\text{m}^2 = r^2(15.95) \cdot \pi$ ( <i>E. grandis</i> )                                                                                                                                                                                                                                                                                                                  |
| Comments                                                        | <p>Sample plots are permanent and circular. The plots were laid down in a shapefile, positioned systematically with a random start.</p> <p>The location of the plots within the forest plantation was done with a GPS.</p> <p>The area of each plot is not a variable but a fixed value, but must be measured by its radius in order to determine the variable "number of trees within the plot".</p>                                                                                                  |

### 3.1.3 Monitoring Plan

As mentioned in the project description deviations section, due to changes in project proponents and farm owner, deviations in the monitoring plan took place. The specific changes are described in the deviation section and in this section the monitoring plan, as it is, is described.

AF has in place a Quality Management System certified UNIT-ISO 9001 since 2/12/2004. Furthermore, AF has set a forest management system for BDU projects. The system includes a Monitoring Plan - which specifies (among other relevant information) the forestry inventory -, procedures and monitoring reports. The documents are publicly available on BDU website.

BDU III Forest Management system is certified under FSC certification<sup>78</sup>. These certifications evidence the concern and experience of AF in the implementation and management of very demanding control systems, and consequently in the monitoring of them to ensure the quality of the forestry. Therefore, AF staff is aware of the importance that monitoring has and is committed to monitor the data correctly for the entire crediting period.

BDU monitoring plan has been designed in line with the methodology AR-ACM0001 and its applicable tools referenced in sections 2.1 and 2.2 above in order to provide all relevant data necessary to verify: i) the applicability conditions listed under section 2.2 are met; ii) changes in carbon stocks in the pools selected; and iii) project emissions and leakage emissions.

The monitoring activities were carried out by a third party in accordance with the Forest Inventory Manual guidelines<sup>79</sup>. Read below detailed information on the monitoring process:

The aim of the Monitoring Plan is to record and monitor a number of different parameters in order to ensure that the project followed the corresponding methodology in the validated and registered PD and that the inputs to the carbon calculations are both accurate and up-to-date. Monitoring was done according to the consolidated methodology AR-ACM 0001 "Afforestation and reforestation of degraded lands" (version 05.2.0, EB 65), as mentioned in previous monitoring report.

Monitoring stage comprised gathering information, performing calculations and making estimations of GHG removals. In this monitoring event, it is ensured that commonly established principles of forest inventory and management were put into practice with the implementation of the Monitoring Plan. The document is called Manual for forest inventory and is used as a Monitoring Plan. This document is prepared with the purpose of specifying the procedures and standardization for the measurement of each variable, to be delivered by third parties. This document is in Spanish and can be available for the verification team.

All data gathered as part of the monitoring plan was archived electronically and will be kept at least for two years after the end of the crediting period.

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<sup>78</sup> UNIT-ISO 9001 and FSC certifications are available for the VVB see reference n° 17

<sup>79</sup> Available to VVB during verification

According to the methodology applied, monitoring covered carbon stock changes for living above-ground, litter and dead wood pools. Below ground biomass was estimated indirectly based on above-ground biomass measurements and litter and dead wood were estimated as a percentage of carbon stock in tree biomass. Monitoring events took place between May 2015 and August 2021. The third party involved in this stage was Bosques Servicios Forestales. It is a Uruguayan consultancy and services company, specialized in forest inventories.

With the purpose of controlling and checking the measurement equipment and measuring team capabilities, re measurements were conducted with no previous notice of 5 to 10% of total number of plots in the month of inventory. The staff in charge of this work was different from the one who made the first measurement on the same plot. If the difference between measurements for H and DBH were higher than 5 and 3% respectively, this sample plot should have been definitely eliminated from the total estimation of carbon stock and re measured in a 100%, according to Monitoring plan.

**Organizational structure, responsibilities and competencies.**

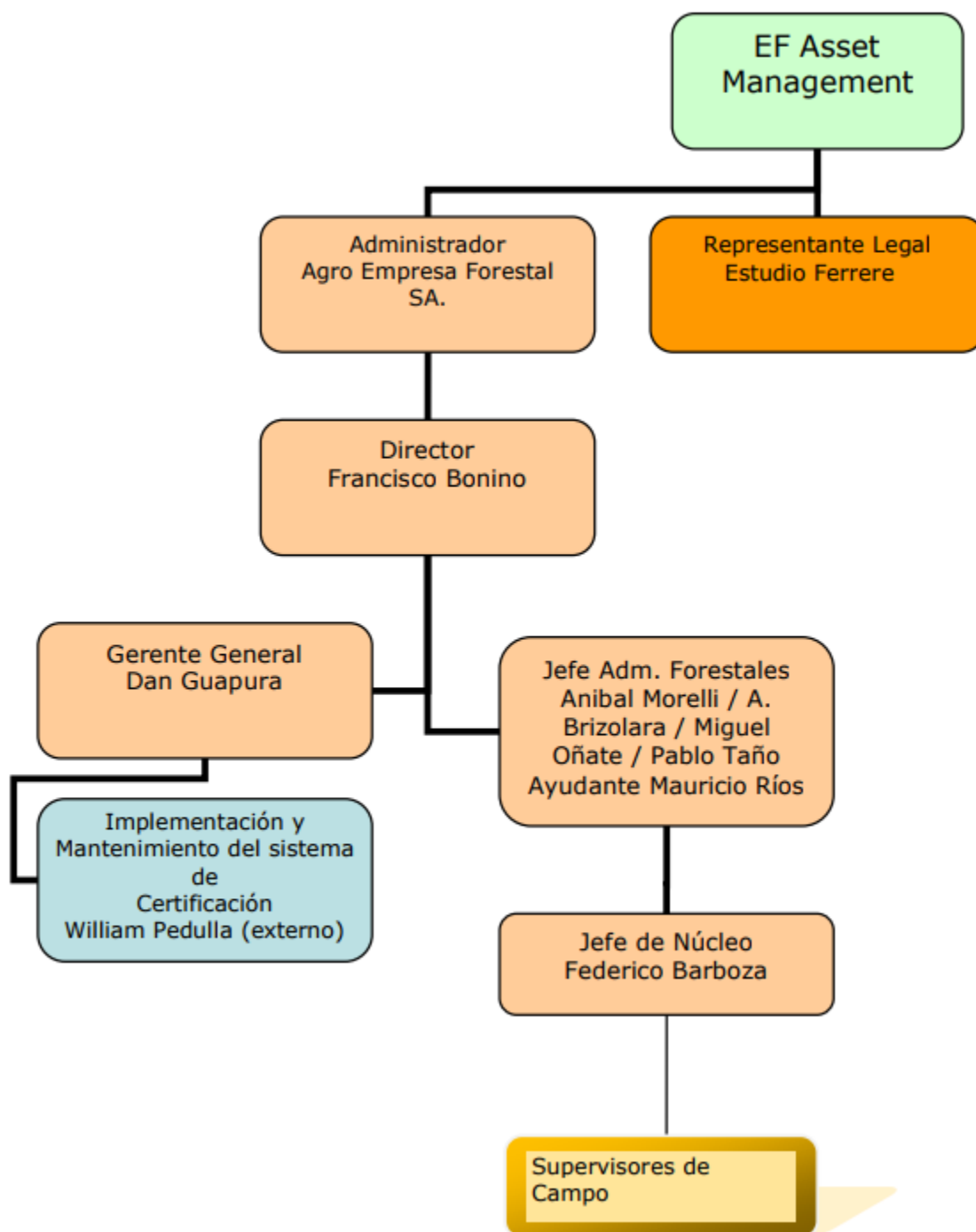
The organizational structure and responsibilities of AF team with regards to the monitoring system are as follow<sup>80</sup>:

- **General Manager**: has the overall responsibility of the forest management system and thus, the monitoring plan;
- **Forests Administration Chief**: responsible for the operational management; resources monitoring; forestry inventories; coordination and control of activities; selection and control of contractors; supervision of AF personnel in various fields and approval of all system documentation.
- **Lands supervisors (AF personnel in the fields)**: responsible for controlling the contractors' personnel activities in the fields; supervising the plantations; reporting the forest administration chief; among other activities.
- **Forest inventory third party**: Bosques Servicios Forestales SA are the contractors in charge of installing sample plots in the field and conducting forest inventories, first data consistency analysis and checks

Forteko's project technical team receives training on: the environmental management policy of the AF, the FSC principles and requirements, the management plan main chapters – among others issues - to warranty their competencies to perform their duties as established in BDU Training Plan Procedure<sup>81</sup>. Contractors also receive training on various topics among security and FSC principles and criteria. Contracts include the inventory guidelines, described in the aforementioned Forest Inventory Manual.

<sup>80</sup> BDU management plan with company description and AF organizational chart and Job profiles and responsibilities available for the VVB (see reference n° 53).

<sup>81</sup> Available for the VVB at validation (see reference 45).



#### Inventory for permanent plots

They are fixed plots that are installed in the different stratum and whose purpose is to represent and reflect the different productivities. These plots are measured annually.

The objective is to generate information on the growth rate of a species in certain sites for decision-making related to forest management and monitoring carbon sequestration.

The permanent plots are installed as of the third year from plantation and are measured in the months of June to August when vegetative growth is slowed down. These plots have been installed following a stratified sampling design. The strata are defined as a combination of site quality, planting year, and species as already mentioned.

In case of installing a new permanent plot, this is defined in accordance with the criterion mentioned above. The site of the new permanent plot is located at a distance greater than or equal to 50 m from the edge and with a percentage of 90% live trees.

### **Stratification**

The stratification eliminates sources of variation that can mask the results of the inventory, once the variability inside the strata shall be lower than that of the whole population. Hence, it will be possible to obtain more precise statistics due to the population stratification. The stratification also facilitates the data collection and the processing of it per stratum, being also suitable for the planning and execution of the work on the field.

Stratification was done considering soil classification, along with plantation year and species, to define monitoring strata (previous owners used region stratification but soil classification is considered as robust as region in order to define a monitoring stratum, especially taking into account the project is limited to two departments in the same country's region).

At the same time, the replacement of 12% of Pinus with Eucalyptus demanded the increase in the number of stratum for monitoring, leading to a total of 26 stratum. The new classification and number of plots monitored are detailed in table 6.

Table 6: Stratum and plots during verification

| Species            | Year plantation | Soil (CONEAT) | Area (ha) | No plots |
|--------------------|-----------------|---------------|-----------|----------|
| <i>Pinus tadea</i> | 2007            | 2             | 571.7     | 5        |
|                    | 2008            | 2             | 3,511.3   | 81       |
|                    | 2008            | 8             | 1,079.6   | 9        |
|                    | 2008            | Otros         | 74.5      | 3        |
|                    | 2009            | 2             | 1,618     | 25       |

|                           |      |       |         |    |
|---------------------------|------|-------|---------|----|
|                           | 2009 | 8     | 209.3   | 3  |
|                           | 2010 | 2     | 3,255.2 | 68 |
|                           | 2011 | 2     | 2,293.9 | 16 |
|                           | 2012 | 8     | 3.3     | -  |
|                           | 2013 | 2     | 32.2    | -  |
|                           | 2013 | 8     | 3.4     | -  |
|                           | 2013 | G     | 24.9    | -  |
| <i>Eucalyptus dunnii</i>  | 2017 | 2     | 29.2    | 1  |
|                           | 2018 | 2     | 194.7   | 6  |
|                           | 2019 | 2     | 45.4    | -  |
|                           | 2019 | 8     | 7.9     | -  |
|                           | 2021 | 2     | 163.44  | -  |
| <i>Eucalyptus grandis</i> | 2017 | 2     | 391.9   | 13 |
|                           | 2018 | 2     | 256.0   | 9  |
|                           | 2019 | 2     | 171.6   | 6* |
|                           | 2019 | 8     | 150.0   | 5* |
|                           | 2019 | G     | 1.2     | -  |
|                           | 2019 | Otros | 0.1     | -  |

|  |       |   |       |     |
|--|-------|---|-------|-----|
|  | 2020  | 2 | 4.1   | -   |
|  | 2020  | 8 | 6.7   | -   |
|  | 2021  | 2 | 315.5 | 11* |
|  | TOTAL |   |       | 260 |

\*projected plots to be installed

Current stratification could suffer subdivisions or merges in the case unexpected disturbances occur or insignificant intra-stratum variability is detected in the annual variation in carbon pools (e.g. forest fires).

#### · **Sampling**

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 in order 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.

Due to the application of thinning, forest stands in this project have a low number of trees per hectare, tending to have a few large trees per hectare as the stands get older, and uniformly distributed. Thus, taking into consideration the project-specific conditions and the IPCC guidance, circular plots of 300 m<sup>2</sup> have been selected for monitoring of strata with *Eucalyptus dunnii* (not thinned, higher density throughout the rotation), 800 m<sup>2</sup> for strata with *Eucalyptus grandis* and 500m<sup>2</sup> for Pinus stratum.

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 same treatment is assured, in the same way as all the project extension (e.g. during site and soil preparation, weeding, fertilization, harvesting, etc.) and are 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, later during the first verification the number changed and increased. During this verification period, the number was calculated given the new strata generated. The outcome of the estimation of plots increased to 255 (which is higher if compared to the value estimated by the mentioned calculation tool)

An example of Power BI dashboard where all permanent plots information is managed is available in figure 6.

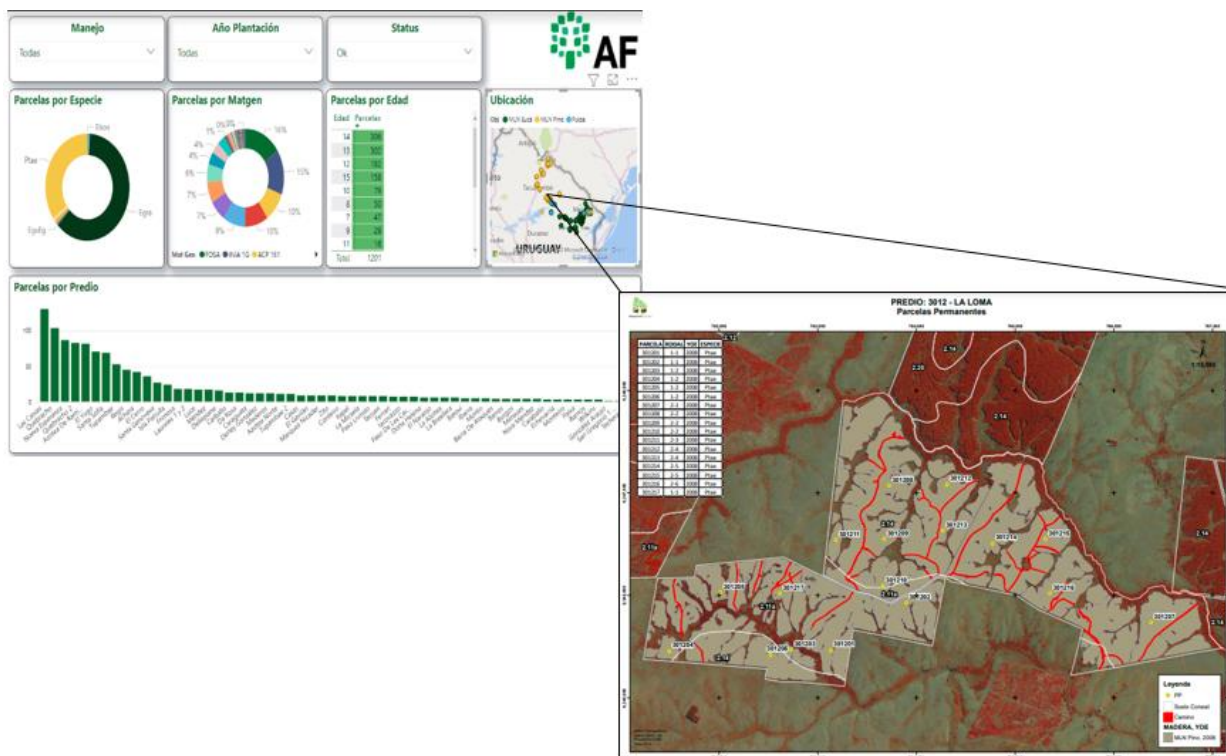


Figure 6. Sample plots management dashboard under AF management and a map for the sample plots in La Loma property, as an example.

### • **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.

Plot grid is done using QGIS or ArcMaps to randomly locate the permanent sampling plots (location is systematic with random start). The map with the location of the sampling plots (geopdf) is loaded on the GPS receptors used by forest inventory crews, usually AvenzaMaps app, so that they can reach the plots accurately.

Further information about the inventory, stratification, sampling, data collection, etc. is available in BDU Forest Management Plan and Forest Inventory Manual<sup>82</sup>.

Once the plot was located, the coordinates were registered in the GPS and recorded in the spreadsheet. Afterwards, the previously defined circular plot area was installed. The center of the plot corresponded to the midpoint between two trees (1 per row, faced) and in between. These two

<sup>82</sup> Available to VVB during verification (see reference n° 30 & 53)

trees were marked with the corresponding plot number and the letter "C", from where the plot was delimited, identifying those trees that are on the plot edge.

The next step included marking every tree that was within the plot. The first tree in the plot is the one furthest to the left of the plot, based on how the operator arrived at the site, and this is marked with the number 1. The numbering was then carried out as follows: starting from tree 1, the trees to the right to the end of the plot in that row are numbered. Then it's the turn for the next row above, to finish the semicircle on the side of tree 1. Then, the same procedure was repeated on to the other side of the plot.

### **Measurement**

Each source of GHG emissions/removals is estimated ex post according to the equations previously described and based on the following methods and monitored parameters:

- CTREE (carbon stocks in above and below ground biomass of trees): will be estimated based on stratified random sampling method as described. For this purpose, VTREE (stem volume of tree) will be calculated applying a manual of procedures developed for local conditions, based on diameter at breast height (DBH) and height (H) measurement in each plot.

- DBH measuring: By convention, the diameter is measured at 1.30 m from the ground level, so this measure remains standardized independently of the operator and its height. At this height the instrument is also easy to manage. The DBH is a direct measure from which it is possible to calculate the transverse area, the basal area, the individual and total volume, the growth and the form quotient of the tree, and other variables of interest. In the estimating processes that involve the use of regression functions, the DBH is always the first independent variable because of its easy assessment and for presenting normally a high correlation with the volume, weight and other dependent variables.

- H measuring: The height of a tree or portion of it is the linear distance along its principal axis, departing from the ground up to the top or up to another referential point, always in conformity with the type of height that is needed to measure. The height serves essentially for the calculation of volume and for the calculation of increases in height and in volume. Total Height refers to the distance between the ground and the apex along the principal axis.

### **Data processing**

Once the data has been collected in the field, the contractor must send them by email specifying the type of inventory carried out, establishment surveyed, number of plots and location in kmz format. This data is sent in the electronic spreadsheet (see figure 6) according to the type inventory, in a neat and orderly manner, previously verified that the data does not present errors or repetitions. All those doubts or modifications that arose during monitoring out in the field are clarified in the column called "comments".

The data obtained in the field during monitoring, was then revised, processed and analyzed by the forest planning team in charge of inventories (Daniel Romero y Camila Gomez). In case of finding any inconsistency or doubt, a field check was performed when necessary.

Once the data was reviewed, it was processed using the data processing system Caliper [<https://webapp.avlchile.cl/caliper/caliper.dll>]. It is a software for processing forest inventories that calculates dasometric variables and other variables defined by the user.

In addition, it has a module called "Validator", which allows a review of the consistency of the data, detecting possible inconsistencies in the values that could affect the results. In case of detecting inconsistencies, they are analyzed and evaluated prior to processing.

After processing the data with the configured and established parameters, the software generated an inventory report made with all the information for analysis (these results are presented at product, log, tree, parcel or stand level).

