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## GREEN GOLD LORETO 1 VCS MONITORING REPORT



Document Prepared by GREEN GOLD FORESTRY PERU S.A.

|                          |                                                                                                                                                                                                                                                                       |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Project Title</b>     | Green Gold Loreto 1                                                                                                                                                                                                                                                   |
| <b>Version</b>           | V4.2                                                                                                                                                                                                                                                                  |
| <b>Report ID</b>         |                                                                                                                                                                                                                                                                       |
| <b>Date of Issue</b>     | 26-July-2024 this version of the document issued                                                                                                                                                                                                                      |
| <b>Project ID</b>        | 2345                                                                                                                                                                                                                                                                  |
| <b>Monitoring Period</b> | 01-August-2020 to 31-July-2022                                                                                                                                                                                                                                        |
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# 1 PROJECT DETAILS

## 1.1 Summary Description of the Implementation Status of the Project.

Green Gold Forestry Peru S.A. (GGF) is a forestry company with 254,071 hectares (ha) of production forest concessions for timber purposes located in the Loreto region. With the Green Gold Loreto 1 project, GGF has taken 183,445.54 ha of its concession area out of the planned logging cycle and into management for ecosystem services. Using the VM 0010 “Methodology for Improved Forest Management: Conversion from Logged to Protected Forest, v1.3 (28 April 2016)”, validated in 2021, the project reduced/removed a total of 773,715 tCO<sub>2e</sub> net GHG emissions during the monitoring period August 2020 – July 2022. In addition, the following activities were implemented:

1. Involving the neighbouring communities in the project, to ensure their participation in the project
  - Presentation of the project in 16 communities
  - Elaboration of a socioeconomic baseline in 16 communities
  - Supporting land tenure process (titling) and strengthening governance in 14 communities
  - Generation of employment opportunities (part-time jobs), training on productive activities and acquisition of goods and services in 16 communities
  - Implementation of environmental education workshops with children
  - Elaboration of a Gender Action Plan (GAP) that included participatory workshops in its design
2. Regularly patrolling the project area with teams of forest custodians
  - Elaboration of a resource mapping with 14 communities
  - Identification of access points, both fluvial and terrestrial
  - Terrestrial and fluvial patrolling of forest concessions using the GGF boat “El Napuruna”
3. Erecting signs along all fluvial access points and existing logging roads: Implementation of boundary markers in buffer zones between communities’ territory and GGF forest concessions
4. Remote monitoring using drone and satellite surveys: Analysis through satellite imagery in the area of interest to evaluate the biomass loss in identified disturbed areas.

| Audit Type   | Period                        | Program | VVB Name   | Number of years |
|--------------|-------------------------------|---------|------------|-----------------|
| Validation   | 16-June-2021                  | VCS     | SCS Global | 1               |
| Verification | 01-August-2020 – 31-July-2022 | VCS     | SCS Global | 2               |

## 1.2 Sectoral Scope and Project Type

This is an AFOLU Improved Forest Management (IFM) Logged to Protected Forest (LtPF) project. It is not grouped.

## 1.3 Project Proponent

|                   |                                                                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Organization name | Green Gold Forestry Peru SA                                                                                                                                        |
| Contact person    | Mr. Gareth Hughes                                                                                                                                                  |
| Title             | General Manager                                                                                                                                                    |
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## 1.4 Other Entities Involved in the Project

No other entities are involved in the project.

## 1.5 Project Start Date

The project start date is August 1, 2020. This is the date on which it is assumed that logging operations would have resumed in the project area in the baseline scenario, whereas the project activity of conservation is effectively being implemented. It marks the beginning of the dry season when logging operations are feasible again after the rainy season.

## 1.6 Project Crediting Period

The project crediting period is 20 years, commencing on August 1, 2020, and ending on July 31, 2040.