Finally, the results obtained at the stand level were uploaded to the Forest Management System INFLOR [<https://af.inflor.cloud/sgf/>], generating a database with which reports are made both for volume estimates for carbon sequestration estimates and support for the forestry and strategic planning of the company.

| NRO_INVENT | FECHA_INV | PREDIO | ID_PREDIO | ANO_PLAN | MODAL | SUP_MODAL | PARCELA | SUPPARCELA | N° Arbol | Especie | DAP | Alt Total | Calidad | HCalidad | UTM_N | UTM_E | Marcados | Sanidad | Forma | Daño | Comentarios |
|------------|-----------|--------|-----------|----------|-------|-----------|---------|------------|----------|---------|-----|-----------|---------|----------|-------|-------|----------|---------|-------|------|-------------|
|            |           |        |           |          |       |           |         |            | 1        |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 2        |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 3        |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 4        |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 5        |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 6        |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 7        |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 8        |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 9        |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 10       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 11       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 12       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 13       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 14       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 15       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 16       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 17       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 18       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 19       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 20       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 21       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 22       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 23       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 24       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 25       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 26       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 27       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 28       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 29       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 30       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 31       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 32       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 33       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 34       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 35       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 36       |         |     |           |         |          |       |       |          |         |       |      |             |
|            |           |        |           |          |       |           |         |            | 37       |         |     |           |         |          |       |       |          |         |       |      |             |

| ESPECIES |             |
|----------|-------------|
| CODIGO   | DESCRIPCIÓN |
| 1        | E.dunnii    |
| 2        | E.smithii   |

| NOMENCLATURA |                   |
|--------------|-------------------|
| CODIGO       | DESCRIPCIÓN       |
| PREDIO       | Código del predio |
| ID_PREDIO    | Nombre del predio |
| SUPPARCELA   | 300;500;800;1.000 |
| DAP          | Milímetros        |
| Alt. Total   | Decímetros        |
| UTM N        | 7 dígitos         |
| UTM E        | 6 dígitos         |

Figure 7. Spreadsheet used during monitoring by contractor

### QA/QC procedures

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, in order to verify that data quality objectives are met, and in general, to support the effectiveness of the QC system. QA/QC plan includes some of activities aiming at achieving accuracy and precision of data, and transparency of procedures are:

- Development of Standard Operating Procedures for field measurements, clearly defining objectives, admissible and inadmissible errors during monitoring, procedures, and responsibilities<sup>83</sup>;

<sup>83</sup> Forest Inventory manual available for VVB during verification (see reference n° 30)

- Training of personnel in field measuring and hiring experienced technicians for the task;
- Assure periodical check and maintenance of measuring instruments: all mechanical, optical and electronic instruments will be periodically checked by qualified personnel;
- In addition, consistency on field data will be permanently monitored, in order to detect any error.
- Fully document and archive field and processed data: to ensure data preservation, all relevant monitoring documents (data, data analyses, static factors, photos, images, GIS output and other data) will be stored in electronic and/or paper format and back-ups will be done periodically;

During the execution of the monitoring activities, quality controls were carried by AF in the field, without previous notice. The quality of the measurement carried out is controlled with an intensity of 10% of the plots measured, using the same data collection sheet.

The following aspects are evaluated:

- Location: the plot must be clearly identifiable and agree with the defined geographic location.
- Identification: the plot must be correctly marked with a stake and trees must be correctly numbered.
- Total height: differences of more than 5% in height measured with clinometer will not be accepted.
- DAP: differences greater than 3% in the DAP measured with diametric tape will not be accepted.

In those cases where the errors were greater than does admissible, the contractor had to re-measure 100% of the plot.

Another measure in place for permanent plots is the “buffer area”. The establishment of buffer areas in permanent plots is intended to avoid edge problems, wind damage, accidental extraction of trees, pathways, etc. and allows destructive sampling of trees for various purposes without altering the measurement plot itself. The buffer area consists of 1.56ha whose center is the plot itself [square area of 125 \* 125 m. sideways].

Further information about QA/QC is available in AF Forest Management Plan<sup>84</sup>.

### **Operational and management structure**

Entity applying monitoring plan: Agroempresa Forestal S.A

Phone: +598 2916 2020

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<sup>84</sup> Available for VVB under reference n° 53.

www.AF.com.uy

Monitoring event was developed by Bosques Servicios Forestales SA. Entity applying monitoring event in 2015 – 2021.

Carbon estimations and general calculations was developed by ProSustentia SAS

Phone: +5491136338125

www.prosustentia.com

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

Along with the project implementation, the project documentation will be published on VCS and CCB website for all stakeholders, so that they can obtain the detailed project information and development progress. Also, the project's information is available in local language at BDU III website. This includes management and monitoring plans.

Results from climate monitoring analysis will be available in BDU III website together with updated risk analysis at specific brochures describing the project characteristics and benefits.

Moreover, different communications are made publicly in the media regarding carbon certification of the project<sup>85</sup>.

## 3.2 Quantification of GHG Emission Reductions and Removals

### 3.2.1 Baseline Emissions

As demonstrated during VCS validation, the baseline scenario is the continuation of extensive cattle breeding. This means that the project area without the project activity would have remained as pasture land. This pasture land covers virtually all the project area. Existing trees constitute buffer zones and they do not form part of the VCS project boundary. It is clear that there were no trees in the baseline scenario of the VCS project. Therefore, changes in carbon stock of above-ground and below-ground biomass of non-tree vegetation could be conservatively assumed to be nil in the baseline scenario based on the tool 14 "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities".

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 (extensive grazing).

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<sup>85</sup> Radio, local newspaper and events where project's communication regarding carbon credits takes place (see reference n° 41).

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

### 3.2.2 Project Emissions

‘Forteko S.A.’ project activity does not have GHG emissions. However, this chapter refers to the removals of GHG performed by this project activity.

Net anthropogenic GHG removals by sinks is estimated as the actual net GHG removals by sinks minus the baseline net GHG removals, minus leakage. The following general formula described in the methodology AR-ACM0001 (equation 8) 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; t CO<sub>2</sub>-e.

$\Delta C_{ACTUAL}$  = Actual net GHG removals by sinks; t CO<sub>2</sub>-e.

$\Delta C_{BSL}$  = Baseline net GHG removals by sinks; t CO<sub>2</sub>-e.

LK = Total GHG emissions due to leakage; t CO<sub>2</sub>-e.

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

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

Where:

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

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

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

$GHG_E$  = 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

$GHG_{E,t}$  = Increase in non-CO<sub>2</sub> emissions due to biomass burning of existing vegetation as part of site preparation in year t; tCO<sub>2</sub>-e

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

The tool for “Estimation of non-CO<sub>2</sub> GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity” has been considered. The use of fire for site preparation and/or to clear the land of harvest residue prior to replanting is specifically excluded from the project management and therefore project emissions are estimated as zero.

In addition, no non-CO<sub>2</sub> emissions resulted in this period.

### 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. For ex-ante estimation, all pools were accounted.

Following is presented the equation for the estimation of  $\Delta C_P$ . 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

$\Delta C_{SOC}$  = Changes in carbon stock in SOC in project, in areas of land meeting the applicability conditions of the tool "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities", as estimated in the same tool; t CO<sub>2</sub>-e

### Biomass carbon pools

Above and below ground biomass have been estimated according to the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activity". Carbon estimations in trees are based on field measurements of monitored parameters, chapter 3.1.3 of the Monitoring Report. Estimations are archived as part of the project verification and will be available for the verification team.

The aboveground biomass corresponds to tree biomass, no shrubs are considered for estimation. The method used for estimating change in carbon stock in trees is the "stock change method". Change in carbon stock in trees in two successive points in time is calculated as the difference between the two estimated stocks.

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

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

Where:

$B_{TREEj,p,i,t}$

Biomass of trees of species j in sample plot p of stratum i at late 2021

$V_{TREEj,p,i,t}$

Stem volume of tree species using field measurements of tree parameters (DBH and height), default values (tree shape factor) and complemented with worksheets data processing (interpolation of not-measured heights); m3.

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; m3

Vtree

Aboveground biomass is calculated based on Bruce et al (1968) regression models (taper function) and the volumetric equation expressed below. The equations were updated from PDD in line with the calculations during forestry inventories:

Bruce et al (1968) taper function is used based on the parameters for each species:

$$dwb(h)^2 / DBH_b^2 = b_1 \cdot X^{1,5} + b_2 (X^{1,5} - X^3) DBH_b + b_3 (X^{1,5} - X^3) H + b_4 (X^{1,5} - X^{32}) H \cdot DBH_b + b_5 (X^{1,5} - X^{32}) H^{0,5} + b_6 (X^{1,5} - X^{40}) H^2$$

Where,

$dwb(h)$  = diameter (cm) without bark, measured at stem height (m)

$DBH(b)$  = diameter (cm) with bark at breast height, 1,3m from ground

$H$  = total height (m)

$h_j$  = height (m) from ground to diameter  $g_j$  ( $j=1,...,n$ )

$$X = (H-h_j) / (H-1,3)$$

$b_i$  = parameters estimated for each species (i=1, ...6)

| Parameter | Egrandis | Edunnii  | Pinus     |
|-----------|----------|----------|-----------|
| b1        | 0,88612  | 0,79307  | 0.796790  |
| b2        | -0,01139 | -0,01139 | -0.011734 |
| b3        | 0,01628  | 0,01645  | 0.015011  |
| b4        | -0,00008 | -0,00002 | -0.000041 |
| b5        | -0,00137 | 0,00272  | 0.013051  |
| b6        | 0,00004  | -0,00006 | -0.000145 |

The universal volumetric equation by smalian used is:

$$V_{tree} = DBH \cdot DBH \cdot 0.785 \cdot H$$

Where,

$V_{tree}$  = Total volume without bark (m<sup>3</sup>)

$DBH$  = Diameter (cm) extracted from Bruce et al. equation

$H$  = Height (cm) equal to 1cm

The next step is to add each section calculated and apply factor to include total volume with bark.

According to the methodology, for ex-post estimation, the volume equation used must be demonstrated to be appropriate for the purpose of estimation of tree biomass by applying the tool "Demonstrating appropriateness of volume equations for estimation of aboveground tree biomass in A/R CDM project activities". The appropriateness of the equations is demonstrated through the

satisfaction of the following conditions, in the sense that the formula is very generic and applicable in any case:

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

Moreover, the parameters for the regression equation are obtained from studies conducted within the project area, farms owned by BDU and neighboring companies, with variables derived from a data set of more than 50 trees and in line with the conditions stated in A/R Methodological Tool “Demonstrating appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities” V. 1. Information on the procedures are detailed in the Agroempresa Forestal Forest Inventory Manual, section 11<sup>86</sup>.

**$D_j$**

Basic wood density of tree species  $j$ . Species  $j$  corresponds to *Pinus* sp., *Eucalyptus grandis* and *dunnii*, with a basic density of 44 t.d.m./m<sup>3</sup> for *Pinus* and values from 38 to 49 t.d.m./m<sup>3</sup> according to age for *Eucalyptus*. This parameter was established as “available at validation” in the Project Design, but as new species were included in the project activity the parameter is further detailed.

The value for *Pinus* was obtained and corresponds to default value for *Pinus pinaster* in IPCC LULUCF Good Practice Guidance (2003), Table 3A.1.9-1. As also established in the validation report, the applied value is also midrange in values for loblolly pine wood density published by Oregon State.

The value for *Eucalyptus* is calculated based on information by ACHUGAR, L. et al. (2003)

**$BEF_{2,j}$**

Biomass expansion factor for conversion of stem biomass to above-ground tree biomass, for tree species  $j$ ; dimensionless. The  $BEF_2$  is to be used in connection to growing stock biomass data and not with increment data, as described in chapter 3.2 of the GPG for LULUCF (2003). The value for ex-ante estimation considered available at validation is not monitored, it ranged from 3.4 (for young forest) to 1.15 (mature forests) for *Pinus*, and 3.2 to 1.15 for *Eucalyptus*. The exact values applied for different plantation dates are reported in the final worksheet for carbon stock projection. In the case of ex-post estimation, the default value recommended by methodology, 1.15 will be used in case biomass does not include branches

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<sup>86</sup> Forest Inventory manual and associated information available for VVB during verification under reference 30.

biomass. In the case of Forteko, according to the technical team, the biomass provided by the system includes branches biomass, so BEF<sub>2,j</sub> is not used in this monitoring period.

**R<sub>j</sub>**

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

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

Where A is aboveground biomass content (t.d.m./ha). The aboveground biomass was calculated per year of plantation and different values were obtained.

In the case of ex-ante estimations, the default values from table 3A.1.8 from GPC for LULUCF (2003).

Following paragraph 23 to 31 (equation 5, 6, 7, 8, 9, 10, 11 and 12) of the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs", the total tree biomass and the uncertainty of the mean tree biomass per hectare within the project boundary is estimated.

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

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

Where:

|                          |                                                                                 |
|--------------------------|---------------------------------------------------------------------------------|
| <b>C<sub>TREE</sub></b>  | Carbon stock in tree biomass within the project boundary; t CO <sub>2</sub> -e. |
| <b>B<sub>TREE</sub></b>  | Biomass of trees within the project boundaries.                                 |
| <b>CF<sub>TREE</sub></b> | Carbon fraction of tree biomass; 0.47 t C td.m-3.                               |

### **Soil organic carbon**

Estimates of soil organic carbon (SOC) stocks were done in accordance with the “Tool for the estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activity” V.1.1. As suggested by the tool, it is assumed that the implementation of the project activity firstly decreases the SOC content of the lands from the pre-project level due to the site preparation. Afterwards, the SOC increases to the level that is equal to the steady-state SOC content under native vegetation. The increase in SOC content in the project scenario takes place at a constant rate over a period of 20 years from the year of planting. The project meets the applicability conditions of this tool -as demonstrated in validation since the areas of land to which the tool is applied do not fall into wetland category, do not contain organic soils and are not subject to any of the land management practices and application of inputs listed in the tool.

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

Table 7. Parameters used for estimation of Soil Organic Carbon (SOC).

| Parameter             | Symbol               | Value | Source (SOC estimation tool, V01.1.0)                                                                                                                                                                            |
|-----------------------|----------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reference SOC (tC/ha) | SOC <sub>REF,i</sub> | 88    | Table 3 HAC soils, warm temperate                                                                                                                                                                                |
| Land use factor       | f <sub>LU,i</sub>    | 1     | Table 6 All permanent grassland                                                                                                                                                                                  |
| Management factor     | f <sub>MG,i</sub>    | 0.70  | Table 6. Severely degraded grassland. Lands are identified as degraded lands using the “Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities” |
| Input factor          | f <sub>IN,i</sub>    | 1     | Table 6 Grassland without input of fertilizer                                                                                                                                                                    |

SOC at the beginning of the project (SOC<sub>INITIAL,i</sub>) is estimated by multiplying the factors in Table 6 by the reference SOC. As per the tool, a loss in SOC (SOC<sub>LOSS,i</sub>) is applied in the case that soil disturbance occurs on more than 10 per cent of the land area, which is the case of Forteko project. The following methodological formula is used for calculating the annual change in SOC stock:

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

Where:

|               |                                                                                                                                                                   |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $dSOC_{t,i}$  | The rate of change in SOC stock in stratum i of the area of land, in year t; t C/ha/yr.                                                                           |
| $SOC_{REF,i}$ | Reference SOC stock corresponding to the reference condition in native lands by climate region and soil types applicable to stratum i of the area of land; tC/ha. |

The correspondent carbon sequestration calculation is presented to the verification team in the total carbon stock estimation worksheet.

### **Litter and Dead Wood**

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

### **3.2.3 Leakage**

According to the methodology, the following types of leakage emissions can occur: GHG emissions due to activity displacement, the activity displaced being agricultural activities. Therefore, leakage is estimated as follows:

$$LK = \sum_{t=1}^i LK_{AGRIC,t}$$

Where,

$LK$  Total GHG emissions due to leakage; t CO<sub>2</sub>-e

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

As it has been stated in PD document, the methodology requires the assessment of sources of leakage due to activity displacement (conversion from grazing land to forestry). Application of the tool “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R DM project activity” led to the conclusion that this source can be neglected. The application of the “Guidelines on conditions under which increase in GHG emissions related to displacement of pre-project grazing activities in A/R CDM project activity is insignificant”,

which is one of the applicability conditions of the tool, resulted in the conclusion that the project will not cause any displacement of the activity occurring before project implementation. The project accomplishes the following conditions:

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

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

The total area to be displaced corresponds to the total area of the project 16,181.5 ha, meaning that the grazing area displaced is 100% and also more than 50 ha, then the value “n” – “a” is  $16,181.5 - (5\% \text{ of } 16,181.5 = 809.1) = 15,372.4$ . This area, used for grazing cattle, can be identified as degraded.

(i) The grazing cattle displaced by Forteko’s project will be to neighbor areas. One of the main explanations are that the project areas are not located in only one farm but in 4 different areas. It was already demonstrated that the project areas are degraded or degrading, and because the grazing animals are moved to neighbor zones (to control during on-site validation visit), the same conditions applies to this specific soil.

(ii) Moreover, the animals will be displaced only for 2 to 3 years and lately returned to the same site. The silvicultural management practice does not permit the animals to be grazing at the same time with the small trees, to avoid any physical damages. When the trees are big enough 2 or 3 years, the animals are reintroduced. During the period when the animals are displaced, the grasslands to where they go have the carrying capacity, as seen in table 10 of the PD document, the majority of farms in the project area (64%) are dedicated to beef cattle production. In Uruguay 80% of the land is dedicated to grazing animals, and the displacement takes place to other parts of the properties of the project, outside the project area.

Moreover, condition (d) is also met, where:

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

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

v. Slaughterhouses

Option (i) and (ii) were already demonstrated above. Option (v) is also valid for the case of Forteko’s

project. This is a common practice in the cattle beef production in Uruguay.

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

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

Beef cattle breeding (cow-calf) was the dominant activity in the pre-project land (Eastern hilly areas of Uruguay). Cattle were based on a breeding herd where heifers are mostly placed with bulls at the age of 3 years. Sales include culling cows to be fattened, surplus heifers, and calves (at weaning). Average production is 33 kg per ha per year<sup>19</sup>.

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

- Uruguayan grazing activity is completely associated with forestry. A larger amount of cattle, more than what is usual, is put within the project area during some months to substantially reduce the amount of above ground biomass minimizing the use of glyphosate (herbicides for site preparation) during site preparation for the forest establishment
- During site preparation and for a maximum of two years after forest establishment, cattle is put apart in similar areas (commonly in neighbors farms) to prevent cattle from harming the small trees. During the period in which cattle loss the winger part of leather, it is very common the animal uses fences or trees to scratch. After these two years cattle is reintroduced and managed in a silvopastoral system with trees (both activities complement each other). The impact of cattle displacement is reduced to two years over thirty year rotation.
- The total area under project activity is not afforested in the same year, first areas were planted in 2007, and the last ones in 2012 and then some of the farms were replacement of species took place were reforested in 2017 and onward.

The impact of this staggered plantation plan substantially reduces the eventual grazing displacement, cattle that has to be moved to other areas can be put in farms that were not afforested or in areas that has more than two years with forestry owned by Forteko.

It is important to emphasize that the area that comprises Forteko's boundary were not planted all at a same time, so animals are displaced gradually to other lands, following the sequence of plantations.

- Silvopastoral production is conducted during eighteen and ten years of rotation period. Silvopasture combines trees with forage and livestock production. The trees are managed for high-value saw logs and, at the same time, provide shade and shelter for livestock and forage, reducing stress and increasing forage production
- During one and a half year –maximum two –cattle are put in existing grasslands with the carrying capacity that allows for accommodation of the displaced animals during this period of displacement. These are areas with no forest (80% of Uruguayan surface is pasture) meaning that deforestation never occurs when introducing cattle in farms. And these areas can be identified as degraded.
- Existing cattle in the pre-project situation may either stay within project boundaries or in an area controlled by project participant, or be sold to the market (calves and surplus heifers are normally sold in the market for fattening on other grazing areas, while cows, heifers and a reduced number of bulls are sold to slaughterhouses). It is Forteko's policy that landowners can continue with their activities for a certain period after the purchase of the land, so that they have time to reduce the population of their cattle. In some cases, they may even stay in the land.

Furthermore, according to data gathered from governmental Livestock Controller Division (DICOSE)<sup>87</sup> there has been a smooth increase in the beef cattle number of heads at a national level.

On the other hand, according to data taken from National Forest Directorate (DGF)<sup>88</sup> forest plantations have also been increasing for the same period of time (Figure 7). In addition, native forest has also been increasing in terms of area in the last 43 years at the national level. According to National Forest Inventories (2010) and to the first native forest monitoring of 1980<sup>89</sup> native forests have increased 26% in terms of area. The fact that total forest area and amount of livestock have been increasing is evidence that project activity does not result in displacement of the previous productive system. Therefore, leakage is assumed to be zero.