## 1.7 Project Location

The project areas have been divided by GGF into three project regions, each comprising one or more discreet parcels of forest land. The three regions are:

1. Consolidado Tacsha 1 – Total area 125,557.53 ha
2. Consolidado Tacsha 2 – Total area 30,619.63 ha
3. San Regis – Total area 27,268.38 ha

The locations of the project areas are shown in Figure 1 and the geodetic coordinates are presented in Table 1, 2 and 3.

**Table 1: Geodetic coordinates - Consolidated 1**

| Vertices | Segments  | UTM coordinates |         | Geodetic Coordinates |                   |
|----------|-----------|-----------------|---------|----------------------|-------------------|
|          |           | East            | North   | Latitude             | Longitude         |
| P1       | P1 - P2   | 618560          | 9681411 | 2° 52' 54.651" S     | 73° 55' 59.702" W |
| P2       | P2 - P3   | 618560          | 9700613 | 2° 42' 29.362" S     | 73° 56' 0.267" W  |
| P3       | P3 - P4   | 623560          | 9700613 | 2° 42' 29.216" S     | 73° 53' 18.355" W |
| P4       | P4 - P5   | 623560          | 9695613 | 2° 45' 12.033" S     | 73° 53' 18.205" W |
| P5       | P5 - P6   | 628560          | 9695613 | 2° 45' 11.878" S     | 73° 50' 36.290" W |
| P6       | P6 - P7   | 628560          | 9700825 | 2° 42' 22.157" S     | 73° 50' 36.452" W |
| P7       | P7 - P8   | 638560          | 9702656 | 2° 41' 22.210" S     | 73° 45' 12.703" W |
| P8       | P8 - P9   | 638560          | 9695613 | 2° 45' 11.550" S     | 73° 45' 12.467" W |
| P9       | P9 - P10  | 641061          | 9695613 | 2° 45' 11.464" S     | 73° 43' 51.489" W |
| P10      | P10 - P11 | 641061          | 9694778 | 2° 45' 38.653" S     | 73° 43' 51.460" W |
| P11      | P11 - P12 | 643904          | 9694778 | 2° 45' 38.553" S     | 73° 42' 19.400" W |
| P12      | P12 - P31 | 643904          | 9690613 | 2° 47' 54.170" S     | 73° 42' 19.252" W |
| P13      | P13 - P14 | 637904          | 9690613 | 2° 47' 54.382" S     | 73° 45' 33.548" W |
| P14      | P14 - P15 | 637904          | 9685613 | 2° 50' 37.191" S     | 73° 45' 33.376" W |
| P15      | P15 - P16 | 633560          | 9685613 | 2° 50' 37.340" S     | 73° 47' 54.054" W |
| P16      | P16 - P17 | 633560          | 9690613 | 2° 47' 54.529" S     | 73° 47' 54.221" W |
| P17      | P17 - P18 | 628560          | 9690613 | 2° 47' 54.692" S     | 73° 50' 36.132" W |
| P18      | P18 - P19 | 628560          | 9677382 | 2° 55' 5.529" S      | 73° 50' 35.700" W |
| P19      | P19 - P20 | 638560          | 9712503 | 2° 36' 1.596" S      | 73° 45' 13.023" W |
| P20      | P20 - P21 | 638560          | 9703258 | 2° 41' 2.628" S      | 73° 45' 12.723" W |
| P21      | P21 - P22 | 628560          | 9701399 | 2° 42' 3.460" S      | 73° 50' 36.470" W |
| P22      | P22 - P19 | 628560          | 9714780 | 2° 34' 47.742" S     | 73° 50' 36.873" W |
| P23      | P23 - P24 | 623083          | 9715911 | 2° 34' 11.081" S     | 73° 53' 34.240" W |
| P24      | P24 - P25 | 623122          | 9730128 | 2° 26' 28.128" S     | 73° 53' 33.391" W |
| P25      | P25 - P26 | 625275          | 9728651 | 2° 27' 16.165" S     | 73° 52' 23.624" W |
| P26      | P26 - P27 | 625375          | 9728726 | 2° 27' 13.706" S     | 73° 52' 20.389" W |
| P27      | P27 - P28 | 632508          | 9729669 | 2° 26' 42.790" S     | 73° 48' 29.506" W |
| P28      | P28 - P29 | 630036          | 9725552 | 2° 28' 56.934" S     | 73° 49' 49.406" W |
| P29      | P29 - P30 | 638560          | 9719263 | 2° 32' 21.471" S     | 73° 45' 13.237" W |
| P30      | P30 - P23 | 638560          | 9714893 | 2° 34' 43.768" S     | 73° 45' 13.099" W |
| P31      | P31 - P32 | 643549          | 9713777 | 2° 35' 19.934" S     | 73° 42' 31.539" W |
| P32      | P32 - P33 | 648560          | 9710614 | 2° 37' 2.750" S      | 73° 39' 49.187" W |
| P33      | P33 - P34 | 648560          | 9708514 | 2° 38' 11.144" S     | 73° 39' 49.114" W |
| P34      | P34 - P31 | 643556          | 9706009 | 2° 39' 32.872" S     | 73° 42' 31.066" W |
| P35      | P35 - P36 | 638560          | 9680613 | 2° 53' 19.977" S     | 73° 45' 11.947" W |
| P36      | P36 - P37 | 648560          | 9680613 | 2° 53' 19.607" S     | 73° 39' 48.106" W |
| P37      | P37 - P38 | 648560          | 9680886 | 2° 53' 10.727" S     | 73° 39' 48.117" W |
| P38      | P38 - P39 | 653560          | 9680886 | 2° 53' 10.532" S     | 73° 37' 6.197" W  |