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<sup>87</sup> [https://www.inac.uy/innovaportal/file/10495/1/pi\\_modulo\\_introductorio\\_web.pdf](https://www.inac.uy/innovaportal/file/10495/1/pi_modulo_introductorio_web.pdf) diapo 8

<sup>88</sup> Sistema de Información Forestal. Dirección General Forestal (MGAP) Registro Nacional de Bosques de 1975 a la fecha. Cartografía Forestal Nacional Año 2000. DGF/RENARE-MGAP Available at: <https://www.gub.uy/ministerio-ganaderia-agricultura-pesca/sites/ministerio-ganaderia-agricultura-pesca/files/2020-10/Informe%20final.pdf>

<sup>89</sup> 1er Carta Forestal Nacional 1980. Dirección Forestal, Parques y Fauna – MGAP value available at: <https://www.gub.uy/ministerio-ganaderia-agricultura-pesca/sites/ministerio-ganaderia-agricultura-pesca/files/2020-10/Informe%20final.pdf>

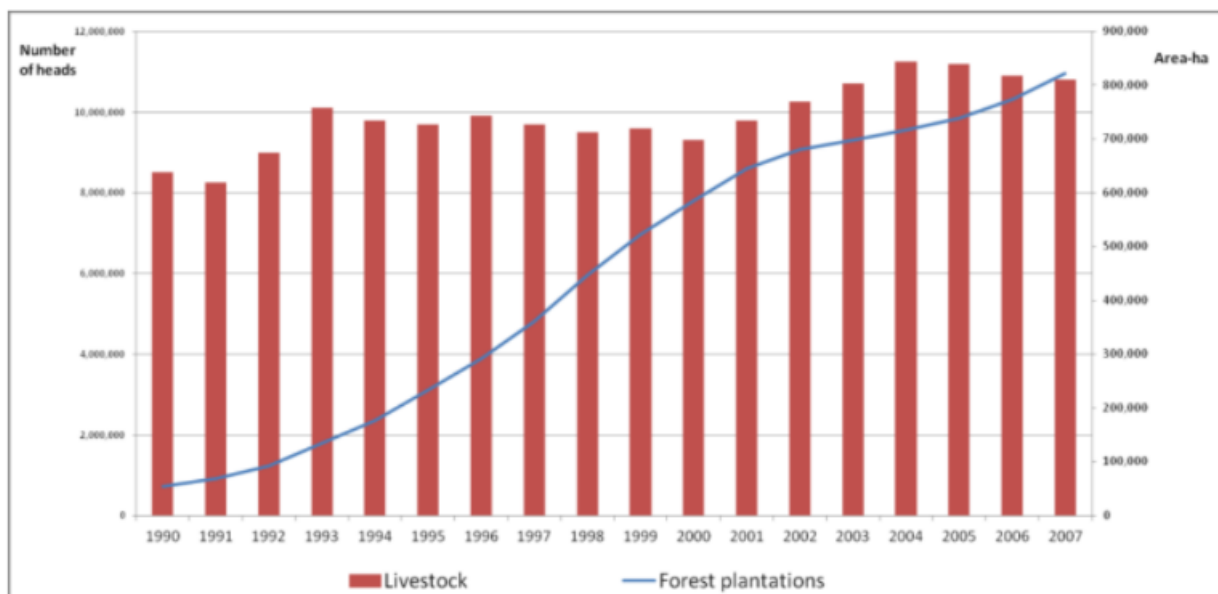


Figure 8: Blue curve shows the evolution of grassland area converted to forest plantations. Red bars show the number of cattle heads each year. Statistics were taken from official sources at a national scale.

### 3.2.4 Net GHG Emission Reductions and Removals

During this verification period (26th March 2013 to 25th September 2021), net GHG emission reductions reached 3,710,011 tCO<sub>2</sub>e (when decimal values are rounded-down), as detailed below, including the buffer credits calculated taking into consideration the non-permanence risk value of 10% for this monitoring period. Baseline net GHG removals and total GHG emissions due to leakage are zero, thus ex-post measurement of C AR-CDM equals ΔC ACTUAL:

| Year                       | Baseline emissions or removals (tCO <sub>2</sub> e) | Project emissions or removals (tCO <sub>2</sub> e) | Leakage emissions (tCO <sub>2</sub> e) | Net GHG emission reductions or removals (tCO <sub>2</sub> e) | Buffer pool allocation (10%) | VCUs eligible to be issued |
|----------------------------|-----------------------------------------------------|----------------------------------------------------|----------------------------------------|--------------------------------------------------------------|------------------------------|----------------------------|
| 26-Mar-2013 to 31-Dec-2013 | 0                                                   | 287.353                                            | 0                                      | 287.353                                                      | 28.736                       | 258.617                    |
| 1-Jan-2014 to 31-Dec-2014  | 0                                                   | 335.657                                            | 0                                      | 335.657                                                      | 33.566                       | 302.091                    |

|                           |   |           |   |           |         |           |
|---------------------------|---|-----------|---|-----------|---------|-----------|
| 1-Jan-2015 to 31-Dec-2015 | 0 | 335.657   | 0 | 335.657   | 33.566  | 302.091   |
| 1-Jan-2016 to 31-Dec-2016 | 0 | 335.657   | 0 | 335.657   | 33.566  | 302.091   |
| 1-Jan-2017 to 31-Dec-2017 | 0 | 334.998   | 0 | 334.998   | 33.500  | 301.498   |
| 1-Jan-2018 to 31-Dec-2018 | 0 | 649.076   | 0 | 649.076   | 64.908  | 584.168   |
| 1-Jan-2019 to 31-Dec-2019 | 0 | 709.910   | 0 | 709.910   | 70.991  | 638.919   |
| 1-Jan-2020 to 31-Dec-2020 | 0 | 387.762   | 0 | 387.762   | 38.777  | 348.985   |
| 1-Jan-2021 to 25-Sep-2021 | 0 | 333.941   | 0 | 333.941   | 33.395  | 300.546   |
| <b>Total</b>              | 0 | 3.710.011 | 0 | 3.710.011 | 371.005 | 3.339.006 |

The final results for GHG emissions removals for the different pools for the verification period are presented below..

| Year/pool                  | Baseline (tCO <sub>2</sub> e) | Leakage (tCO <sub>2</sub> e) | Above and below ground (tCO <sub>2</sub> e) | Dead wood (tCO <sub>2</sub> e) | Litter (tCO <sub>2</sub> e) | SOC (tCO <sub>2</sub> e) | Total stock | Annual (tCO <sub>2</sub> e) |
|----------------------------|-------------------------------|------------------------------|---------------------------------------------|--------------------------------|-----------------------------|--------------------------|-------------|-----------------------------|
| 2007-March 2013            | 0                             | 0                            | 400559                                      | 32045                          | 16022                       | -89643                   | 358983,0    | 358983                      |
| 26-Mar-2013 to 31-Dec-2013 | 0                             | 0                            | -                                           | -                              | -                           | 2.715                    | -           | 287.353                     |
| 1-Jan-2014 to 31-Dec-2014  | 0                             | 0                            | -                                           | -                              | -                           | 78.379                   | -           | 335.657                     |
| 1-Jan-2015 to 31-Dec-2015  | 0                             | 0                            | -                                           | -                              | -                           | 154.043                  | -           | 335.657                     |
| 1-Jan-2016 to 31-Dec-2016  | 0                             | 0                            | -                                           | -                              | -                           | 229.707                  | -           | 335.657                     |
| 1-Jan-2017 to 31-Dec-2017  | 0                             | 0                            | 1.503.211                                   | 120.257                        | 60.128                      | 304.711                  | 1.988.307,7 | 334.998                     |
| 1-Jan-2018 to 31-Dec-2018  | 0                             | 0                            | 2.029.934                                   | 162.395                        | 81.197                      | 363.858                  | 2.637.384,7 | 649.076,00                  |
| 1-Jan-2019 to 31-Dec-2019  | 0                             | 0                            | 2.599.168                                   | 207.933                        | 103.967                     | 436.228                  | 3.347.295,4 | 709.910,00                  |
| 1-Jan-2020 to 31-Dec-2020  | 0                             | 0                            | 2.871.258                                   | 229.701                        | 114.850                     | 519.249                  | 3.735.057,7 | 387.762,00                  |
| 1-Jan-2021 to 25-Sep-2021  | 0                             | 0                            | 3.104.943                                   | 248.395                        | 124.198                     | 591.463                  | 4.068.999,2 | 333.941,00                  |

2013-2017 values of project removals result from the calculated removals for the period (1,988,307.7tCO<sub>2</sub>e) minus those from the previous monitoring period (- 358,983tCO<sub>2</sub>e), with a total of 1,629,324.7 before buffer deductions. The vintages for that period are assigned based on lineal growth for the biomass pool -estimated based on the monthly average value (21,666 tCO<sub>2</sub>)- and the actual soil carbon stock for the vintage.

LTA value calculated ex-post equals 4,534,914 tCO<sub>2</sub>e. Total NERs verified during the different monitoring periods equal 4,068,994tCO<sub>2</sub>e a value still below LTA (estimated from the addition of monitoring period 1: 358,983tCO<sub>2</sub>e; and current monitoring period: 3,710,011tCO<sub>2</sub>e). Thus, total VCUs to be emitted in this monitoring period equals total emissions captured: 3,710,011tCO<sub>2</sub>e (decimal places rounded-down), minus buffer pool allocation which equals a total of 3,339,006. Buffer credits equal 371,005 tCO<sub>2</sub>e, in line with the 10% value result from the NPRR assessment and decimal values for annual removals rounded-up. The annual disaggregation for VCUs is shown below:

Uncertainty values reached 4.7% with a confidence interval of 95% and calculations are available to VVB.

### 3.3 Optional Criterion: Climate Change Adaptation Benefits

Not applicable as the project is not seeking Gold level.

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

Not applicable as the project is not seeking Gold level

## 4 COMMUNITY

### 4.1 Net Positive Community Impacts

#### 4.1.1 Community Impacts (CM2.1)

As previously mentioned, periodic surveys to the community allow to identify the forestry activity impacts on the communities. In this line the impacts analyzed include: impact on local jobs, community well-being, employees respect for local communities culture, environment conservation, among others.

Moreover, the Company interacts with the community in accordance with the criteria of Social Responsibility and assuming its role as a neighbor. Through socio-cultural studies, possible interactions are identified, for example:

- a) Generation of manpower and use of local services.
- b) Collaboration with educational activities (presentations, collaborations, etc.).
- c) Talks on forest fire prevention and care for the environment in schools and high schools in the areas of influence, whether rural or urban.

As a result of the project activity an increase in the creation of jobs in an area with high unemployment and high poverty rates is observed with more than 666 jobs generated (with 27 estimated to be women). In the case of the project, all workers are annually trained on FSC principles and criteria, AF policies, working security as well as others providing experience of forest planting and sustainable forest management in degraded grasslands in connection to HCV areas. The forest activity in Uruguay causes an increase in the number of jobs compared to extensive farming activity, as well as job quality, since forestry wages are typically higher than other activities rural areas. These will contribute to the attenuation or reversal of the phenomenon of population migration from the project zone to urban and other areas of the country. Moreover, the development of services in the towns next to project area is expected to increase due to project activity.

In addition, there is a tendency in the country that forestry workers return home after each workday, which is a big improvement in respect to livestock, which strongly depends on the residence workers on farms, far from their families.

On the other hand, the gross value of production per unit land area will increase between 6 to 8 times compared to extensive livestock farming. Forestry produces an increase in tax revenue. Biomass production and energy resource is of high strategic value for Uruguay, the project will increase supply of forest residues, which is considered a security for the country in terms of energy sources.

Regarding each community group impacts have been identified:

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Community Group           | Cattle breeders                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Impact(s)                 | Temporary relocation of activities, changes in the beef cattle breeding system (to silviculture)                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Type of Benefit/Cost/Risk | Actual and predicted impacts beneficial to the cattle breeders (with temporary inconveniences related to temporary relocation)                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Change in Well-being      | <p>Changes towards silvicultural activities have shown to bring benefits to cattle animals in comparison to grassland breeding, this being the provision of shelter from high temperature weather and storms. Still, this change in activities include temporary relocation within the property, to avoid young plantation from being eaten, or broken by cattle.</p> <p>Moreover, with the objective of reducing fire risks, cattle breeders and neighbors are capacitated on fire prevention and care for the environment during talks and community work.</p> |

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Community Group           | Rural population                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Impact(s)                 | Increase in economic activities and demand for services in the area; improve of local communities well-being and livelihoods.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Type of Benefit/Cost/Risk | <p>A direct actual benefit is that Forteko has implemented a program to support and assist local communities, public schools, public entities (firefighters, police) or any stakeholders identifying together problems solvable by the company, with donations of various types<sup>90</sup>. From materials goods (firewood, tools, and school supplies), to staff time (educational presentations in schools, technical assistance and participation in productive projects). Both Cambium and AF are committed to promote and enhance the well-being of the community.</p> <p>An indirect predicted benefit with the increase in the demand for services in the area, as a result of more activities taking place, is the generation of more jobs in different sectors<sup>91</sup>. This value is expected to represent a 150% in relation to direct jobs generated</p> |

<sup>90</sup> A complete and detailed list of donations is available for VVB during verification under reference 52

<sup>91</sup> Based on the report by Ferrere (2017) "Contribución de la Cadena Forestal a la Economía de Uruguay" (see reference 34)

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      | <p>by the project<sup>92</sup> meaning an improvement in the livelihood of 1036 persons (considering direct and indirect jobs, including cattle breeders and beekeepers within the project boundary) of which 45 are estimated to be women<sup>93</sup>.</p> <p>Another direct benefit for rural communities' well-being is erosion control and HCV conservation.</p> <p>Impacts ratings are measured based on annual surveys to community</p>                                                                                                                                                                                                                                                                                                                                                     |
| Change in Well-being | <p>Improvement given more people access jobs and training; conservation of environmental services. The implementation of the project activity will result in an effective protection of the soil against erosion and in a reversion of the degradation by building up soil organic carbon. Soils will be disrupted only once each rotation cycle and site preparation will be based on strip tillage, with strips oriented perpendicularly to slope direction, and use of glyphosate herbicide to minimize the exposure the soil to erosion agents.</p> <p>The tree vegetation will completely protect the soil and at harvest, bark, leaves and branches will be left on the ground, thus minimizing any negative impacts of erosion by rainfall and soil degradation by harvesting machinery</p> |

|                           |                                                                                                                                                              |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Community Group           | Forest producers and workers                                                                                                                                 |
| Impact(s)                 | Increase in scale and demand for jobs and industries; management experience improvement                                                                      |
| Type of Benefit/Cost/Risk | Indirect predicted benefit given by economic studies <sup>94</sup>                                                                                           |
| Change in Well-being      | The project will contribute to create a development pole away from Montevideo and other areas which concentrate most of the economic activity in the country |

|                 |                          |
|-----------------|--------------------------|
| Community Group | Project forestry workers |
| Impact(s)       | Chemical management      |

<sup>92</sup> Based on information from the report of Ferrer, 2017 (previous reference); where induced jobs from the forestry sector represented more than 150% of direct jobs in 2016.

<sup>93</sup> Based on General Census 2011 values for population structure.

<sup>94</sup> Based on the report by Ferrere (2017) "Contribución de la Cadena Forestal a la Economía de Uruguay" see previous reference

|                           |                                                                                             |
|---------------------------|---------------------------------------------------------------------------------------------|
| Type of Benefit/Cost/Risk | Identified direct potential risk – low significance (given the mitigation actions in place) |
| Change in Well-being      | Potential health risk                                                                       |

|                           |                                                                                                                                                                                                                                                                                     |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Community Group           | Rural school students and staff                                                                                                                                                                                                                                                     |
| Impact(s)                 | Education improvements by upgrading education facilities that are child sensitive                                                                                                                                                                                                   |
| Type of Benefit/Cost/Risk | Actual direct benefit received by students and education institution staff                                                                                                                                                                                                          |
| Change in Well-being      | This will be achieved through the project's donations to improve the school infrastructure and maintenance. It also includes talks on subject of interest to school authorities as: locally transmitted diseases, risk of locally present ophidians, flora and others <sup>95</sup> |

#### 4.1.2 Negative Community Impact Mitigation (CM2.2)

On the basis of the theoretical assessment of the impacts identified in the Environmental Impact Assessment as negative as a result of the planned interventions and related forest activities, the aim is to establish mitigation measures that will depend on each particular situation.

Mitigation is understood as the design and execution of works, activities or measures aimed at moderating, attenuating or measures aimed at moderating, attenuating, minimizing or diminishing the negative impacts that this that this project may generate on the human and natural environment.

Regarding temporary inconveniences for cattle breeders, mitigation actions include relocation within the same properties when possible. Also, cattle breeders have legal contracts signed with the project proponent, which clearly state the agreement's conditions, parties responsibilities, among others, Moreover, the project's impacts identified in the EIA will be mitigated based on:

**Impacts on personnel:** the mitigation measures that result in a low risk weighting are: the mandatory use of PPE (shoes or rubber boots, overalls, nitrile gloves, respirator for organic vapours, cap and goggles in the case of transferring products to be filled, etc.) rubber boots, overalls, nitrile gloves, respirator for organic vapours, cap and goggles in the case of transferring products for filling goggle backpacks). It is also compulsory to have an applicator's licence which implies going through a specific training course in the application of chemical products.

**Roads and Routes:** The Company establishes that on rainy days it is forbidden to drive on unpaved roads to avoid road and routes deterioration.

<sup>95</sup> A complete and detailed list of donations is available for VVB during verification (see reference 52)

**Soil and water contamination by chemicals:** There is an operating procedure in place for the correct use and care to be taken to avoid spills and contamination by limiting use, trained personnel in charge, among other actions.

**Flora:** Operators will be trained in operational IT to prevent the product from contaminating the local flora.

To the extent that negative impacts are identified that could have a greater significance than foreseen, the necessary corrective measures will be taken immediately. These will depend on the specific situation in each case and will be evaluated by the management of the legal entity, the AF GROUP and the appointed technical advisors.

No elements have been established to determine or establish compensation measures to restore environmental impacts, given that they have not been identified in the production process of the properties that make up the AF GROUP.

The following are some of the situations that could be found and the measures that could be taken in the event that they are found:

**Gullies:** If there are significant gullies, their surface area is measured and monitored to ensure that it does not increase. If this is the case, the area is measured and monitored to ensure that it does not increase, and if it does, it will be filled in or trees will be planted, selecting the most appropriate measure for each situation.

**Erosion:** Planting lines should preferably be carried out perpendicular to the slope, in the event that there is a longitudinal and transverse slope, it shall be cross slope, with drains/roads that allow for a change in the direction of the tillage so that there are no downhill furrows. The furrows should have a slight slope (2%), which is necessary to prevent the accumulation of water that would limit the growth of the trees.

Whenever possible, roads should not be used when they are wet, so as not to risk jeopardising their preservation.

**Water wells:** In the water wells, physical and chemical analysis of the water is carried out and the water table is measured on a biannual basis.

**Soil analysis:** If necessary, soil analysis will be carried out at selected sites. This can be defined e.g. when plantations are monitored and growth is found to be below expectations.

**Harvesting:** Given that forest harvesting is the activity that potentially generates the greatest impacts, certain aspects to be taken into account after harvesting are recorded in the Harvest Environmental Monitoring Sheet.

**Roads:** Given that forest harvesting is the activity that potentially generates the greatest impacts, certain aspects to be taken into account after harvesting are recorded in the Harvest Environmental Monitoring Sheet.

Moreover, the project area has management and monitor plan in place for HCV and APCI (areas of particular conservation interest) to ensure the conservation of those areas identified, throughout the project's lifetime (see section 4.3.1).

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

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

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

All the previous benefits lead to the improvement in the well-being of 12,558 people (of whom 6529 are estimated to be women). These value is calculated taking into consideration the number of direct and indirect jobs generated, donations and development projects with the communities for the verification period, as well as population near HVC identified.

Evidence of the net positive impact of the project's activity are the results of the activity's rating by the stakeholders on the well-being, job generation and other variables analyzed in the annual community survey. These results are reported in section 4.3.1 of this report.

Those impacts identified will be mitigated based on the procedures further described in the general Forest Management Plan leading to net positive impacts.

#### **4.1.4 Protection of High Conservation Values (CM2.4)**

None of the HCV have been negatively affected by the project because they are either protected by national laws or voluntarily protected by the project proponents (for those within private lands). All HCV related to community well-being are not located in the rural areas, but in towns, negligible being affected by the project activity.

Those HCV found within the project area will be monitored and protected as mentioned in the BDU project Management Plan and section 5 of this and PDD document.

## **4.2 Other Stakeholder Impacts**

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

The project activities may contribute to other stakeholders, improving socio-economic conditions, by bringing decentralized development and generating job opportunities. It will also add to a higher demand for forestry industries in the area, which can eventually lead to migration because of job opportunities.

It is well known that planting trees on a grassland site usually causes a reduction in the runoff and an increase in the evapotranspiration. This might cause some competition for water with other users (e.g, cattle farms located downstream in the watersheds, hydroelectric power generation, and water for human consumption). Some studies (e.g. Silveira et al., 2006<sup>96</sup>) have shown that this effect is not significant in Uruguay at the medium-size watershed scale (due to high precipitation). At the micro-watershed level, there might be some problems, which can be minimized by plantation design (e.g. by limiting the extent of forest plantations in a watershed)<sup>97</sup>. The proposed project will leave at least 30-35% of the land area unplanted, which would greatly reduce the hydrological effects, as compared with a more common 25% of unplanted area. In addition, since most of the project area flows into rivers with relatively high flow rate, no significant downstream effects are expected.