|     |           |        |         |                  |                   |
|-----|-----------|--------|---------|------------------|-------------------|
| P39 | P39 - P40 | 653560 | 9681949 | 2° 52' 35.912" S | 73° 37' 6.239" W  |
| P40 | P40 - P41 | 658560 | 9681949 | 2° 52' 35.711" S | 73° 34' 24.324" W |
| P41 | P41 - P42 | 658560 | 9675613 | 2° 56' 2.007" S  | 73° 34' 24.065" W |
| P42 | P42 - P43 | 653560 | 9675613 | 2° 56' 2.212" S  | 73° 37' 5.988" W  |
| P43 | P43 - P44 | 653560 | 9661667 | 3° 3' 36.278" S  | 73° 37' 5.417" W  |
| P44 | P44 - P35 | 638560 | 9672292 | 2° 57' 50.918" S | 73° 45' 11.648" W |
| P45 | P45 - P46 | 643560 | 9668149 | 3° 0' 5.630" S   | 73° 42' 29.554" W |
| P46 | P46 - P47 | 652711 | 9659223 | 3° 4' 55.904" S  | 73° 37' 32.807" W |
| P47 | P47 - P48 | 653847 | 9659286 | 3° 4' 53.806" S  | 73° 36' 56.022" W |
| P48 | P48 - P49 | 658560 | 9657973 | 3° 5' 36.357" S  | 73° 34' 23.308" W |
| P49 | P49 - P50 | 658560 | 9645613 | 3° 12' 18.784" S | 73° 34' 22.761" W |
| P50 | P50 - P51 | 668560 | 9645613 | 3° 12' 18.316" S | 73° 28' 58.842" W |
| P51 | P51 - P52 | 668560 | 9640613 | 3° 15' 1.105" S  | 73° 28' 58.600" W |
| P52 | P52 - P53 | 673560 | 9640613 | 3° 15' 0.857" S  | 73° 26' 16.639" W |
| P53 | P53 - P54 | 673560 | 9636720 | 3° 17' 7.588" S  | 73° 26' 16.443" W |
| P54 | P54 - P55 | 658560 | 9636720 | 3° 17' 8.318" S  | 73° 34' 22.361" W |
| P55 | P55 - P56 | 658558 | 9633812 | 3° 18' 43.028" S | 73° 34' 22.287" W |
| P56 | P56 - P57 | 655145 | 9633855 | 3° 18' 41.784" S | 73° 36' 12.873" W |
| P57 | P57 - P58 | 653291 | 9635004 | 3° 18' 4.453" S  | 73° 37' 12.963" W |
| P58 | P58 - P59 | 652394 | 9633558 | 3° 18' 51.581" S | 73° 37' 41.967" W |
| P59 | P59 - P60 | 648569 | 9634507 | 3° 18' 20.824" S | 73° 39' 45.918" W |
| P60 | P60 - P61 | 648560 | 9645613 | 3° 12' 19.223" S | 73° 39' 46.692" W |
| P61 | P61 - P62 | 643560 | 9645613 | 3° 12' 19.432" S | 73° 42' 28.662" W |
| P62 | P62 - P63 | 643560 | 9650613 | 3° 9' 36.627" S  | 73° 42' 28.865" W |
| P63 | P63 - P64 | 648560 | 9650613 | 3° 9' 36.421" S  | 73° 39' 46.902" W |
| P64 | P64 - P65 | 648560 | 9655613 | 3° 6' 53.619" S  | 73° 39' 47.109" W |
| P65 | P65 - P45 | 643560 | 9655613 | 3° 6' 53.822" S  | 73° 42' 29.065" W |

Table 2: Geodetic coordinates - Consolidated 2

| Vertices | Segments  | UTM coordinates |         | Geodetic Coordinates |                   |
|----------|-----------|-----------------|---------|----------------------|-------------------|
|          |           | East            | North   | Latitude             | Longitude         |
| P1       | P1 - P2   | 588560          | 9695984 | 2° 45' 0.859" S      | 74° 12' 11.684" W |
| P2       | P2 - P3   | 588560          | 9710613 | 2° 37' 4.448" S      | 74° 12' 11.992" W |
| P3       | P3 - P4   | 583560          | 9710613 | 2° 37' 4.549" S      | 74° 14' 53.907" W |
| P4       | P4 - P5   | 583560          | 9715613 | 2° 34' 21.714" S     | 74° 14' 54.003" W |
| P5       | P5 - P6   | 590427          | 9715613 | 2° 34' 21.577" S     | 74° 11' 11.647" W |
| P6       | P6 - P7   | 590524          | 9715613 | 2° 34' 21.575" S     | 74° 11' 8.520" W  |
| P7       | P7 - P8   | 590619          | 9715613 | 2° 34' 21.573" S     | 74° 11' 5.442" W  |
| P8       | P8 - P9   | 592056          | 9713827 | 2° 35' 19.706" S     | 74° 10' 18.869" W |
| P9       | P9 - P10  | 592078          | 9713778 | 2° 35' 21.293" S     | 74° 10' 18.152" W |
| P10      | P10 - P11 | 592126          | 9713685 | 2° 35' 24.319" S     | 74° 10' 16.580" W |
| P11      | P11 - P12 | 592861          | 9712760 | 2° 35' 54.437" S     | 74° 9' 52.777" W  |
| P12      | P12 - P31 | 593466          | 9712025 | 2° 36' 18.360" S     | 74° 9' 33.164" W  |
| P13      | P13 - P14 | 593560          | 9712026 | 2° 36' 18.325" S     | 74° 9' 30.110" W  |