On the other hand, given the fact that climate change in Uruguay has increased precipitations and is expected to continue causing an increased frequency of extreme precipitation events associated with flooding<sup>98</sup> causing severe infrastructure damage and displacement of people from their homes, the establishment of forests acts as a factor attenuating such negative impacts, by moderating the runoff. This is in fact a positive environmental service of the project. Given the fact that soil erosion will be controlled and that a minimal amount of agro chemicals will be used no negative impacts on water quality is expected either.

### **4.2.2 Net Impacts on Other Stakeholders (CM3.3)**

Any potential negative impacts on the hydrological cycle processes is minimized by: a) the design of plantations, which occupies only approximately 62%<sup>99</sup> of the land of Forteko project area,

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<sup>96</sup> Silveira, L., Alonso, J., y Martínez, L. 2006. Efecto de las plantaciones forestales sobre el recurso agua en el Uruguay. Agrociencia (2006) Vol. X N°2 pág. 75-93

<sup>97</sup> Nosoetto, M. & Jobbagy, G. (2016) Análisis del impacto hídrico de la expansión forestal en cuencas de Uruguay at Sociedad de Productores Forestales Uruguay

<sup>98</sup> As mentioned in section III of: Giménez et al (2006) Cambio climático en Uruguay, posibles impactos y medidas de adaptación en el sector agropecuario. Serie Técnica N° 178, INIA

<sup>99</sup> This takes into consideration only the forested surface, meaning, for example only 2,055.9ha of Manolete farm is considered when the whole farm is 3,042ha

avoiding sensitive areas; and b) the fact that the annual rainfall, and in particular during the spring-summer period, when usually water deficits occur, has been increasing over recent decades, and is expected to continue in the future, thus offsetting the expected decrease in runoff.

In order to evaluate that no net negative impacts on other stakeholders have taken place surveys are conducted not only with neighbours, but different stakeholders with different backgrounds, activities and relation to the project (including contractors and other interested parties).

Moreover, during annual FSC certification, a wide array of stakeholders are interviewed and no complaints have arisen regarding negative impacts of the project, other than local impacts mitigated, such as rural road deterioration<sup>100</sup>.

### 4.3 Community Impact Monitoring

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

The community monitoring plan includes a matrix where the different variables analyzed are monitored (monthly or annually according to indicator) and publicly available on BDU webpage to stakeholders in the form of summary monitoring reports, in local language.

Impacts on the communities' well-being is analyzed from the information collected through the annual survey conducted by BDU (see section 2.3.3). The results for the verification period are reported in the annual summary monitoring reports mentioned where the rating for different forestry activity impacts is summarized. Other variables are systematically monitored using internal reports including working accidents, jobs generated, trained employees, water and soil quality, number of complaints resolved, contribution of project developer to communities in material assistance. Results for the verification period of some of the variables are reported below<sup>101</sup>:

Table 8. Monitoring results for verification period

| Cost/benefit/risk                                          | Indicator                               | Monitoring frequency | Goal                                     | Results for verification period (under AF management) <sup>102</sup> |
|------------------------------------------------------------|-----------------------------------------|----------------------|------------------------------------------|----------------------------------------------------------------------|
| Improvement of livelihoods of communities and stakeholders | Number of direct and indirect employees | Annual               | Prioritize local hiring if needs are met |                                                                      |

<sup>100</sup> FSC summary reports available in reference 17.

<sup>101</sup> Complete results available for VVB during verification (see reference n° 19 & 67)

<sup>102</sup> Information during Cambium management available to VVB during verification

| Cost/benefit/risk                                                                             | Indicator                                                               | Monitoring frequency | Goal                                                                              | Results for verification period (under AF management) <sup>102</sup>                                                                                                                                                                                                                                                     |                |                   |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|-------------------|------|----|----|------|----|----|------|-----|-----|------|-----|-----|------|-----|-----|
| Improvement of technical capacities of communities and stakeholders                           | Number of trained people in forestry-related areas                      | Annual               | 100% forestry contracted companies should be trained every year                   | <table><tr><th>Year</th><th>Jobs generated</th><th>Trained employees</th></tr><tr><td>2016</td><td>61</td><td>61</td></tr><tr><td>2017</td><td>30</td><td>30</td></tr><tr><td>2018</td><td>171</td><td>171</td></tr><tr><td>2019</td><td>281</td><td>281</td></tr><tr><td>2020</td><td>123</td><td>123</td></tr></table> | Year           | Jobs generated    | Trained employees | 2016 | 61 | 61 | 2017 | 30 | 30 | 2018 | 171 | 171 | 2019 | 281 | 281 | 2020 | 123 | 123 |
|                                                                                               |                                                                         |                      |                                                                                   | Year                                                                                                                                                                                                                                                                                                                     | Jobs generated | Trained employees |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
|                                                                                               |                                                                         |                      |                                                                                   | 2016                                                                                                                                                                                                                                                                                                                     | 61             | 61                |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
|                                                                                               |                                                                         |                      |                                                                                   | 2017                                                                                                                                                                                                                                                                                                                     | 30             | 30                |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
|                                                                                               |                                                                         |                      |                                                                                   | 2018                                                                                                                                                                                                                                                                                                                     | 171            | 171               |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
|                                                                                               |                                                                         |                      |                                                                                   | 2019                                                                                                                                                                                                                                                                                                                     | 281            | 281               |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
|                                                                                               |                                                                         |                      |                                                                                   | 2020                                                                                                                                                                                                                                                                                                                     | 123            | 123               |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
| Adding a total of 666 job position and training capacities                                    |                                                                         |                      |                                                                                   |                                                                                                                                                                                                                                                                                                                          |                |                   |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
| Achieve exceptional community communication and participation throughout the project lifetime | Number of complaints resolved                                           | Annual               | 100% of complaints should be answered and solved in line with procedures in place | No complaints received during verification period                                                                                                                                                                                                                                                                        |                |                   |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
|                                                                                               |                                                                         |                      |                                                                                   |                                                                                                                                                                                                                                                                                                                          |                |                   |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
|                                                                                               |                                                                         |                      |                                                                                   |                                                                                                                                                                                                                                                                                                                          |                |                   |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
| Achieve exceptional community communication and participation throughout the project lifetime | Communities valorisation of project communication procedures            | Annual               | Maintain values of good/very good results above 60%                               | Average for the period 82,5%                                                                                                                                                                                                                                                                                             |                |                   |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
|                                                                                               |                                                                         |                      |                                                                                   |                                                                                                                                                                                                                                                                                                                          |                |                   |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
| Improvement of communities well-being                                                         | Contribution of project developer to communities in material assistance | Annual               | Contribute with communities with what is possible                                 | 6 schools benefited (painting, firewood, park maintenance, park game fixing)                                                                                                                                                                                                                                             |                |                   |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
|                                                                                               |                                                                         |                      |                                                                                   | 3 neighbor communities (road infrastructure materials, drinking water, a sculpture, electrical appliances and others)                                                                                                                                                                                                    |                |                   |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |
|                                                                                               |                                                                         |                      |                                                                                   | 1 Police headquarters (firewood)                                                                                                                                                                                                                                                                                         |                |                   |                   |      |    |    |      |    |    |      |     |     |      |     |     |      |     |     |

| Cost/benefit/risk             | Indicator                                                               | Monitoring frequency | Goal                                                          | Results for verification period (under AF management) <sup>102</sup>                 |
|-------------------------------|-------------------------------------------------------------------------|----------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                               | Communities valorization of project improvement to community well-being | Annual               | Maintain values of good/very good results above 60%           | Average for the period 74,5%                                                         |
| Cattle breeders participation | Number of cattle breeders in properties                                 | Monthly              | Maintain interaction with cattle breeders                     | 25 cattle breeders                                                                   |
| Maintenance of community HCV  | Community HCV conservation status within premises                       | Annual               | No HCV negatively impacted                                    | No community HCV within the project area or impacted by project                      |
| Mitigate workers health risks | N° of accidents/1m illion working hours                                 | Monthly              | Reduce accidents to 4 accidents every 1 million working hours |  |

The general BDU premises results for communities' valorization for the forestry activities are included below, but information is available at establishment level<sup>103</sup>. This values represent the percentage of stakeholders' rating sum for *good*, *very good* and *excellent* results, for each variable:

Table 9. Survey results for forestry project activity on community in project zone

| Variable analyzed/Year    | 2017  | 2018  | 2019  | 2020  |
|---------------------------|-------|-------|-------|-------|
| <b>Economic impact</b>    | 77.1% | 81.2% | 72.2% | 59.1% |
| <b>Jobs generated</b>     | 67.4% | 62.5% | 63%   | 54.5% |
| <b>Working conditions</b> | 90.3% | 75%   | 70.4% | 47.7% |

<sup>103</sup> Survey may vary according to activities, prioritizing information around those premises were activity took place and may indicate negative impacts.

|                                                               |       |                        |       |                      |
|---------------------------------------------------------------|-------|------------------------|-------|----------------------|
| <b>Communication rating between employees and communities</b> | 85.5% | 96.9%                  | 81.5% | 65.9%                |
| <b>Employees integration to the communities culture</b>       | 91.5% | 96.9%                  | 83.3% | 75%                  |
| <b>Environmental impact of forestry activity</b>              | 77%   | 56.3% (15% no answers) | 62%   | 25% (52% no answers) |
| <b>Impact over communities well-being</b>                     | 81.9% | 84.4%                  | 65.7% | 65.9%                |

Regarding community HCV, non-have been identified within the project area. Those within the project zone have not been negatively affected by the project as they are either protected by national laws or voluntarily protected by private land owners. Almost all HCV related to community well-being are not located in the rural areas, but in towns, negligible being affected by the project activity. If HCV for community are found within the project area, they'll be monitored and protected as mentioned in the BDU project Management Plan. In conclusion, the BDU project is not affected or affecting HCV for community well-being.

#### **4.3.2 Monitoring Plan Dissemination (CM4.3)**

Annual monitor results are updated and published in both Cambium and BDU webpage, available to the public. Summaries are reported to the community during consultation instances, including verification stages and events specially organized for monitor report results communication. This is the case of biodiversity reports, communicated in schools.

#### **4.4 Optional Criterion: Exceptional Community Benefits**

Not applicable as the project does not seek Gold standard.

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

Not applicable.

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

Not applicable.

#### 4.4.3 Net Impacts on Women (GL2.5)

Not applicable.

#### 4.4.4 Benefit Sharing Mechanisms (GL2.6)

Not applicable.

#### 4.4.5 Governance and Implementation Structures (GL2.8)

Not applicable.

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

Not applicable.

### 5 BIODIVERSITY

#### 5.1 Net Positive Biodiversity Impacts

##### 5.1.1 Biodiversity Changes (B2.1)

The expected biodiversity changes include an improvement of the ecological environment of the planted areas and the native forest and grasslands surrounding these forest plantations, meaning the total of the properties (only considering the cadastral units part of the project): 16,181.5ha. This is due to the fact that native forests won't be impacted by the activity and monitored to avoid negative impacts, whereas those degraded grasslands due to cattle breeding with HVC potential are being protected and monitored, allowing its recovery. Cattle breeding activity did not include this measures, leading to degradation in the area.

| Change in Biodiversity | Increase in biodiversity richness                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitored Change       | <p>At La Hacienda property, biodiversity richness monitoring included:</p> <p>Flora:</p> <p>Presence of 3 species of the three birds in SNAP list that gives HCV category to the area are confirmed:</p> <ul style="list-style-type: none"> <li>• <i>Pyrrhura frontalis</i> (chiripepé)</li> <li>• <i>Aratinga leucophthalmus</i> (White-eyed parakeet)</li> <li>• <i>Aratinga acuticaudata</i> (Blue-crowned Parakeet)</li> </ul> <p>Fauna:</p> <p>A fixed monitoring plot (400 m2) was implemented, where the flora is surveyed:</p> <ul style="list-style-type: none"> <li>• Presence of natural regeneration in different strata</li> </ul> |

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | <ul style="list-style-type: none"> <li>• Undergrowth</li> <li>• Percentage of land covered</li> <li>• Presence of epiphytic / parasitic species</li> <li>• Presence of climbers</li> <li>• Indicators of felling or burning</li> <li>• Presence of invasive species of importance</li> </ul> <p>Visual inspection of field supervisor tours (with camera tool)</p> <p>Analyzing:</p> <ol style="list-style-type: none"> <li>1. Verify that the distance restriction of 20 mts. To the native forest is complied with, when the soil is tilled and the plantation is established.</li> <li>2. Incorporate the area in the long-term flora and fauna monitoring program.</li> <li>3. Monitor the presence of exotic tree species and eliminate them</li> <li>4. Monitor the populations of parrots and flora of conservation interest</li> <li>5. Check firewall status</li> <li>6. Verify cattle exclusion</li> </ol> |
| Justification of Change | <p>The floristic surveys carried out till 2015 have recorded the presence of 345 species from which 13 are currently listed as according to the SNAP lists.</p> <p>The state of conservation of natural areas is highly satisfactory, maintaining the different representative environments with a high diversity. After 3 years from the baseline, the conservationist management plan implemented has proven it's favoring the maintenance and in some cases the reestablishment of the different habitats in the non-forested sectors.</p>                                                                                                                                                                                                                                                                                                                                                                        |

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Change in Biodiversity | Invasive species control                                                                                                                                                                                                                                                                                                                                                                                                               |
| Monitored Change       | <p>Visual inspection of field supervisor tours (with camera tool)</p> <p>Analyzing:</p> <ul style="list-style-type: none"> <li>• Is there natural regeneration of Eucalyptus and Pinus in unwanted areas?</li> <li>• Are there populations of other invasive plant species within the native forest, conservation areas and HCV?</li> <li>• Is the execution of extra-stand forestry practices invading conservation areas?</li> </ul> |

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | <ul style="list-style-type: none"> <li>State of natural field areas (height of horizon of leaves in pastures, % of soil covered, erosion)?</li> </ul> <p>Is any animal species displayed, if YES which one?</p>                                                                                                                                                                                                                                                        |
| Justification of Change | Results have shown no increase in areas occupied by invasive species, compared to without-project condition, but same species identified in cattle breeding livestock dumps areas: <i>Cynodon dactylon</i> y <i>Pennisetum clandestinum</i> . The evidence observed shows the conservation procedures conducted are limiting outbreaks of invasive or non-native species ( <i>Eucalyptus</i> ), controlling erosion levels, allowing for the regeneration of pastures. |

### 5.1.2 Mitigation Actions (B2.3)

The different measures which may be taken, according to needs, are listed below<sup>104</sup>:

- Mapping of the conservation area and implementation of procedures to be respected by others activities (crops, alternative productions, vehicular traffic, activities not in accordance with the objective of the area, etc.).
- Control the entry of hunters, fishermen, birders, and people outside the company staff in general.
- Evaluate the relevance of carrying out livestock management with objectives compatible with the conservation of environments, their flora and fauna.
- Minimize the use of dogs in livestock management, since in general they are an important cause of mortality of wild fauna, mainly of small and medium-sized mammals.
- Fence the area where vulnerable species have been found.
- Reconstruction plan: management of invasive alien species and Pines

There are a number of aspects that are common to the management plan for unplanted areas of all farms (from the point of view of the fauna tetrapod) and with greater emphasis on HVCs.

- Access restriction. The presence of people should be restricted to the minimum essential in the case of company personnel and contractors.
- Establish effective surveillance of the areas by Field Supervisors.

<sup>104</sup> Evidence included in the form of maps, contracts and other documents available to VVB

- Perform access control tasks and installation of posters deterrent. It would be desirable to prohibit (and enforce the prohibition) the access to unauthorized persons, in particular, but not exclusively, hunters, fishermen, campers, birders, etc.
- Prohibit (as far as possible, and if not reduce to a minimum essential) the presence of dogs linked to the performance of livestock movement tasks, in the environment of residences or accompanying visitors. Dogs in living areas must:
- Restrict employee's circulation, preventing them from entering conservation areas and particular to HVCs.
- Maintain special attention on the presence of exotic species feral (wild boar dogs and pigs (*Sus scrofa*), axis deer - Axis and Hare - *Lepus europaeus*), mainly) for detect presences, or substantial increases that warrant taking control actions.
- Control the presence, within the HVC, of plant species invasive aliens that imply an impoverishment of the environments for tetrapod fauna.
- Adjust livestock endowments (and categories and species) in response to its affectation to the vegetation cover, keeping in the as much as possible a good soil cover and the supply of Shelters (tall grass, accumulated plant material) and food (seeds, leaves) for wildlife. It is desirable to consider cattle within HVCs as a management tool for the vegetation rather than as a strictly productive objective.
- Reduce the risk of fire through: perimeter firewalls, green areas, surveillance, and prohibition of fire and control of access.
- In the particular case of HVC it is desirable to avoid inter-fingering between cultivation and natural areas, minimizing the area contact and avoiding, in particular, cutting or narrowing excessive, biological corridors and connections.
- In all cases, the installation of posters relating to areas of conservation or HVC should be one of the last actions (subsequent to the establishment of controls and specific surveillance) since many times they have the opposite effect, warning about the presence of securities and tending to illegal access rather than avoiding it.
- Vegetable waste must be at least 20 meters away with respect to the areas defined as priority conservation areas, as well as of water courses, buffer zones and ecotones.
- The roads and storage areas will be planned avoiding affecting areas of conservation of the property, as well as the shallows, water courses, etc. and in special conservation priority areas.

After the harvest:

- Verification that the 20 m buffer zones have been well defined with respect to the plantation firebreak.

- Verification that there are no specimens of *Eucalyptus* or *Pinus* (or exotics invasive) in conservation priority areas or other sites.

Moreover, specific considerations are defined for each HCV area in the project area, applicable to others if defined in the project area. For example:

- Control possible fragmentation or discontinuity of areas and corridor
- Control the natural regeneration of cultivated forest species towards unwanted areas.
- Eliminate invasive species populations within HVC and RA
- Verify that extra-stand forestry practices are not carried out.
- Verify the status of non-forested areas, fences and posters.
- Verify the ground cover and adjust accordingly the provision of livestock.
- Circulation with heavy machinery is restricted in areas to conserve and areas to conserve.

Specific considerations for areas of particular conservation interest are defines, as is the case for La Cascada establishment:

- Take care of the possible fragmentation or discontinuity of areas and corridors.
- Control the natural regeneration of forest species cultivated towards unwanted areas.
- Eliminate invasive species populations within areas of special interest for conservation
- Verify that extra-stand forestry practices are not carried out.
- Verify the status of non-forested areas, fences and signage.
- Verify the ground cover and adjust accordingly the provision of livestock.
- Circulation with heavy machinery is restricted in the areas to be conserved and areas to conserve.

Regarding forestry activities, the mitigation plan in place include:

**A. During harvest:**

- Tree cutting: The most suitable cutting form should be used to ensure the conservation of the surrounding areas classified as HCV. Special attention should be paid to areas adjacent to the sites defined as conservation priority areas and lowlands.
- Traffic of machinery: The traffic of machinery should be avoided in the HCV, as well as in the vicinity thereof, the sites to be protected must be clearly marked.

- Entering the "conservation priority" areas should be avoided by employees.
- Vegetable residues must be at a minimum of 20 meters with respect to the areas defined as priority conservation areas, as well as of water courses, buffer zones and ecotones.
- The roads and storage areas will be planned avoiding affecting areas of conservation of the property, as well as the shallows, water courses, etc. and in special conservation priority areas.

**B. After the harvest:**

- Verify that the 25 m buffer zones have been well defined with respect to the firebreak of the plantations on the South side and 12 other sides.
- Verify that there are no specimens of *Eucalyptus* and *Pinus* (or exotics invasive) in conservation priority areas or other sites.

**c. Grazing**

- Bovine cattle, in the permitted areas, must be controlled during the year to facilitate the seedling of native forage value pastures.
- monitoring the state of grasses especially in the lowlands taking as reference the average height of the horizon of leaves.
- The possibility of dividing the property into paddocks should be analyzed to manage livestock in the best possible way in different circumstances / times of year.

**d. Planning management or re-planting:**

- The design of the stands and management activities should be planned in order to ensure not to affect priority areas for conservation.
- Low forested areas should be re-planned, eliminating the stands included within them.

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

As demonstrated during VCS validation in PD, the identified baseline activity: cattle breeding, represents a degrading land activity in the region. The activity does not required an Environmental Impact Assessment, leading to no mitigation plans, or HCV areas identification and conservation. No mitigation plans means no actions taken to avoid soil erosion, plant invasion, among other activity's impacts. From the biodiversity monitoring conducted in the different farms, it can be seen that those areas impacted by grazing presented low potential to provide native biodiversity habitats, and only species adapted to disturbed areas were present. This is due to the grazing management in the area, affecting vegetation cover and available resources. Moreover, it presents low employment rates per hectare in comparison to other economic activities.

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

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

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

The positive impacts of the development of the project are demonstrated above compared with conditions under the without-project land use scenario reaching the 16,181.5ha of productive area.