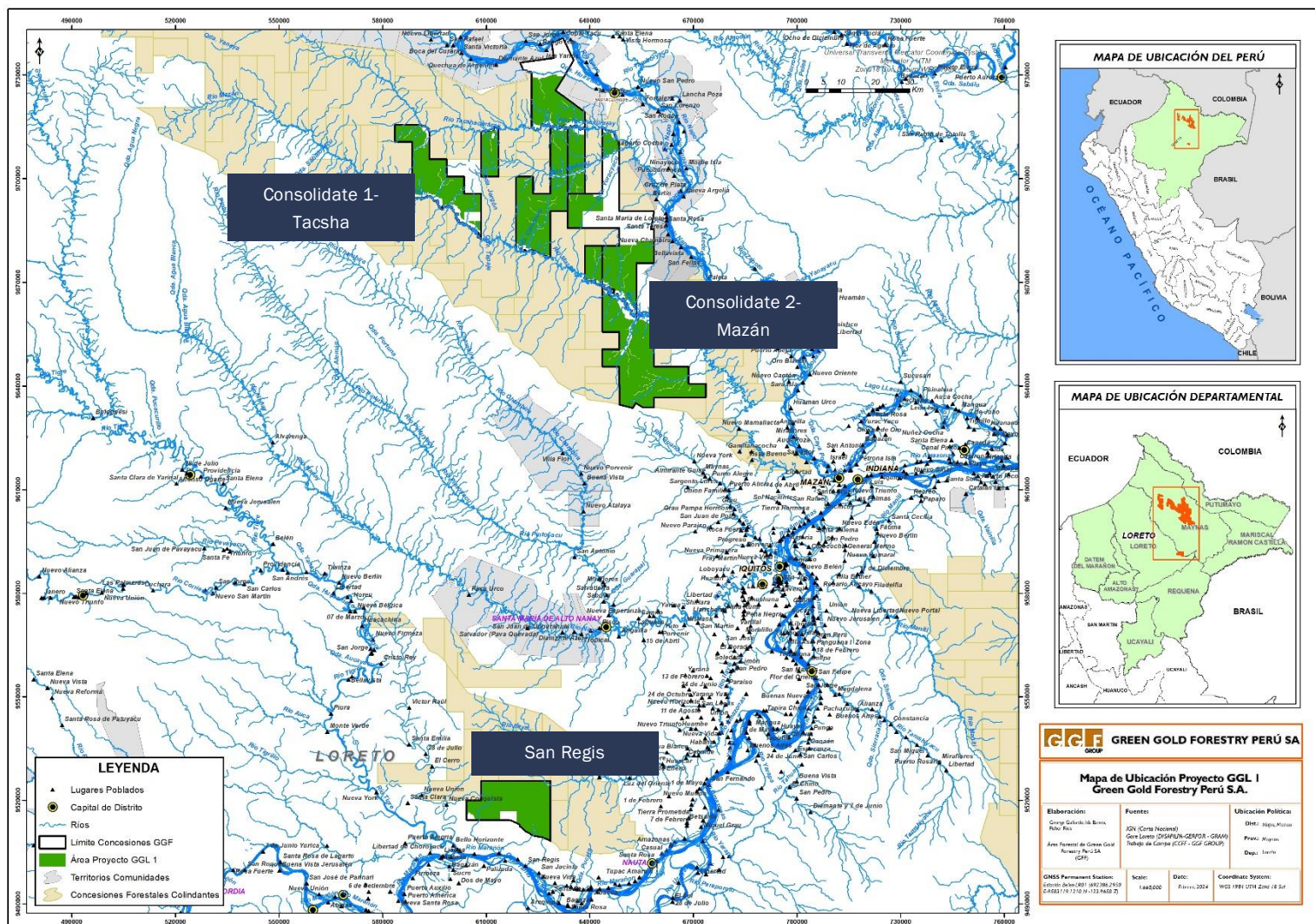
|     |           |        |         |                  |                   |
|-----|-----------|--------|---------|------------------|-------------------|
| P14 | P14 - P15 | 593432 | 9712123 | 2° 36' 15.169" S | 74° 9' 34.278" W  |
| P15 | P15 - P16 | 593560 | 9712311 | 2° 36' 9.043" S  | 74° 9' 30.116" W  |
| P16 | P16 - P17 | 593560 | 9712124 | 2° 36' 15.135" S | 74° 9' 30.112" W  |
| P17 | P17 - P18 | 593560 | 9705613 | 2° 39' 47.172" S | 74° 9' 29.970" W  |
| P18 | P18 - P19 | 598560 | 9705613 | 2° 39' 47.058" S | 74° 6' 48.053" W  |
| P19 | P19 - P20 | 598560 | 9700613 | 2° 42' 29.887" S | 74° 6' 47.936" W  |
| P20 | P20 - P21 | 603560 | 9700613 | 2° 42' 29.764" S | 74° 4' 6.015" W   |
| P21 | P21 - P22 | 603560 | 9695613 | 2° 45' 12.591" S | 74° 4' 5.890" W   |
| P22 | P22 - P19 | 608560 | 9695613 | 2° 45' 12.460" S | 74° 1' 23.965" W  |
| P23 | P23 - P24 | 608560 | 9690371 | 2° 48' 3.165" S  | 74° 1' 23.825" W  |
| P24 | P24 - P25 | 603560 | 9690371 | 2° 48' 3.298" S  | 74° 4' 5.756" W   |
| P25 | P25 - P26 | 603560 | 9688032 | 2° 49' 19.459" S | 74° 4' 5.696" W   |
| P26 | P26 - P27 | 604536 | 9687750 | 2° 49' 28.625" S | 74° 3' 34.093" W  |
| P27 | P27 - P28 | 606565 | 9687750 | 2° 49' 28.571" S | 74° 2' 28.366" W  |
| P28 | P28 - P26 | 606685 | 9686557 | 2° 50' 7.423" S  | 74° 2' 24.447" W  |
| P29 | P29 - P30 | 606665 | 9687750 | 2° 49' 28.569" S | 74° 2' 25.127" W  |
| P30 | P30 - P31 | 608560 | 9687750 | 2° 49' 28.517" S | 74° 1' 23.754" W  |
| P31 | P31 - P32 | 608560 | 9684377 | 2° 51' 18.357" S | 74° 1' 23.662" W  |
| P32 | P32 - P33 | 608544 | 9684371 | 2° 51' 18.554" S | 74° 1' 24.180" W  |
| P33 | P33 - P34 | 606785 | 9686536 | 2° 50' 8.109" S  | 74° 2' 21.208" W  |
| P34 | P34 - P35 | 608560 | 9712897 | 2° 35' 49.600" S | 74° 1' 24.411" W  |
| P35 | P35 - P36 | 609950 | 9713147 | 2° 35' 41.433" S | 74° 0' 39.428" W  |
| P36 | P36 - P37 | 610094 | 9713471 | 2° 35' 30.878" S | 74° 0' 34.776" W  |
| P37 | P37 - P38 | 612900 | 9713884 | 2° 35' 17.357" S | 73° 59' 3.905" W  |
| P38 | P38 - P39 | 612785 | 9713566 | 2° 35' 27.701" S | 73° 59' 7.621" W  |
| P39 | P39 - P40 | 613560 | 9714040 | 2° 35' 12.250" S | 73° 58' 42.539" W |
| P40 | P40 - P41 | 613560 | 9700613 | 2° 42' 29.502" S | 73° 58' 42.181" W |
| P41 | P41 - P1  | 608560 | 9700613 | 2° 42' 29.636" S | 74° 1' 24.097" W  |