#### **5.1.4 High Conservation Values Protected (B2.4)**

From what is indicated in section 5.1.1, the maintenance and increase in the biodiversity of flora and fauna for the HCV area is demonstrated, and all other HCV in the project zone not negatively affected as they don't take place within the project area and are protected either by national and local entities as recognized reserve areas or by private property, in the case of certified plantations.

HCV Quebrada Los Loros at "La Hacienda" farm corresponds to a ravine that is born within the property, with abundant native vegetation. According to the survey of flora and fauna that began in the spring of 2008, species of conservation interest were found. These included the presence of 43 species of trees and shrubs, among which some of interest for conservation were recorded, in attention to their restricted distribution or to its productive uses. Moreover, regarding fauna, three parrots listed in the SNAP list for conservation were recorded:

- *Pyrrhura frontalis* (chiripepe)
- *Aratinga leucophthalmus* (White-eyed parakeet)
- *Aratinga acuticaudata* (Blue-crowned parakeet)

Conservation protection and management activities have been documented in the "summary report for forest HCV management" and detailed in the cartography. The "Natural Resources Management" chapter of the management plan details that the flora and fauna studies are carried out by external experts to know the natural resources on lands certified by Forteko. Within the same

chapter, the areas to be protected or preserved are established. Additionally, hunting is prohibited on all Forteko's Project area and native forests are not disturbed.

There are detailed wildlife censuses, carried out by external experts that characterize the different existing ecosystems. There is a list of existing and potential species on the land according to their conservation status. The silvicultural systems applied to artificial plantations meet the production objectives and are similar to those of other companies in the area and approved by the competent authorities. In this line, new potential HCV areas will be studied and identified throughout the project lifetime.

No degraded areas were identified that might require the implementation of restoration plans. However, based on these baseline studies, the Plan for the Elimination of Invasive species (ELEI) 2020 -2021 was established.

A control of the elimination of exotic species is in place, with intervention activities that depend upon the property's need. The project preserves areas of native forest, natural grasslands with rocky outcrops, and low grasslands. These areas are mapped and identified and are well known to land workers.

#### **5.1.5 Invasive Species (B2.5)**

Forteko's plantations include exotic species of Eucalyptus and Pines. Specifically, the Exotic Invasive Species Committee for Uruguay (CEEI) has published a list of invasive flora and fauna, where Eucalyptus is not among them <sup>105</sup>. There is no evidence of invasive species. The results obtained from the monitoring of the verification period, described in items 5.2 and 5.4, showed the reduction of invasive species and no new exotic and / or invasive species were identified

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

The project uses mostly Loblolly Pine (*Pinus taeda*), *Eucalyptus grandis* and, to a lesser extent, *dunnii*. None of the species are native to the area. The choice of species is due primarily to the fact that they ensure an adequate productivity level and a market access for the products to be obtained, which would not be possible if other species were used. On the other hand, they originate in regions with ecological conditions highly similar to those in Uruguay. At the same time, the mentioned species are broadly used in Uruguay and therefore adapted to the project agro-ecological zone.

These similarities explain why this species adapted so well to Uruguayan conditions, where it has been successfully grown and bred for many years. Prove of this is that other VCS forestry plantations projects are using the same species.

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<sup>105</sup> Available at: <https://www.gub.uy/ministerio-ambiente/comunicacion/publicaciones/lista-especies-exoticas-invasoras-uruguay#:~:text=El%20Comit%C3%A9%20de%20Especies%20Ex%C3%B3ticas,requieren%20de%20atenci%C3%B3n%20prioritaria%20dado> and for VVB during verification

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Species              | <i>Pinus taeda</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Justification of Use | <i>Pinus taeda</i> started to be used in the 1960s <sup>106</sup> . Currently this tree species is one of the most widely planted in Uruguay, representing approximately 20% (~ 155,000ha) of commercial plantations according to “Dirección General Forestal” <sup>107</sup> . In addition, this species has been successfully planted and has satisfactorily growth in the Forteko project site since 2007, there were no soil or weather adaptation problems which could be seen during last verification. |
| Adverse Effect       | As a general measure, the project will voluntarily adopt the application of the National Code of Good Forest Practices. Forests are based on 22-25 year rotation Loblolly Pine ( <i>Pinus taeda</i> ), managed with pruning (to a height of 5.6 m) and two thinning operations, to obtain knot-free, high-diameter logs suitable for saw-milling. Plantation were completed by year 5 of the project and forests will be replanted after clear-cut harvest. Practices are certified with FSC standard.        |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Species                  | <i>Eucalyptus grandis</i>                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Justification of Use     | They ensure an adequate productivity level and a market access for the products to be obtained, which would not be possible if other species were used. The project will produce high quality wood suitable for plywood and saw wood production. To produce these type of logs, intensive silvicultural management is implemented (pruning up to 9 meters and thinning), which means intensive and specialized workforce                    |
| Potential Adverse Effect | As a general measure, the project will voluntarily adopt the application of the National Code of Good Forest Practices.<br><br>Likewise, an environmental management system will be implemented with a focus on continuous improvement, following the FSC (Forest Stewardship Council) standard. Based on the environmental impact studies carried out, a significant negative environmental impact is not expected as a consequence of the |

<sup>106</sup> Porcile Madermi (2007) Crónicas del desarrollo forestal en Uruguay. Cuadro 1 (see reference n° 37)

<sup>107</sup> División Evaluación e Información, DGF-MGAP (2021) Cartografía forestal de bosques plantados 2021 Available at: <https://www.gub.uy/ministerio-ganaderia-agricultura-pesca/comunicacion/publicaciones/anuario-opypa-2021/estudios/cartografia-forestal-bosques-plantados-2021>

|  |                                                                                                                                                                                                                                                                                                                                                                                          |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>implementation of the project activities and the use of <i>Eucalyptus grandis</i>.</p> <p>The project is classified in Category A in DINAMA (lower impact).</p> <p>Natural regeneration (mainly in buffer zones and lowlands) will be controlled. After pruning and thinning, drainage zones will be controlled, and no pruning/thinning residues will be allowed in these areas.</p> |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Species                  | <i>Eucalyptus dunnii</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Justification of Use     | <p>This specie will be planted in low areas or where <i>Eucalyptus grandis</i> can be affected by frost damage<sup>108</sup>. Similarly to <i>Eucalyptus grandis</i>, <i>Eucalyptus dunnii</i> ensure an adequate productivity level and a market access for the products to be obtained. This species mix will allow the project to produce both high quality wood suitable for plywood and saw wood production and fast growing species for pulp.</p>                                                                                                                                                                                                                                                                                                                                                    |
| Potential Adverse Effect | <p>As a general measure, the project will voluntarily adopt the application of the National Code of Good Forest Practices Likewise, an environmental management system will be implemented with a focus on continuous improvement, following the FSC (Forest Stewardship Council) standard. Based on the environmental impact studies carried out, a significant negative environmental impact is not expected as a consequence of the implementation of the project activities and the use of <i>Eucalyptus dunnii</i>. The project is classified in Category A in DINAMA (lower impact) Natural regeneration (mainly in buffer zones and lowlands) Will Be controlled After pruning and thinning, drainage zones will be controlled and no pruning/thinning residues will be allowed in these areas.</p> |

#### 5.1.7 GMO Exclusion (B2.7)

Forteko's project is FSC certified so it has a commitment with FSC values. One of them is the prohibition of introduction of genetically modified organisms in forestry operations.

<sup>108</sup> Oberschelp, G.P.J et al (2016) Assessing the freezing stress tolerance in three species of Eucalyptus: first results.

### 5.1.8 Inputs Justification (B2.8)

Based on FSC Principle 6, Environmental Impact, management systems should promote the development and adoption of non-chemical methods for pest management, in order not to harm the environment. The use of chemical pesticides should be avoided. Because of that, AF has in place an internal policy and strategy to minimize the use of chemical substances. In the case of pest control, if chemical pesticides are needed, an environmental and social risk assessment is conducted prior to application, with the aim of identifying impacts, mitigation and monitoring measures of the different chemical alternatives.

At the same time, given forestry sanitation is considered to need a national scale solution among producers, AF channels its efforts through the Health Commission of the Society of Forest Producers (CS-SPF), participating actively. The CS-SPF establishes a short and medium-term work plan, which includes lines of work in aspects of monitoring, control, investigation and training / dissemination for pests considered priority. In turn, forest health issues at the national level are coordinated by the CECOPE (Executive Council for the Coordination of Pests and Diseases forestry) made up of representatives of the MGAP through the General Directorate Forestry and the General Directorate of Agricultural Services, INIA and SPF.

Moreover, a report conducted by a specialist in the use of agrochemicals "Report on the justification of the use of agrochemicals (herbicides and ant killer) in forest plantations" (2020) includes a technical analysis of weed control and agrochemicals, including a detailed national and regional literature review. The analysis concludes the need for the use of agrochemicals as the most economically profitable method and the impossibility of the mechanical method for areas larger than 100 ha due to the lack of local labor, as well as being more costly and involving a higher level of risk. There is a history that the non-use of agrochemicals for weed control significantly reduces the yield of Eucalyptus plantations, making them unviable. Agrochemicals are used responsibly and operational procedures are in place for the storage, transport and use of agrochemicals, according to CNBPF guidelines and FAO codes.

In reference to the use of ant-killers, it presents studies that conclude at the local level that there are no alternatives to the use of ant-killer and that plantations cannot be established without ant control, citing studies carried out by the Universidad de la República at the request of the working group of the Health Commission of the Society of Forest Producers.

Some of the inputs eventually used includes<sup>109</sup>:

|                      |                                                                                                                                                                                                                                                             |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                 | Fipronil                                                                                                                                                                                                                                                    |
| Justification of Use | It is used for ant control during the establishment of the trees, meaning with a minimum of 8-9 years between applications. In the absence of a national regulation regarding use of the input, the company has decided internally the minimum distance for |

<sup>109</sup> A complete list of inputs used annually, quantity and establishments where it is applied is available at annual monitoring reports for VVB during verification (see reference 19).

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | <p>application near water bodies, being 10 mts to water bodies when terrestrially applied.</p> <p>Fipronil is applied manually in a solid format, inside bateholders minimizing risks of runoffs for localized control of ants. Only specially trained personnel manage the chemicals.</p> <p>The project will follow FSC standards regarding these input<sup>110</sup>.</p>                                                                                                               |
| Potential Adverse Effect | <p>The WHO and EPA consider fipronil "moderately toxic" to humans. It is considered low to moderately toxic depending on the route of exposure. It is classified within group C, a possible human carcinogen.</p> <p>In the environment it behaves as: Solubility in water: low. Persistence in the soil: extreme to medium. Mobility on the ground: medium to light. Persistence in water sediment: less persistent. Volatility: not volatile. Bioaccumulation: medium.<sup>111</sup></p> |

|                          |                                                                                                                                                                                                                                                                                                                               |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                     | Metsulfuron                                                                                                                                                                                                                                                                                                                   |
| Justification of Use     | Used to control wide-leaf weeds. In addition, grazing is used as an effective method to control the vegetation before planting                                                                                                                                                                                                |
| Potential Adverse Effect | <p>EPA considers it as "Slightly toxic". In the environment it behaves as:</p> <p>Solubility in water: moderate. Persistence in the soil: medium to non-persistent. Mobility on the ground *: extreme. Persistence in water sediment *: more persistent. Volatility: not volatile. Bioaccumulation: slight.<sup>112</sup></p> |

|                      |                                                                                                                                       |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Name                 | Glyphosate                                                                                                                            |
| Justification of Use | Weed control is performed by using glyphosate, a moderate toxicity <sup>113</sup> herbicide according to Uruguay legislation on toxic |

<sup>110</sup> The project has been granted by FSC a permit to use the chemical till 2021, after which risk analysis and mitigation plans are to be presented till the use of Fipronil is discontinued (risk analysis available for VVB).

<sup>111</sup> Source: <http://www.plaguicidasdecentroamerica.una.ac.cr/index.php/base-de-datos-menu/259-fipronil>

<sup>112</sup> Source: <http://www.plaguicidasdecentroamerica.una.ac.cr/index.php/base-de-datos-menu/395-metsulfuron>

<sup>113</sup> In Uruguay, Glyphosate has now been declared with a moderate toxicity, corresponding to a Category III (blue label): Category 1a. Extremely dangerous or very toxic; Category 1b. Very dangerous or toxic;

|                          |                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | substances. Two applications are carried out some days before tillage and/or plantation. Generally, the last row (4th row) and the last intermediate row (3rd row) are applied with glyphosate. The rest of the rows are made with selective and pre-emergent herbicides which do not contain glyphosate. In addition, grazing is used as an effective method to control the vegetation before planting. |
| Potential Adverse Effect | Given its potential effect on soils it is limited to pre-emergence periods (tillage and or plantation) and used only over last and last intermediate rows.                                                                                                                                                                                                                                               |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                     | Phosphorite                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Justification of Use     | Fertilization is mechanically applied on plantation stripes before tree plantation                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Potential Adverse Effect | <p>Phosporite is a natural, low-impact fertilizer for the environment. Products and their waste have a better nutritional quality (higher P content than unfertilized crops). The incorporation of such organic residues improves the biological activity of the soil and the accumulation of carbon in the soil, helping to improve its physical and chemical properties.</p> <p>Excessive amounts used in rainy seasons or degraded soil could potentially cause runoffs to water bodies, causing eutrophication<sup>114</sup>.</p> |

|                          |                                                                                                                                                                                                              |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                     | Chlorine-free insecticides                                                                                                                                                                                   |
| Justification of Use     | On the first year after plantation, during the month February and March, ant control is systematically performed over the whole area. Afterwards insecticides are selectively applied on ant paths and nests |
| Potential Adverse Effect | It has a reduced permanence in the ecosystem, but potential effects can be clinical manifestations to people depending on the exposure                                                                       |

Category 2. Moderately dangerous or noxious; Category 3. Moderately dangerous or careful; Category 4. Normally not dangerous or careful

<sup>114</sup>Source: <http://fosfatosdelhuila.com/fhportal/wp-content/uploads/2014/02/LIBRO-APLICACION-ROCA-FOSFORICA1.pdf>

|                          |                                                                                                                                                                                                                                                                                                    |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                     | 2,4 D-Amine <sup>115</sup>                                                                                                                                                                                                                                                                         |
| Justification of Use     | It is a selective herbicide with low volatility and systemic action, specially designed to combat broad-leaved weeds in natural fields and grass pastures.                                                                                                                                         |
| Potential Adverse Effect | In the environment it behaves as <sup>116</sup> :<br><br>Solubility in water: high. Persistence in soil: medium to non-persistent. Mobility in soil: high to light (depending on pH; high pH5). Persistence in water sediment: less persistent. Volatility: not volatile. Bioaccumulation: slight. |

|                          |                                                                                                                                                                                                                                                                          |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                     | Haloxifop metil                                                                                                                                                                                                                                                          |
| Justification of Use     | Non-residual systemic herbicide, it is selective for the post-emergent control of annual and perennial grass weeds (narrow leaf).                                                                                                                                        |
| Potential Adverse Effect | In the environment it behaves as <sup>117</sup><br><br>Solubility in water: low. Persistence in soil: medium to non-persistent. Mobility in the soil: high to medium. Persistence in water sediment: less persistent. Volatility: not volatile. Bioaccumulation: slight. |

|                      |                                                                                                                                                                                                                                                                                        |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                 | S-metolachlor                                                                                                                                                                                                                                                                          |
| Justification of Use | It is a systemic herbicide, for pre-emergent use, it is absorbed by coleoptile and radicle in annual grasses and by hypocotile and radicle in germinating broadleaf weeds. It is important to bear in mind that this product will not exert control if it is applied on emerged weeds. |

<sup>115</sup> [http://www.lanther.com.ar/producto/73/2\\_4-d-amina-60-lanther/](http://www.lanther.com.ar/producto/73/2_4-d-amina-60-lanther/)

<sup>116</sup> <http://www.plaguicidasdecentroamerica.una.ac.cr/index.php/base-de-datos-menu/5-24-d>

<sup>117</sup> <http://www.plaguicidasdecentroamerica.una.ac.cr/index.php/base-de-datos-menu/309-haloxifop>

|                          |                                                                                                                                                                                                                                                                                  |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Potential Adverse Effect | In the environment it behaves as <sup>118</sup> :<br><br>Solubility in water: high to light. Persistence in the soil: slight. Mobility in the soil: high to medium. Persistence in water sediment: more persistent. Volatility: not volatile. Bioaccumulation: medium to slight. |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                          |                                                                                                                                                                                                                      |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                     | Oxyfluorfen                                                                                                                                                                                                          |
| Justification of Use     | Pre-emergence broad leaf weed control is performed by using the active principle oxyfluorfen.                                                                                                                        |
| Potential Adverse Effect | Given its potential effect on soil, water and people health (both operators and neighboring communities), it's use authorization is now limited with a specific risk assessment and mitigation plan <sup>119</sup> . |

This policy meets the requirements of the National Code of Good Forest Practices and the ILO Code. It is also established that products prohibited by the FSC will not be utilized.

All pesticide and agrochemical inputs used are public information available in BDU annual reports in the web (Public Summary Monitoring). This information includes: the pesticides used by active principle, quantities applied and area.

## 5.2 Offsite Biodiversity Impacts

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

| Negative Offsite Impact                                                                                                           | Mitigation Measure(s)                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Livestock enters protected natural areas or the exclusion of livestock in those areas.                                            | Build fences or exclusion of livestock in those areas.                                                                                                                                  |
| High density of cattle – degradation of grasslands and native forest, by shift of livestock from plantation to said natural areas | Proper management. Livestock density control (units per ha). Livestock management plan. Evaluation of pastures within afforestation. Annual survey on impacts in HVC areas within farms |

<sup>118</sup> <http://www.plaguicidasdecentroamerica.una.ac.cr/index.php/base-de-datos-menu/388-metolaclor>

<sup>119</sup> More detailed information on risk form elaborated specifically for these input (as well as Fipronil) (see reference 114)

|                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The advance of the native forest towards the plantation, eliminates the buffer areas | Buffer zones are established or re-established between forest plantation and native forests. This grasslands buffers zones must be equal or bigger than 20 meters.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Plague outbreaks                                                                     | <p>Forteko project works together with the Health Commission of the Forest Producers Society (CS-SPF for its acronym in Spanish). CS-SPF establishes a short- and medium-term work plan, which includes monitoring, control, research and training/dissemination for priority pests, training/dissemination for priority pests. In this framework, the activities of the AF Group's health management plan are part of or aligned with the activities of the CS-SPF. The main areas of the plan include<sup>120</sup>:</p> <ul style="list-style-type: none"> <li>- Preventive actions: material selection; health check of seedlings on entry; silvicultural management (timing, procedures)</li> <li>- Monitoring: systematic survey; survey of specific events</li> <li>- Control: biological; silvicultural (sanitary thinning); chemical as last resource.</li> </ul> |

### 5.2.2 Net Offsite Biodiversity Benefits (B3.3)

The Forteko project is a subgroup of lands within BDU III and II Trust Fund total plots. Forteko comprises 30 properties or plots located in the Central East region of Uruguay (the host country), with a total area of 16,181.5 ha of which, 14,413 ha are effectively planted. The project has a long history of grazing by beef cattle, activities that have caused soil erosion and land degradation. Forteko project, a forest plantations for obtaining pulp and saw wood and removing carbon dioxide from the atmosphere have been established since 2007, expecting to significantly decrease soil erosion and soil degradation.

Before the implementation of the Forteko project, native fauna or flora studies in the area were never conducted. Extensive beef production companies did not have the habit nor the obligation to carry out this kind of studies, since traditionally the extensive cattle is not certified by international standards (for example, FSC or similar), nor is it controlled by the Ministry of the Environment (ex-DINAMA). Burning was a common activity in pastures by cattle breeders. With the BDU project implementation, new HCVs areas are defined, native forests are strictly controlled and fires are controlled. Periodic monitoring activities allows to identify the activities' impact on HCV and communities.

<sup>120</sup> More information on the Forestry Management Plan section 3.6

The ongoing forestry project in terms of land occupation with the management being carried out to date do not affect the conservation areas identified as representative. A coherent design and areas of interest are maintained and are interconnected within the property and through streams and gullies also with neighboring fields. The establishment has significant areas of fields with rocky outcrops. In these areas, fragmentation was generally avoided by the occupation of land in the implanted forestry project. At the end of the 2021 monitoring, the stands remain within the limits defined in accordance with the project and adjusted to the established distances from the native forest. Machinery traffic is being carried out outside the aforementioned areas defined as representative, without affecting low-lying areas.

### 5.3 Biodiversity Impact Monitoring

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

##### Summary

Initially, during 2008, the first characterization and survey of the properties with potential conservation interest were conducted. The goal of the studies was to detect those areas that contain the most conservation values, in a broad sense, encompassing not only species but also conservation values. Considering the connectivity and the representativeness of the values contained with respect to the region in which they are located, defining the presence or not of areas of High Conservation Value (HCV). If present, initial measures were proposed to ensure their continuity and the implementation of specific monitoring plans developed for each category and appropriate management plans.