Table 3: Geodetic coordinates – San Regis

| Vertices | Segments  | UTM coordinates |         | Geodetic Coordinates |                   |
|----------|-----------|-----------------|---------|----------------------|-------------------|
|          |           | East            | North   | LATITUD              | LONGITUD          |
| P1       | P1 - P2   | 604285          | 9516228 | 4° 22' 34.180" S     | 74° 3' 36.482" W  |
| P2       | P2 - P3   | 604285          | 9520003 | 4° 20' 31.238" S     | 74° 3' 36.648" W  |
| P3       | P3 - P4   | 608560          | 9519999 | 4° 20' 31.206" S     | 74° 1' 17.956" W  |
| P4       | P4 - P5   | 608560          | 9525613 | 4° 17' 28.392" S     | 74° 1' 18.190" W  |
| P5       | P5 - P6   | 628560          | 9525613 | 4° 17' 27.483" S     | 73° 50' 29.451" W |
| P6       | P6 - P7   | 628560          | 9524705 | 4° 17' 57.061" S     | 73° 50' 29.407" W |
| P7       | P7 - P8   | 628294          | 9524833 | 4° 17' 52.895" S     | 73° 50' 38.035" W |
| P8       | P8 - P9   | 627904          | 9524833 | 4° 17' 52.914" S     | 73° 50' 50.706" W |
| P9       | P9 - P10  | 627893          | 9524833 | 4° 17' 52.915" S     | 73° 50' 51.072" W |
| P10      | P10 - P11 | 627711          | 9524833 | 4° 17' 52.923" S     | 73° 50' 56.974" W |

|     |           |        |         |                  |                   |
|-----|-----------|--------|---------|------------------|-------------------|
| P11 | P11 - P12 | 627407 | 9524553 | 4° 18' 2.056" S  | 73° 51' 6.806" W  |
| P12 | P12 - P31 | 628560 | 9524203 | 4° 18' 13.379" S | 73° 50' 29.382" W |
| P13 | P13 - P14 | 628560 | 9508219 | 4° 26' 53.862" S | 73° 50' 28.582" W |
| P14 | P14 - P15 | 628560 | 9508219 | 4° 26' 53.862" S | 73° 50' 28.606" W |
| P15 | P15 - P16 | 619703 | 9512450 | 4° 24' 36.538" S | 73° 55' 16.150" W |
| P16 | P16 - P17 | 619703 | 9512950 | 4° 24' 20.248" S | 73° 55' 16.175" W |
| P17 | P17 - P18 | 618850 | 9513362 | 4° 24' 6.864" S  | 73° 55' 43.850" W |
| P18 | P18 - P1  | 618850 | 9516916 | 4° 22' 11.142" S | 73° 55' 44.015" W |
| P19 | P19 - P20 | 613995 | 9516916 | 4° 22' 11.363" S | 73° 58' 21.515" W |
| P20 | P20 - P21 | 613995 | 9514269 | 4° 23' 37.553" S | 73° 58' 21.398" W |
| P21 | P21 - P22 | 607845 | 9514279 | 4° 23' 37.491" S | 74° 1' 40.921" W  |
| P22 | P22 - P19 | 607835 | 9514279 | 4° 23' 37.491" S | 74° 1' 41.251" W  |
| P23 | P23 - P24 | 607076 | 9514281 | 4° 23' 37.482" S | 74° 2' 5.857" W   |

Figure 1: Project Area Map



## 1.8 Title and Reference of Methodology

The project applies methodology VM0010 - Methodology for Improved Forest Management: Conversion from Logged to Protected Forest, v1.3 (28 April 2016).

Also applied are the following tools:

- CDM Tool for testing significance of GHG emissions in A/R CDM project activities, v.1
- VCS tool VT0001 Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities, v3.0
- VCS AFOLU Non-Permanence Risk Tool v4.0
- CDM Tool for Calculation of the Number of Sample Plots for Measurements within A/R CDM Project Activities

## 1.9 Participation under other GHG Programs

The project has not been registered, nor is it seeking registration under any other GHG programs.

## 1.10 Other Forms of Credit and Supply Chain (Scope 3) Emissions

### 1.10.1 Emission Trading Programs and Other Binding Limits:

The project does not reduce GHG emissions from activities that are included in an emissions trading program or any other mechanism that includes GHG allowance trading.

### 1.10.2 Other Forms of Environmental Credit

The project has not sought or received another form of GHG-related environmental credit.

### 1.10.3 Supply Chain (Scope 3) Emissions

GGF has not identified that the project has had any effect on a third-party supply chain.