Later, in 2019, a new analysis of the flora and tetrapod fauna potentially present was carried out based on the available databases consulted (MVOTMA, 2017) using the Military Geographic Service, which means the analysis covered a much larger surface area than those of the properties. Based on these, an approximation was made of the conservation status and the importance of the environments as biodiversity hotspots, their functioning as biological corridors and their link to conservation strategies.

Flora field sampling was planned by means of prior photo-interpretation, identification of different environments and definition of permanent sample areas, and further field visits with the corresponding identification of species and herborization of plants. A checklist was generated to report vegetation conservation conditions and species identification.

In the case of fauna field sampling, these are conducted at establishment level with bi-annual frequency (taking into consideration seasonal variety), for HCV areas, based on sighting methodology, with visual inspection during the field supervisor's tours (photographic camera tool). The sampling identifies species richness for: amphibians, reptiles, mammals and birds.

Finally, monitoring plans are designed and implemented based on the category of conservation considered.

The methodology used in the identification of areas of high conservation value was based on the document "Common Guidelines for the Identification of High Conservation Values - draft May 2013

from the “Proforest organization”<sup>121</sup>. The six types of High Conservation Values (HCVs) are as follows:

- HCV 1 - Species diversity: Concentrations of biological diversity, including endemic species and rare, threatened or endangered species, significant to global, regional or national level.
- HCV 2 - Landscape-scale mosaics and ecosystems: Large ecosystems and mosaics of landscape-scale ecosystems that are globally, regionally or nationally significant, and that contain viable populations of the vast majority of species that appear in natural, in natural patterns of distribution and abundance.
- HCV 3 - Ecosystems and habitats: Rare, threatened or endangered ecosystems, habitats or refuges danger.
- HCV 4 - Critical ecosystem services: Basic ecosystem services in critical situations, including the protection of water catchment areas, the control of the erosion of vulnerable soils and slopes.
- HCV 5 - Community needs: Areas and resources essential to meet the needs of basic needs of local communities or indigenous peoples (for example, subsistence, health, nutrition, water, etc.), identified in collaboration with these indigenous communities or peoples.
- HCV 6 - Cultural values: Culturally significant areas, resources, habitats and landscapes, archaeological or historical criticism at the world or national level and / or of cultural, ecological, economic or religious / sacred importance for the traditional culture of the local communities or indigenous peoples, identified through the involvement of said indigenous communities or peoples.

In 2008, a review was carried out of the assets managed by Cambium Forestal Uruguay S.A., assessing whether the six criteria mentioned above were met in any of the properties. The advice of a biologist with expertise in flora and fauna was contracted. The following were selected of native forest, wetlands or other environmentally interesting areas were selected. After an on-site review by Cambium Forestal Uruguay S.A. staff, those lands were declassified where the native forest or environmentally interesting areas were fragmented or had common characteristics of the region.

In this way, the following project plots were left for the consultant's visit:

- Quiebrayugo, Department of Cerro Largo.
- Manolete, Department of Cerro Largo.
- La Hacienda, Department of Cerro Largo.

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<sup>121</sup> Available at: <https://www.proforest.net/fileadmin/uploads/proforest/Documents/Publications/guia-generica-para-la-identificacion-de-altos-valores-de-conservacion.pdf>

The biologist carried out a diagnostic visit to the selected properties, to determine whether areas with interesting biodiversity potential exist on these properties. The result of the visit was a document entitled "Report of field trips for the selection and proposal of sites to survey and monitor flora and fauna". This report prioritizes the sites with a high environmental potential for a flora and fauna monitoring program.

At the same time, company personnel carried out a review of the property, based on its proximity to population centers. It was determined that water sources for human consumption would qualify as a basic need for the communities. However, in the case of the project, there are no villages adjacent to the establishments.

In this line, a HCV1 and 3 were identified in La Hacienda property. For these reason, as prevention measures, the following procedures were established:

1. Indicated the area on the property plan;
2. Inform contractors of the environmental value, when they have forestry operations close to the area;
3. Indicated the boundaries of the plantation, respecting the 20 meters that they must exist between the plantation and the native forest;
4. Access control to third parties;
5. Access control and careful handling of livestock loads;
6. Firewall maintenance;
7. Periodic supervision in order to avoid the entry of hunters and birders.

Regarding AF's monitoring procedures, these are detailed below, and implemented for all FSC certified projects:

#### **Criteria for the categorization of representative BDU properties for the conservation of biodiversity**

The following criteria is used for the categorization of forest properties in BDU III pointing to the greater efficiency in the application of conservation measures and considering human and economic resources availability for their management and monitoring.

- 1) Presence of SNAP (National System of Protected Areas) or high value areas for HCVA conservation according to the definition originally developed by the FSC for High Conservation Value Forests in the certification of forest ecosystems;
- 2) Biogeographic representativeness;
- 3) Representativeness of watersheds;

- 4) Presence of threatened species of flora or fauna at the international or regional level according to the International Union for the Conservation of Nature;
- 5) Presence of endangered species of flora or fauna at the international or regional level according to the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES);
- 6) Connectivity of the areas;
- 7) Estimated wealth (Chao 1);
- 8) Special landscape value;
- 9) Effective total area of natural areas;
- 10) If there are still conflicts in the categorization of the areas after the application of these criteria, indexes of similarity between communities can be applied (Greig-Smith).

Based on the aforementioned criteria, the properties selected as representative are surveyed (monitored) in greater depth to clearly determine its habitat values with precise identification of their attributes in order to define conservation plans. The monitoring studies would be applied over properties with HCV, presence of natural environments or species of particular study interest or farms with high species richness values. These studies involve annual surveys (at least two surveys to gain information on different times of the year), calculation of diversity indexes, spatial distribution, indicator species, wealth estimation, etc.

The follow-up studies would be applied to the rest of the representative farms. These studies involve surveys every five years, calculation of species richness, distribution of species and indicator species. The categorizations made are subject to changes due to the entry of higher priority properties (more representative) or changes in management or anthropogenic activity that may change their condition.

Activities taken to perform the flora and fauna monitoring studies include:

- 1) Prior to the fieldwork, surveys over satellite images (Google Earth) to identify environmental composition and over available historical information are made. Based on this information, areas of interest, access to them and other logistical aspects are defined.
- 2) In situ, ground survey (surface data) according to vegetation physiognomy is carried out.

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

The analysis includes the comparison of total lists of potential species within the area, and those actually present (detected by different means during the field visit), as well as to those that are considered to be present according to the composition and state of the composition and status of the environments represented. An approximation is made of the conservation status and the

importance of the environments as biodiversity hotspots and their functioning as biological corridors.

In relation to the fauna, walking tours are the main tool used to reduce the potential lists obtained from bibliographic information to lists closer to the real ones, recording the richness and abundance of the tetrapod fauna species. This emanates from the recognition of the environments actually represented in the study area and their conservation status. The lists generated are analyzed to detect species present based on IUCN Red Book (IUCN, 2013), Red List of the Birds of Uruguay (Azpiroz et al., 2012, and the List of Priority Species for Conservation (SNAP - DINAMA) (Soutullo DINAMA) (Soutullo et al., 2013)<sup>122</sup>. The presence of migratory species is also analyzed, as well as those that are present in different observation probability categories (Azpiroz et al., 2003).

Photographs are taken with digital cameras, of the most representative species. For the bird survey, binocular are used for walking tours and for the group of birds, the number of species (richness) and the number of individuals of each (abundance) based on direct sightings and the identification of vocalizations is recorded.

For the amphibian survey, surveys are carried out with estimation of abundance by sound record of vocalizations and by active search of individuals. For reptiles, an active search is made under stones, trunks and other cryptozoic shelters. For mammals, traces and caves are surveyed.

### **Fauna Monitoring Plan**

Fauna biodiversity plans are performed in most representative farms belonging to BDU III by using environmental indicators that describe the impact on the environment.

According to Canter L.W. 1998<sup>123</sup>, environmental indices are useful for:

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

<sup>122</sup> Azpiroz, A.B., M. Alfaro y S. Jiménez. 2012. Lista Roja de las Aves del Uruguay. Una evaluación del estado de conservación de la avifauna nacional con base en los criterios de la Unión Internacional para la Conservación de la Naturaleza. Dirección Nacional de Medio Ambiente, Montevideo.

Soutullo A, C Clavijo & JA Martínez-Lanfranco (eds.). 2013. Especies prioritarias para la conservación en Uruguay. Vertebrados, moluscos continentales y plantas vasculares. SNAP/DINAMA/MVOTMA y DICYT/ MEC, Montevideo. 222 pp.

<sup>123</sup> Environmental Impact of Water Resources Projects. US: Lewis Publishers Inc. Canter, L.W. (1998)

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

Low values may indicate:

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

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

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

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

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

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

At the global level, both invertebrate and vertebrate species are used for studies of biological diversity. In the case of the research team, the Bird Class was chosen, subphylum Vertebrata (Vertebrates) due to:

- Easy direct and / or indirect registration
- Important number of species in our country
- Specific conservation status defined in most species, whether at the national, regional and global levels (Ministry of Environment, IUCN, CITES).

- Can apply as RAE species for international forest standards

### **Selection of species as indicators (“Indicator species”)**

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

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

### **Selection criteria**

To select indicator species, the role they play in the ecosystem will be taken into account, especially considering those species known to be sensitive to specific actions of the use of resources related to the project in question, species that play a basic role in a given community and species that represent a certain group of species (associations). For example, some bird species that are not very specialized, find food resources in modified environments, where some specific plant species that provided food to other species of birds specialized in them have disappeared. These last ones (specialists) will see reduced population in these areas, while those (generalists) will see them increase sensibly due to lack of competence in the availability of other resources (shelters, water, etc.).

Migratory species have often been shown to be more sensitive to environmental changes in the sites where they arrive, meaning that they may no longer be stopover, feeding, breeding or resting sites. The proportion of migratory species in the total number of species detected is a good indicator of the conservation or otherwise of environmental suitability.

Moreover, the proportion of bird species in categories of frequency of observation are a good indicator of the degree of health of the environments studied. The categories considered are Common, Fairly Common, Uncommon and Rare (according to Azpiroz, 2003). Environments that suffer strong disturbances tend to vary the proportions of observation frequency categories, generally with an increase in Common and Fairly common species to the detriment of Uncommon and Rare species.

The analysis of the relative abundances of these species will be useful for the purpose of evaluating changes in the habitat that determine high or low levels in the populations and are manifestations

of impacts on a larger scale. It is also important the real or potential value from the aesthetic, scientific or economic point of view, its survival expectation and its rarity at the local and global level.

In these sense, the presence maintained or not of species listed in IUCN threat categories, both globally (for their entire distribution) and strictly for the region are indicators monitored and taken into account:

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

Special consideration is given to those species that the Ministry of Environment recommended for its inclusion in the "List of Priority Species for Conservation in Uruguay" (Soutullo et al, 2013). The presence maintained or not of species included in these list is one of the indicators monitored.

### **Flora Monitoring Plan**

The first step towards the definition of HCV is the implementation of a program for the survey and characterization of environments and flora. For the purpose of establishing a priority list of properties to be studied, a grid is drawn up in which the sites are rated on a scale of 3 to 1 (High, Medium and Low respectively), in which attributes such as species richness ( $\alpha$  diversity), diversity of environments as a potential for species turnover ( $\beta$  diversity), and ratio between non-forested area within the establishment in relation to the area occupied by forest crops were the selected indicators. The Conservation Importance Value that arises from the sum of the values of each of the attributes allowed a ranking of properties to be surveyed in more detail.

In the case of flora present, the monitoring plan includes annual surveys in order to evaluate:

- a. Verification of species under the National Protection Area System list in order to assign conservation category.
- b. Fragmentation of natural areas and biological corridors
- c. Buffer areas condition around HCV and particular interest for conservation areas.
- d. Natural regeneration of woody invasive species, within both, productive areas and native forest.
- e. Invasive species control procedures carried out in HCV areas.

f. General natural land condition, based on land use and land use management.

The monitoring plan also includes the variables surveyed on HCV sites regarding any presence of impact from the forestry activity as well as illegal activities. In this sense, indicators include: presence of vehicle tracks, invasion of exotic species, conservation state of the signs, among others, in order to ensure HCV protection. Additionally, hunting is prohibited in all BDU III lands<sup>124</sup>, native forest are not altered and the silvicultural systems applied to artificial plantations meet the production targets approved by the competent authorities.

Moreover, level of degradation is monitored, in order to define the need for a restoration plan implementation. Although no degraded areas were identified that might require the implementation of restoration plans, based on the baseline studies, a plan for the elimination of invasive species (ELEI 2020 -2021<sup>125</sup>) was elaborated.

The project preserves areas of native forest, natural grassland with rocky outcrops and low meadows. These areas are mapped and identified and well known by the land's workers. Variables analyzed and results for La Hacienda are further detailed in the table below<sup>126</sup>. As of 2017, with the change in property landownership, the area has been conserved under same conditions but currently with no monitoring in place<sup>127</sup>.

Table 10. HCV monitoring conditions at La Hacienda farm

| Date       | Contact responsible of monitoring | Findings                                                                                                                                                                                                                                                                              | Recommendations                                                                               |
|------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 21/03/2011 | Luciana Nauar                     | Field tillage planning was carried out in the vicinity of the creek, to guarantee compliance with the 20 meters distance to the native forest.<br><br>The contractor and workers were trained on the value of the "Quebrada de Los Loros" and in order not to intervene in that area. | Verify during forestry activities the compliance with the minimum distance to native forests. |
| 29/08/2013 | Luciana Nauar                     | • HCV maintained without visible alterations                                                                                                                                                                                                                                          | No recommendations                                                                            |

<sup>124</sup> Only special authorization may be issued for hunting does animal species listed by the national Directorate for Renewable Natural Resources as of compulsory control, or control free of authorization

<sup>125</sup> Invasive species management plan available on request by VVB during validation

<sup>126</sup> Complete surveys are not available due to lack of access to information from previous owners, only available summary monitoring reports.

<sup>127</sup> The property has not been FSC certified so no monitoring has been implemented yet. Anyway, under the precautionary principle, the area is still considered of HCV.

|               |               |                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               |               | <ul style="list-style-type: none"> <li>• Planting distances are maintained, buffer zone without alterations</li> <li>• A differential management is carried out regarding grazing, with a lower load of animals.</li> <li>• There has been no sighting of parrots</li> </ul>                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 10-12/12/2013 | Carlos Brussa | <p>The floristic surveys up to date have identified the presence of 345 total species, among which 13 are considered priority according to SNAP lists.</p> <p>The general conservation condition of the area is satisfactory, achieving high diversity for the different represented ecosystems.</p> | <p>-Forested are management should not affect conservation areas.</p> <p>-Transit outside roads and plantation borders should be avoided, especially in lowlands areas.</p> <p>-Plantation areas should be designed to have defined borders, avoiding ramifications of low area.</p> <p>-Respect corridors of the areas to be conserved.</p> <p>-Special precaution in the use of agrochemicals.</p> <p>-Bear in mind design of camps and accumulation sites without affecting conservation areas</p> <p>-Implement strict control over natural revegetation of non-native species.</p> |
| 18/09/2014    | Luciana Nauar | A fixed monitoring plot (400 m2) was implemented, where the flora and indicators were surveyed:                                                                                                                                                                                                      | Suggestions or observations:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|            |               |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                   |
|------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
|            |               | <ul style="list-style-type: none"> <li>• Presence of natural regeneration in different strata</li> <li>• Undergrowth</li> <li>• Percentage of land covered</li> <li>• Presence of epiphytic / parasitic species</li> <li>• Presence of climbers</li> <li>• Indicators of felling or burning</li> <li>• Presence of invasive species of importance</li> </ul> <p>Conclusion: the monitoring conditions of December 2013 are maintained.</p> | Continue with annual monitoring and the prevention measures indicated in the data sheet from September 2014 monitoring            |
| 15/09/2015 | Luciana Nauar | <p>The sighting of Parrots Chiripepe and sounds of different individuals is confirmed, which confirms one of the attributes for the conservation of the area (HCV1)</p> <p>The monitoring conditions of December 2013 are maintained, insofar as a well-preserved area, without alterations resulting from forestry operations or other activities.</p>                                                                                    | <p>Continue with annual monitoring and the prevention measures indicated in the data sheet.</p> <p>September 2015 monitoring.</p> |

Moreover, farms Las Mimadas, Las Flacas, Matador, La Loma, El Italiano, are part of an annual program on environmental conditions, illegal activity and biophysics for 2018 up to date, although they don't present HCV areas within the property. An example for 2020 report on Las Flacas can be seen in the figure below where information on different variables is monitored.

| INFORME DE MONITOREO DE ZONA DE CONSERVACION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| PREDIO MONITOREADO:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Las Flacas |
| FECHA:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 28/10/2020 |
| <p>¿Existe regeneración natural de Eucalyptus y Pinus en áreas no deseadas?</p> <p><b>No existe regeneración de Pino</b></p> <p>¿Existe poblaciones de otras especies vegetales invasoras dentro del monte nativo?</p> <p><b>No existen poblaciones invasoras en monte nativo</b></p> <p>¿Se observa ejecución de prácticas forestales extra rodales invadiendo áreas de conservación?</p> <p><b>No se observan</b></p> <p>¿Estado de las áreas de campo natural (altura de horizonte de hojas en pasturas, % de suelo cubierto, erosión).?</p> <p><b>Buen control con pastoreo ganadero , cubierto de pastura, no hay erosiones</b></p> <p>¿Se ubican los carteles identificando zonas de AAVC o BAVC, prohibido cazar y pescar y tomas de agua?</p> <p><b>Se ubican carteles correspondientes</b></p> <p>¿Se visualiza alguna especie animal, en caso que si cuál?</p> <p><b>Se visualizan : ( Zorros ,ñandu )</b></p> <p>¿ Hay canteras que se encuentren abiertas, con extracción de material?</p> <p><b>No hay canteras abiertas</b></p> <p>¿Los caminos y las zonas cercanas al predio se encuentran en condiciones de uso?</p> <p><b>Se encuentran en buen estado</b></p> <p>¿Los cortafuegos se encuentran mantenidos?</p> <p><b>Se encuentran en condiciones aceptables</b></p> <p>¿La plantación al bosque nativo repeta la distancia de 20 metros y 50 si hay curso de agua asociado?</p> <p><b>Se respetan distancias</b></p> <p>¿Se visualizan huellas de máquinas que por sus dimensiones ocasionen impacto negativo?</p> <p><b>No se observan huellas</b></p> <p>Fotografías tomadas en el lugar "ZONA DE CONSERVACION"</p> <div>     </div> |            |

See results for 2020 for all the mentioned properties in the table below:

| Conditions/<br>Properties                             | Las<br>Mimadas                   | Las Flacas                       | Matador                                    | La Loma     | El Italiano |
|-------------------------------------------------------|----------------------------------|----------------------------------|--------------------------------------------|-------------|-------------|
| Presence of<br>unwanted<br>natural<br>revegetation of | With no<br>Pinus<br>revegetation | With no<br>Pinus<br>revegetation | Presence of<br>Pinus. it was<br>controlled | Not visible | Not visible |

|                                                                     |                                      |                                              |                                                   |                                      |                                      |
|---------------------------------------------------------------------|--------------------------------------|----------------------------------------------|---------------------------------------------------|--------------------------------------|--------------------------------------|
| Pinus or Eucalyptus                                                 |                                      |                                              |                                                   |                                      |                                      |
| Presence of invasive species within the natural forest              | No native forest in the property     | No invasive species in natural forest        | No invasive species in natural forest             | Not visible                          | Not visible                          |
| Extra stand forestry practices observed invading conservation areas | Not visible                          | Not visible                                  | Not visible                                       | Not visible                          | Not visible                          |
| Grassland conditions (erosion, soil cover %, etc)                   | Good control with cattle             | Good control with cattle, no erosion visible | Good control with cattle, harvest residue visible | Good condition. 95% of soil covered  | Good condition. 95% of soil covered  |
| Signage conditions for hunting and fishing prohibition              | The corresponding signs are in place | The corresponding signs are in place         | The corresponding signs are in place              | The corresponding signs are in place | The corresponding signs are in place |
| Animal sights                                                       | Fox, different birds and cowardly    | Fox, rhea,                                   | Wild pig                                          | None                                 | None                                 |
| Open quarries                                                       | No open quarries                     | No open quarries                             | Yes, harvest road                                 | Yes                                  | Yes                                  |
| Roads conditions                                                    | In good conditions                   | In good conditions                           | In good conditions                                | In good conditions                   | In good conditions                   |
| Firebreak conditions                                                | In acceptable conditions             | In acceptable conditions                     | In acceptable conditions                          | In acceptable conditions             | In acceptable conditions             |

|                                                  |                         |                         |                         |                         |                         |
|--------------------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Forest distances from water bodies               | Distances are respected | Distances are respected | Distances are respected | Distances are respected | Distances are respected |
| Machinery tracks which may have negative impacts | No sight                | No sight                | No sight                | No sight                | No sight                |

Moreover, within the project zone, another HCV can be identified in farms HCV under AF's management but outside project area boundary. Monitoring results can be seen in Table 11 and complete reports are available for Mi Generala HCV aiming to protect *Grazielia brevipetiolata* an endemic specie<sup>128</sup>.

| <b>Variable/<br/>Monitoring year</b>                  | <b>2017</b>  | <b>2018</b>  | <b>2019</b>  | <b>2020</b>  |
|-------------------------------------------------------|--------------|--------------|--------------|--------------|
| Specie growth                                         | -            | Yes          | Yes          | Yes          |
| Reduction/elimination of specie                       | -            | No           | No           | No           |
| Fragmentation of areas and corridors                  | Not visible  | Not visible  | Not visible  | Not visible  |
| Natural regeneration of forest species to other areas | Non-existent | Non-existent | Non-existent | Non-existent |
| Invasive species in HCV                               | Controlled   | Controlled   | Controlled   | Controlled   |
| Extra stand silvicultural activities                  | Not found    | Not found    | Not found    | Not found    |

<sup>128</sup> Brussa & Walker. Establecimiento Mi Generala - Monitoreo de ambientes y flora

|                                       |                     |                     |                      |                      |
|---------------------------------------|---------------------|---------------------|----------------------|----------------------|
| Cattle presence inside natural forest | None                | None                | None                 | None                 |
| Non forested areas conditions         | Adequate management | Adequate management | Adequate management  | Adequate management  |
| Signs and fencing conditions          | Good                | Good                | Fencing needs repair | Fencing needs repair |
| Flora monitoring                      | Updated             | Updated             | Updated              | Updated              |
| Soil cover                            | Updated             | Updated             | Updated              | Updated              |
| Natural regeneration                  | Updated             | Updated             | Updated              | Updated              |
| SNAP population                       | 11                  | 14                  | 12                   | 16                   |
| Total/SNAP/CITES-UICN                 | 229/11/10           | 267/14/11           | 280/15/10            | 287/16/18            |

### 5.3.2 Biodiversity Monitoring Plan Dissemination (B4.3)

Annually, the Monitoring report is updated in the BDU webpage<sup>129</sup> (and previously in the Cambium webpage) including a summary of the biodiversity monitoring report results. The whole document can also be accessed by request. This information is later presented to interested stakeholders where the category classification or re-classification of the HCV is defined during public consultation. Moreover, biodiversity presentations are conducted at schools for both teachers and students in the project zone.

Moreover, along with the project implementation, the project documentation will be published on VCS and CCB website for all stakeholders, so that they can obtain the detailed project information and development progress. Also, the summary of project description in local language is also

<sup>129</sup> In section "Impactos", available at: [https://www.bosquesdeluruguay.com/media/2022/03/RESUMEN\\_PUBLICO\\_MONITOREOS\\_2020.pdf](https://www.bosquesdeluruguay.com/media/2022/03/RESUMEN_PUBLICO_MONITOREOS_2020.pdf)

disseminated to local communities, as well as the summary of monitoring reports during each verification.

#### **5.4 Optional Criterion: Exceptional Biodiversity Benefits**

Not applicable as the project does not seek Gold standard.

##### **5.4.1 Trigger Species Population Trends (GL3.3)**

Not applicable.

## **6 ADDITIONAL PROJECT IMPLEMENTATION INFORMATION**

## **7 ADDITIONAL PROJECT IMPACT INFORMATION**

## 8 APPENDICIES

### 8.1 Appendix 1: Further information on PD deviations regarding Pinus partial replacement

#### Species replacement projections

The Pinus replacement which is taking place in the project area responds to a company's strategy to ensure land use permanence as the pinus plantations were not being financially sustainable, particularly in the west of the project area, as the industrial development did not take place at the expected rate. Conscious of the barriers jeopardizing Forteko project continuation, the new Project Developer designed a new plantation strategy where part of pinus area would be progressively replaced by Eucalyptus, both grandis (75%) and dunnii (25%). An equilibrium of planted area for each species is expected to be reached by 2040, with:

Table 1.1. Projected planted area per species

| Species                   | Planted area per year (%) |      |      |      |      |      |
|---------------------------|---------------------------|------|------|------|------|------|
|                           | 2021                      | 2025 | 2030 | 2040 | 2070 | 2106 |
| <i>Eucalyptus grandis</i> | 9%                        | 20%  | 46%  | 63%  | 63%  | 63%  |
| <i>Pinus taeda</i>        | 88%                       | 72%  | 40%  | 22%  | 22%  | 22%  |
| <i>Eucalyptus dunnii</i>  | 3%                        | 8%   | 14%  | 15%  | 15%  | 15%  |

The replacement till the end of these monitoring period, as mentioned in section 2.2.4, equals those values for 2021 in the above table, showing pinus was still occupying a predominant area within the project area (88%).

Forestry activities still face challenges regarding financial sustainability today. The new Project Developer, at the time of acquiring the project's lands, elaborated a detailed project prospectus to attract potential investors where an important risk mitigation component was the carbon credits benefits explicitly mentioned in the prospectus. In this regard, it is important to consider that the prospectus mentions that the sale of carbon credits significantly influence the project cash flow and also constitute a social recognition of the positive impact of the project to the sustainable development of the region where it is implemented, generating social, economic and environmental improvements. Furthermore, in the document the Project Developer assumed the commitment to maintain the carbon credits component as it is evidenced in the investment's components (costs of the carbon certificates) and incomes (carbon credits sales) in section VII of *Financial Economic Analysis*.<sup>130</sup>

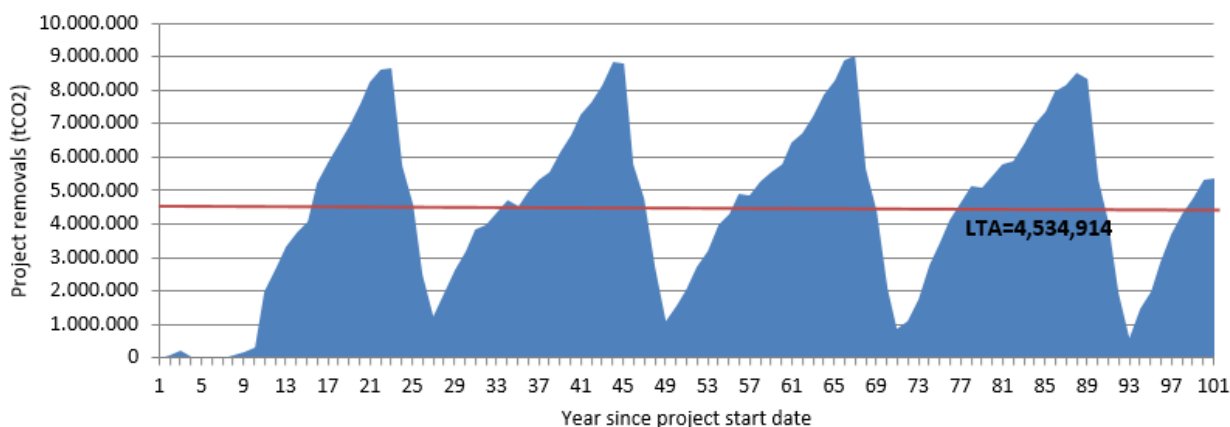
<sup>130</sup> Informative Prospectus 2016 – Fideicomiso Financiero Forestal del Bosque del Uruguay III (equivalent to Forteko, but under the new land owner's denomination) shared in the new evidence folder.

As a result, Forteko is one of the first Uruguayan forestry project in achieving financial closure through Uruguayan pension funds<sup>131</sup>. In this regard, it is important to mention the relevance Forteko's main project investors, the AFAPs, gave to the fact that the project contributes with the climate change mitigation through the emission of carbon credits. This type of investment form part of a strategic position some AFAPs are taking. This is the case of SURA Uruguay which subscribed to the UN Global Compact in 2012.<sup>132</sup>

### Ex – ante projections and LTA

Due to the expected changes, the LTA is recalculated based on the areas to be planted by each species and species progressive replacement. Given Eucalyptus grandis has a higher growth rate than Pinus the LTA is shown not to be negatively impacted, on the contrary, it is increased due to the changes. Figure 1.1 shows the project's carbon removals (in tCO<sub>2</sub>e) for the crediting period (100 years) where it can be seen the difference in the Ex-post LTA values based on the a) current monitoring period situation; b) the corrected LTA based on the expected changes in species replacement and c) a 100% replacement of pinus by the end of its first rotation period (theoretical as it is not planned). The figure also shows a difference in the project removals curve as the replacement of species implies a more dynamic silvicultural activity till the end of the crediting period.

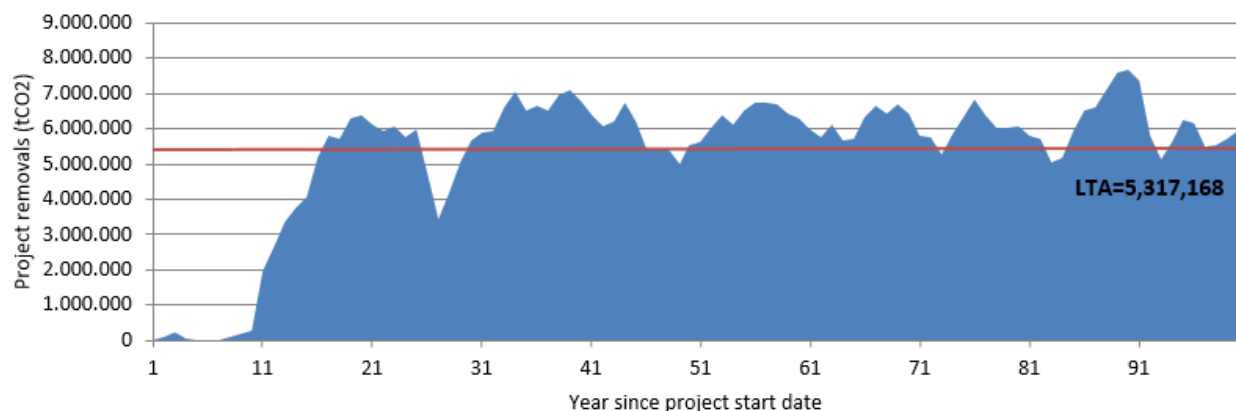
a)



b)

<sup>131</sup> Management Report: República AFAP; 2011;  
[https://www.brou.com.uy/documents/20182/31771/Informe\\_RAFAP\\_S.A\\_31.12.2011.pdf/d692d63e-2aa4-4c9d-be2c-ada5e882ccad](https://www.brou.com.uy/documents/20182/31771/Informe_RAFAP_S.A_31.12.2011.pdf/d692d63e-2aa4-4c9d-be2c-ada5e882ccad)

<sup>132</sup> "Avanzando hacia la Sostenibilidad" Report; Progress Communication 2012; SURA; <https://s3-us-west-2.amazonaws.com/ungc-production/attachments/46581/original/INFORME%20SURA-%20PACTO-GLOBAL3.pdf?1384183651>



c)

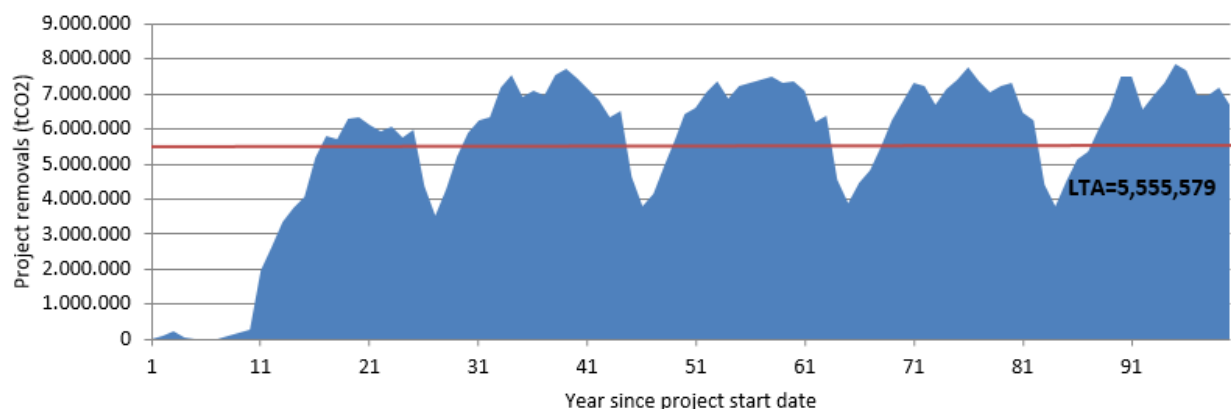


Figure 1.1 Growth projection ex ante (corrected by carbon removals during verification) a) current monitoring period species replacement; b) projected species partial replacement to 2106 and c) 100% replacement of pinus species, and corresponding LTA.

a) The LTA for the current monitoring period projects carbon removals considering the current surface and species distribution, for the rest of the crediting period. By current it refers to the monitoring period.

b) The replacement projection was conducted using an optimization system called Tigermoth, from a developer from Singapur<sup>133</sup>. This system is used for describing, forecasting and analysing the results of forest management strategies. For the presented projection, different variables are taken into consideration such as biological restrictions (such as frost risks and diseases), soil quality in the project area (rocky soils generate more hydric stress). Moreover, discrete factors are taken into consideration such as minimum area necessary to ensure a stable provision of wood for sawmill. The projection results in a surface (ha) value for each species, farm and year for the period 2024-2106. Previous to 2024 real values were considered.

<sup>133</sup> More information available at: [tigermoth.com](http://tigermoth.com)

c) The theoretical replacement considers a 100% replacement of Pinus with Eucalyptus species after the first rotation period, with the exception of those areas already harvested/replaced.

The complete calculations and evidence are available in the shared folder with the corresponding spreadsheets<sup>134</sup>. Furthermore, the LTA value will be updated in future verification periods based on ex-post carbon removals measured.

### Baseline and additionality analysis

The partial replacement of species for this project does not affect the project's additionality, as mentioned in section 2.2.4 of this document, as the conclusions from the "Combined tool to identify the baseline scenario and demonstrate the additionality in A/R CDM project activities v. 0.1" are maintained. This is because the same barriers that were originally identified in the project validation apply for both Pinus and Eucalyptus (hardwood) at the start of the project as well as at the time of species replacement. Further information is included below as evidence. Last, as in the PDD, an Investment Analysis was included. In this case, the expected changes in planted surface for Pinus is taken into consideration in the investment analysis to further demonstrate additionality (as in the validated PD), although the baseline and additionality was defined originally based on a barriers and common practice analysis.

First, based on the CDM tool, same barriers are analyzed for the species replacement. Based on the examples provided by the "Combined tool to identify the baseline scenario and demonstrate the additionality in A/R CDM project activities v. 0.1", and stated in the mentioned project validation, the following list describes the barriers that might be identified as applicable in the following analysis:

- **Barriers related to local tradition, inter alia:**
  - Traditional knowledge or lack thereof, laws and customs, market conditions and practices;
  - Traditional equipment and technology.
- **Barriers due to local ecological conditions, inter alia:**
  - Degraded soil (e.g. water/wind erosion, salinisation, etc.);
  - Catastrophic natural and / or human-induced events (e.g. land slides, fire, etc);
- **Barriers relating to markets, transport and storage;**
  - Remoteness of land area and undeveloped road and infrastructure incur large transportation expenditures, thus eroding the competitiveness and profitability of products from the land use;
  - Possibilities of large price risk due to the fluctuations in the prices products over the project period in the absence of efficient markets and insurance mechanisms;
  - Absence of facilities to convert, store and add value to products resulting from land use limits the possibilities to capture rents from the land use scenario.

---

<sup>134</sup> Additional evidence includes: Ex-ante calculations, with the corrected values for the verified periods 1) including only the replacement for current monitoring period, 2) including the projected progressive replacement to 2106 and 3) a theoretical 100% replacement of pinus; Replacement projections 2021-2106; and growth curves for the three species.

- **Barriers related to local tradition:**

Traditional knowledge or lack thereof, laws and customs, market conditions and practices.

There are no changes as the analysis is still forestry vs. cattle breeding activities. Contrary to cattle breeding production, which has been carried out in the region for the last 300 years, forestry activities started its commercial development in the 1990's, being a relatively new type of production when the project started. Forest plantation with the characteristics proposed by Forteko project (18-20 years old grandis rotations for high quality timber and 22-25 pinus long rotation) was not a common practice in the region. Therefore, local knowledge and technology for its implementation has giving its firsts steps in the area generating new information as well as significant uncertainties.

The adoption of longer rotation (18-25 years as opposed to 9-11 years) generates uncertainties concerning technical and commercial issues such as wood productivity and quality, wind damages, potential pest and disease outbreaks, and longer periods for investment returns among others.<sup>135</sup> In relation to productivity, when longer rotations are implemented, genetic advantages are missed since the adoption of new improvements must wait longer until a new rotation is started.

VCS certification together with FSC contribute to improve the forest management system of Forteko due to the monitoring and environmental plans required. As bellow stated, AF has established these plans in line with the certification schemes requirements and best practices recommendations. Among other activities to mitigate the risk of this barrier, AF has in place a solid technical team structure with well-defined responsibilities and a training plan to guarantee the knowledge of its technical team as well as the personnel from the contractors that work in the lands.<sup>136</sup>

Therefore, it can be concluded that the VCUs sales contributes to alleviate this barrier by providing income before the harvests for these long rotation species, in order to cover for additional cost related to expert personnel, for example.

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<sup>135</sup> BDU III Informative Prospectus; Pages 97-99; October 2016;  
<https://www.bosquesdeluruguay.com/media/2022/03/Prospecto-de-Emission-BDU-3.pdf>

<sup>136</sup> Available for the VVB at verification in shared folder



Figure 1.2 Harvested hard wood *Eucalyptus grandis*, ready for transportation

- **Barriers due to local ecological conditions, inter alia:**

- Low soil quality**

This barrier has not changed since project start date. Forteko project's region presents soils of lower quality than those in the North and West regions of Uruguay, where most long-rotation plantations have been established (see figure 1.3)<sup>137</sup>. The land area of the project is characterized by low fertility soils of light current erosion and reduced productivity. Most of the soils in the area are not suitable for agriculture (understanding that agriculture suitability means better quality of soils) with some specific exceptions.. The two types of soils forming part of this area present production restrictions affecting the forestry activities. Coneat group 2: the landscape is featured by hills with rocky outcrops, and Group 8: association of soils of sandy textures, shallow and low fertility. These statements would only mean worst conditions for *Eucalyptus grandis* growth, over *Pinus* and *dunnii*, adapted to less suitable lands and climatic conditions.

<sup>137</sup> Ministry of Livestock, Agriculture and Fisheries (2008) Aptitud General de Uso de la Tierra. General Direction of Natural Renewable Resources.

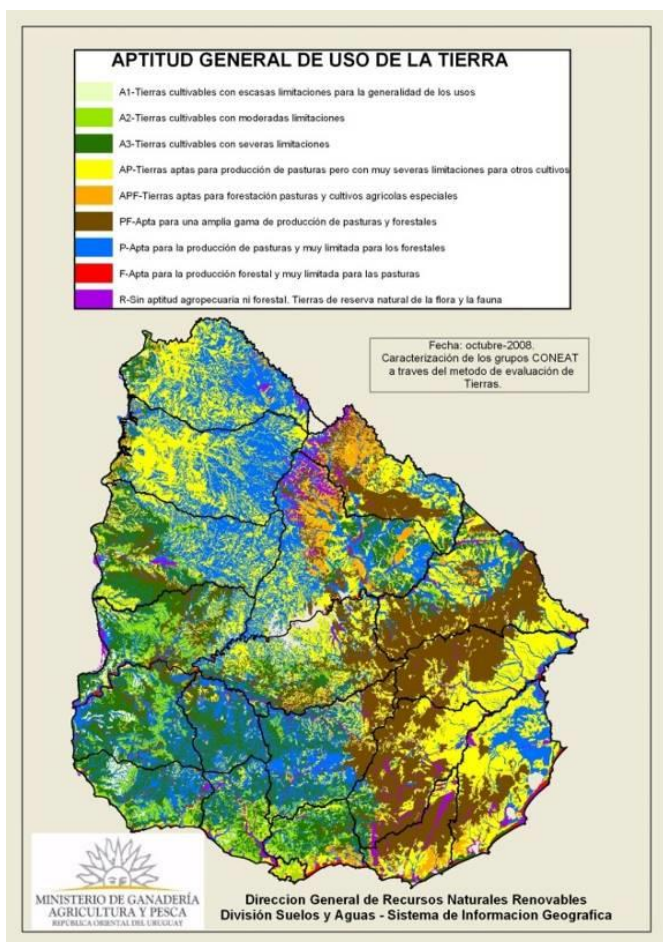


Figure 1.3 General Land Use capacities. Ministry of livestock, agriculture and fisheries (2008)

- Degraded soil (e.g. water/wind erosion, salinization, etc.);

Other relevant issue relates to the fact that the farms of this region could be affected by a high to moderate risk of soil degradation, as it can be seen in the map below<sup>138</sup>. This is more evident in areas with steep slopes which could reach 30-40% increasing the erosion potential.

<sup>138</sup> Available at:

<https://descargas.mgap.gub.uy/DGRN/Comunicaciones/Riesgo%20de%20degradaci%C3%B3n%20de%20tierras%20mapa%20formato%20jpg.jpg>

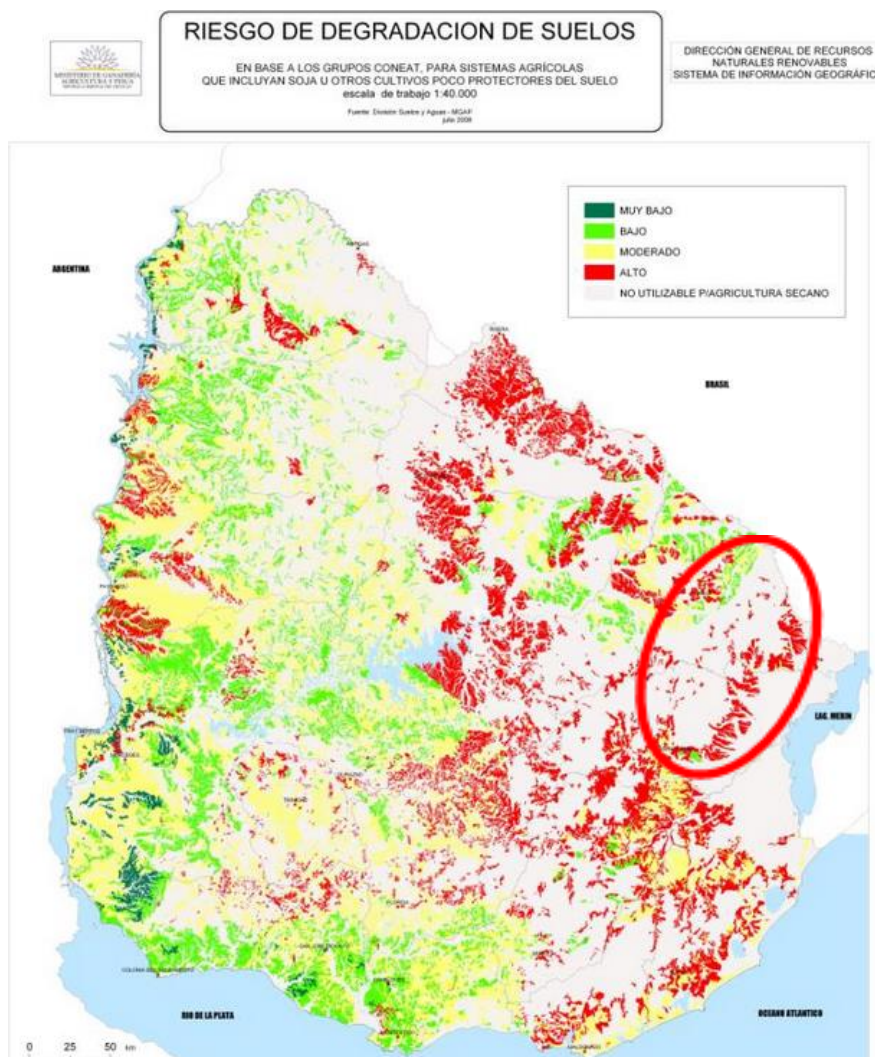


Figure 1.4. Soil Degradation Risk. Ministry of livestock, agriculture and fisheries (2008)

- Unfavorable meteorological conditions

Another uncertainty relates to potential windstorms blowing down or damaging trees. This is even riskier with intensive thinning practices as the proposed by Forteko project for *Eucalyptus grandis* and *Pinus*. The rationale is because opening wider spaces within the forest stands may channel the wind and increase its speed, worsened by the vulnerability of taller trees. If the goal is to obtain high quality timber, there is no other alternative than using intensive thinning practices.

In conclusion, all the risks and uncertainties described above represent a concrete ecological barrier for the type of forestry production proposed by Forteko project, whether it is *Pinus* or *Eucalyptus grandis*.

- Barriers relating to markets, transport and storage;

When compared to other forestry areas of Uruguay, where most of the forestry industries are located or are closer to the consumption centers or ports, the location of Forteko project can be considered a remote area, representing higher transportation cost for wood products, especially the west for Pinus wood. Even though the area of planted forest grew very fast during the last decade, this took place in order to provide for the growing pulp industry in Uruguay, located in other regions of the country. There are three pulp mills in the country of which only one has a considerable size. The largest pulp mill currently operating is UPM, established in 2007 (Río Negro), has a capacity to produce 3.3 million tons of cellulose per year. In addition, there are two other pulp mills (1,1 million t/year) located in the Southwest part of Uruguay. In recent years, four new plywood and sawmill plants have been established in Rivera and Tacuarembó, with a combined processing capacity of only 700,000 m<sup>3</sup>/year. There is a larger number of sawmills (estimated in 77) however the vast majority of them are highly small, very inefficient units, which do not have a significant aggregated demand for wood (they represent 71% of sawmills in the country but only 6% of hardwood consumption)<sup>139</sup>.

In average Forteko project sites are located 350 km away from main industries like pulpmills (450 km to Colonia and Paysandú), plywood (200 km to Tacuarembó) and large sawmills (250 km to Rivera) and 350 km away of commercial ports (Montevideo, Colonia, Nueva Palmira, etc.)<sup>140</sup>. This remoteness is even worse when the road conditions are considered. The productive and socio-economic characteristics of the project's region show that this region does not host any of the pulp and plywood industries nor any of the medium to large size sawmills in the country. They are all located in the North, West and South regions where most plantations were established around the time Forteko project started. For the project's region (central East), the fact of being away from the forest industries and from export ports explain the limited development of transportation infrastructure. This was prepared only to support the traditional extensive cattle grazing.

In conclusion, although forest industry grew in Uruguay, these growth took place in the pulp industry, and the demand for lumber for sawmills in the project area has not changed significantly. The demand for pulp did increase, but as described, the plants are located at a very significant distance and as can be seen in the financial analysis, it is not a business to plant Eucalyptus for pulp in this area and that is why there is no interest in Forteko to go that way. The project continues to target 90% sawn wood and that market did not change. Still, the remoteness of Forteko lands and the undeveloped roads and infrastructure represent large transportation expenditures eroding the competitiveness and profitability of products, both Pinus and Eucalyptus, from the land use. The income from the carbon credit sales will contribute to compensate the higher transportation costs. Therefore, the VCS certification alleviates this barrier.

As analysed above, the Forteko project without being registered as an A/R CDM or VCS project activity, and with the corresponding updates, still faces several barriers preventing its development.

The table below summarizes the identified barriers that apply to the project in both cases: a) at validation; b) with species replacement:

<sup>139</sup> Agriculture, livestock and fisheries Ministry (2020) Sawmill survey-Final Report 2020 available at: <https://www.gub.uy/ministerio-ganaderia-agricultura-pesca/sites/ministerio-ganaderia-agricultura-pesca/files/2020-09/INFORME%20FINAL.pdf>

<sup>140</sup> Own calculation based on Google Map ([www.google.com.ar/maps](http://www.google.com.ar/maps)) and actual location of the industries and ports.

| Barriers                                            | At validation (100% Pinus) | With species replacement |
|-----------------------------------------------------|----------------------------|--------------------------|
| Barriers related to local tradition                 | Yes                        | Yes                      |
| Barriers due to local ecological conditions         | Yes                        | Yes                      |
| Barriers relating to markets, transport and storage | Yes                        | Yes                      |
|                                                     |                            |                          |

### Common practice

Regarding the common practice analysis, all statements in the validated PD still apply under the project's new scenario of species partial replacement if analyzed positioned at the start date, as the conclusion mentions similar forest activities were identified but not without carbon finance, hence it is additional. In this line, it seems important to bring back extractions of Step 4 in section 2.5 Additionality of the validated PD:

*"The common practice analysis was done following the requirements set in the Step 4 of the "Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities". It was analyzed to which extent similar forestation activities to the one proposed have been implemented previously or are currently underway. Similar forestation activities are defined as that 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.*

In spite of a large extension of forest priority soils in the Departments of Treinta y Tres and Cerro Largo, the forest promotion policy implemented in 1987 resulted in only a limited extent of afforestation. Approximately only 10% of "forest priority soils" area established in the regulatory framework has been afforested (according to the Ministry of Livestock, Agriculture and Fisheries. the total area of "forest priority soils" in the department of Cerro Largo and Treinta y Tres is 1,014,066 ha<sup>15</sup>). This represented a very different scenario from that in the other forest regions of the country. As it was explained above, the reasons for this lack of response are to be found in the long distances to wood delivery points (industries or ports) and in the poorer quality of the soils as compared to the North and West regions.

The relatively small area that was forested in the NE region (Cerro Largo and Treinta y Tres) during the period 1987-2005 was in response to the existence of a plantation subsidy, the availability of soft credits from Banco de la República and the exemption of all income and land taxes. As the subsidies were gradually decreased since 2002 until their complete suppression in 2005, the rate of plantation also declined (Fig. 19). The soft credits and several of the tax exemptions were also eliminated between 2003 and 2005.

The soft credits for forest planting provided by Banco de la República had low interest rates (LIBOR plus 1.5 to 2.0 per cent per year) and a grace period of 10 years for both principal and interests. They were conceived for short rotation cycles (i.e., 10 years), clearly not appropriate for the NE region of Uruguay due to the relatively low value of pulpwood (the only product that can be obtained in such a short period). (...) This line of soft credits was gradually modified after 2002 and was later phased out.

The situation after 2005 corresponded to a completely different scenario. The rate of plantation in the region increased sharply, in spite of a lack of policy incentives. This increase is highly associated to the consideration of carbon finance by investors. As shown in Table 1.2, 94 per cent of the forests planted during the period 2006-2011 corresponding to a total of more than 77,000 ha, are either procuring or have already achieved registration under carbon programs (CDM, CCX and VCS).

Table 1.2 Forest area planted between 2006 and 2011, by owner, in Forteko's project region

| Company Name                       | Eucalyptus    | Pinus         | Total         | Seeking Carbon finance |
|------------------------------------|---------------|---------------|---------------|------------------------|
| 'Forteko'                          |               | 16,928        | 16,928        | Yes (VCS)              |
| El Arriero                         |               | 5,377         | 5,377         | Yes (VCS)              |
| Guanaré                            | 22,605        |               | 22,605        | Yes (VCS)              |
| Weyerhaeuser                       | 15,723        | 2,142         | 17,865        | Yes (VCS)              |
| RMK                                | 4,446         |               | 4,446         | Yes (CCX)              |
| Pradera Roja                       | 3,826         |               | 3,826         | Yes (VCS)              |
| Others                             | 1,776         |               | 1,776         | Not known              |
| Posco Uruguay                      | 1,432         |               | 1,432         | Yes (CDM)              |
| Caja de Jubilaciones Profesionales | 1,327         |               | 1,327         | Not known              |
| ITAA                               | 1,186         |               | 1,186         | Yes (VCS)              |
| Bulgheroni                         | 906           |               | 906           | Not known              |
| San Ignacio                        | 850           |               | 850           | Yes (VCS)              |
| Tierras Forestales                 | 501           |               | 501           | Not known              |
| Fernández                          | 187           |               | 187           | Not known              |
| Yandian                            | 107           |               | 107           | Not known              |
| Agrosocio Brasileiro               | 72            |               | 72            | Not known              |
| Saps Krazemblum                    | 53            |               | 53            | Not known              |
| <b>Total</b>                       | <b>54,997</b> | <b>24,447</b> | <b>79,444</b> | <b>94%</b>             |

The common practice analysis was done following the requirements set in the Step 4 of the "Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities". It was analyzed to which extent similar forestation activities to the one proposed have been implemented previously or are currently underway. Similar forestation activities are defined as that 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.

Throughout the analysis it is concluded that there are similar forest activities (in terms of scale, species, etc) in the area (table 1.2). However, 94% of those companies established in the area were seeking carbon finance. There was not identification of similar forest activities without requiring carbon finance (paragraph 33 of the tool). Therefore, there is no need to compare the proposed project activities to others (paragraph 34 of the tool). In conclusion, similar activities cannot be observed, then the project activity is not the baseline scenario, and hence it is additional.

## Investment analysis

Section 2.5 of the PD mentions “*Additionality has been demonstrated through application of Steps 0 to 2 above and through Common Practice Analysis in Step 4 (in this section below). Despite the fact that sub-step 2c resulted in only one land use scenario and according to the “Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities” it is the baseline scenario, the investment analysis was conducted in the afforestation activity to reinforce the conclusion that forest activity in the area was not meant to be developed without being registered in a carbon scheme and generating carbon certifies.*”

Still, the new project proponent has conducted an investment analysis in order to demonstrate that replacing part of Pinus for Eucalyptus is still below the IRR benchmark value, both at the time of the project start date and to date (2024), further demonstrating the project’s additionality. In this line, the IRR values are compared to benchmark values (Table 1.3) estimated based on the Capital Asset Pricing Model (CAPM) using the same steps described in the validated PDD. The values for the Benchmark IRR’s variables can be seen in the table 1.4 and all calculations and references in the shared spreadsheets<sup>141</sup>. It is demonstrated that IRR values for forest plantation activities of the different used species is still below the benchmark IRR values. Table 1.3 Benchmark and IRR comparison per year and species

|                    | Year | IRR value (annual) | Benchmark % |
|--------------------|------|--------------------|-------------|
| Pinus              | 2006 | 4.15%*             | 9.2%        |
|                    | 2007 | 4.6% **            | 8.8%        |
|                    | 2024 | 1.5%               | 6.9%        |
| Eucalyptus grandis | 2024 | 5.6%               | 6.9%        |
| Eucalyptus dunnii  | 2024 | 4.9%               | 6.9%        |

\* and \*\* are average values for the different regions identified in the validated PDD

Table 1.4 values originally used to estimate the benchmark IRR value and updated value for 2024.

|          | 2006 | 2007 | 2024 |
|----------|------|------|------|
| Ke       |      |      |      |
| rf       | 4,9  | 4,8  | 5,51 |
| E(Rm)    | 0,7  | 0    | 0,70 |
| E(Rm)-rf | 5,6  | 4,8  | 5,6  |
| Beta     | 0,5  | 0,57 | 0,61 |
| prs      | 3,81 | 3,67 | 0,81 |
| Ke BETA  | 11,5 | 11,2 | 9,8  |

<sup>141</sup> Calculation spreadsheets available to VVB in shared folder “Additional evidences>Benchmark IRR value”

|               |     |     |      |
|---------------|-----|-----|------|
| CPI           | 2,3 | 2,4 | 2,82 |
| IRR benchmark | 9,2 | 8,8 | 6,9  |

Moreover, the replacement of species is complex because an initial investment is needed again, postponing the project incomes. There is also a new risk that must be taken into consideration: achieving the implementation of the new forest. Moreover, as demonstrated in the Investment analysis in the appendix, the new project's replacement plan does not reach the benchmark IRR either when the carbon income is not considered. In short, the information mentioned above provides a strong argument to justify that this change faces a concrete barrier related with financial issues. Projects similar to Forteko are generally financed by large international forestry companies or investment funds with fluent access to capital markets, venture capital and stock actions.

## 8.2 Appendix 2: Project Risks Table

| Identify Risk        | Potential impact of risk on climate, community and/or biodiversity benefits                                                                                                                                                                                                                                                                                                                                                                                           | Actions needed and designed to mitigate the risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fire                 | <p>The risk of fires in commercial forest plantations in Uruguay is very low due to reduced population density and a very humid climate. Normally forest fires in Uruguay only occur in summer in the coastal areas of the South and Southeast of the country, associated with the tourism activity.</p> <p>In spite of prevention activities, fires can happen. In that case, equipment and staff (owned and contracted) is ready and trained for fire-fighting.</p> | <p>In compliance with national regulations, Cambium Forestal has implemented an extensive plan to prevent forest fires, extended to AF management of properties.</p> <p>There are many preventive activities such as: i) establishment of a network of firebreaks surrounding forests blocks with an area not larger than 50 ha; ii) the introduction of cattle in early stages of the forestation for maintaining pastures short and green, thus reducing the volumes of fuel; iii) permanent surveillance of the project area, particularly at times of medium to high risk of fire; iv) burning as possible technique for cleaning fields is particularly excluded; vi) warning signs with risk of fire are placed next to forest sites; vii) transit of non-authorized hunters, hikers or campers is forbidden; viii) fire extinguishers must set in vehicles (including tractors) that circulate in the property; viii) PAIF program to detect and prevent fires during summer was implemented since 2013; ix) the project has fire insurance hired</p> |
| Diseases and insects | <p>With a low to intermediate possibility of occurrence, there could be diseases and insects that may damage the planted trees, but the diseases and insects will be prevented by routine oversight.</p>                                                                                                                                                                                                                                                              | <p>A continuous monitoring of several variables as the actual health of plantations is applied, in order to detect in advance any disease spread or plagues attack.</p> <p>Furthermore, the monitoring system of the Management Plan, establishes that together with the growth inventory is done the sanitary monitoring of the plantations. An external consultant specialized in health is available, which is used in case of detecting anomalous situations. Supervisors permanently monitor plantations.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>Upon routine oversight, the diseases will be treated according to the Weeds and Insects Control Plan, immediately with biological control once occurred. The chemical pesticides are allowed to be used only if there is a serious pest problem erupted in the project area, and the pesticides will be used in accordance with the National Pesticides Policy and FSC standard.</p> <p>Given forestry sanitation is considered to need a national scale solution among producers, both Cambium and AF channel its efforts through the Health Commission of the Society of Forest Producers (CS-SPF), participating actively. The CS-SPF establishes a short and medium-term work plan, which includes lines of work in aspects of monitoring, control, investigation and training / dissemination for pests considered priority. In turn, forest health issues at the national level are coordinated by the CECOPE (Executive Council for the Coordination of Pests and Diseases forestry) made up of representatives of the MGAP through the General Forestry Directorate and the General Directorate of Agricultural Services, INIA and SPF.</p> |
| Wind | <p>Although it has a very low probability of occurrence, and affects mainly young individuals, another risk is related to an eventual increase in felling off or damage to trees by wind storms. Intensive thinning of eucalyptus plantations is known to increase the risk of wind damages due to the opening of wide spaces within the forest that may channel the wind and increase its speed, aggravated by the vulnerability of tall trees. There is no information on an eventual increase in this vulnerability in thinned stands with very tall trees such as those with ages 15 or more, but there have been some cases of plantations losses due to strong wind storms.</p> | <p>High density initial plantation. Thinned density never below 150 trees per hectare.</p> <p>Also the use of climate insurance in critical moments, geographic diversification and last, avoidance of critical activities during periods of expected adverse meteorological conditions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                                          |                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                     |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frost                                    | Night frosts occur during the winter (from mid-May to early October), with an average of 30 days with frost per year, with temperatures seldom falling below –5 °C.                                                                                                                                                 | Those areas imposing restrictions to tree growth or with high vulnerability to frost were excluded; soils occupying low areas were excluded because of risk of frost. <i>Eucalyptus dunnii</i> were planted in lower areas to prevent frost damage. |
| Soil and water contamination             | Low significance impacts to water sources contamination was found from the EIA to the properties due to agrochemicals use.                                                                                                                                                                                          | Operative procedures in place to assure a correct use of agrochemicals avoiding all risk of contamination and leak to water and soil. Water physicochemical analysis is conducted and phreatic levels are measured every 15 days.                   |
| Natural and artificial habitats affected | Low significance impacts to natural habitat were identified during the EIA to the properties due to the activities taking place during plantation growth and harvest.                                                                                                                                               | Plantations take place in grasslands with no natural habitat replacement. Environmental monitoring takes place during and after harvest, determining all aspects to take place in future activities.                                                |
| Economic risks                           | Although with a low probability of occurrences, internal and external demand for the project's products, changes in national tax legislation, infrastructure maintenance, among others may lead to changes in the project's first description including demand for jobs, hectares planted, among others objectives. | Adaptation to new conditions, alternative markets to be found, export internal market products or delay harvest to maintain project's objectives, among others                                                                                      |