## 1.11 Sustainable Development Contributions

During this monitoring, the project complied with national Sustainable Development Goals (SDG), focusing on 9 SDG targets. The socioeconomic baseline used SDG indicators to collect information of the beneficiary communities. With the results, GGF and the communities are implementing an action plan. Additionally, GGF has monitored its forest and biodiversity. Finally, the harvest of non-timber forest products (NTFPs) is managed according to best-practice principles of decent work, and environmental, social and governance.

Table 1: Sustainable Development Contributions

| Row number | SDG Target | SDG Indicator                                                                         | Net Impact on SDG Indicator        | Current Project Contributions                                                                                                                                       | Contributions Over Project Lifetime                                                        |
|------------|------------|---------------------------------------------------------------------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1)         | 1.1        | 1.1.1 Proportion of population below the international poverty line                   | Implemented activities to decrease | During the monitoring period, GGF generated more than 300 employment opportunities for the beneficiary communities and purchased goods and services for US\$108,568 | The project has purchased goods and services for US\$108,568 from communities' businesses. |
| 2)         | 1.2        | 1.2.1 Proportion of population living below the national poverty line, by sex and age | Implemented activities to decrease | During the monitoring period, GGF generated more than 300 employment opportunities for the beneficiary communities and purchased goods and services for US\$108,568 | The project has purchased goods and services for US\$108,568 from communities' businesses. |

|    |      |                                                                                                                                                                                                                                                                          |                                    |                                                                                                                                                                                                                                                                                                  |                                                                                      |
|----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 3) | 12.8 | 12.8.1 Extent to which (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in<br><br>(a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment | Implemented activities to increase | During the monitoring period, GGF implemented workshops with the objective to teach children and teens about conservation, responsible management of waste and climate change. 266 children participated in these workshops. Currently, GGF is elaborating a curriculum to implement during 2023 | Taught 266 children about climate change and conservation.                           |
| 4) | 13.0 | Tons of greenhouse gas emissions avoided or removed                                                                                                                                                                                                                      | Implemented activities to increase | By conserving 183,445.54 ha of forest, Project Green Loreto 1 has prevented the release of 773,715 metric tons of CO <sub>2e</sub> into the atmosphere during the monitoring period                                                                                                              | Prevented the release of 773,715 metric tons of CO <sub>2e</sub> into the atmosphere |

## 2 SAFEGUARDS

### 2.1 No Net Harm

#### 2.1.1 No net negative environmental impacts

The GHG accounting methodology deals with climate mitigation impact. Thus, this section focuses on biodiversity and ecosystem services other than climate change mitigation.

The change in forest management from logging to conservation has not resulted in any negative environmental impacts. On the contrary, the reduced anthropogenic disturbance and upcoming biodiversity monitoring activities under conservation management has ensured there is continued habitat for existing biodiversity and continued optimal provision of the ecosystem services the forests provide.

#### 2.1.2 No net negative socioeconomic impacts

The project generates positive socio-economic impacts for communities that neighbour the project. More than 300 employment opportunities were created during the monitoring period in the communities and purchasing goods and services for US\$108,568. Jobs have included assistants for field activities, forest custodians, climbers, and other support staff. Forest custodians have regularly monitored the project area, particularly its fluvial access routes, to detect and deter illegal logging, hunting and encroachment. The project plans to develop the conservation area as a prime destination for ecotourism and scientific research, establishing a lodge and research station within the first five years. To start, GGF's sawmill equipment has been dismantled and sold and the land it was on has been cleared for the implementation of the research centre. Furthermore, the project has been training people from communities on the sustainable harvesting of palm tree fruits (aguaje and acaí) and other NTFPs, using a tool called "maquisapa", which enables the harvest of fruits, like aguaje, without cutting the tree down (which is common practice).

Throughout the monitoring period, any potential conflicts related to land tenure were successfully addressed (see section 2.3 of this document). Notably, as the project area does not intersect with community territory, no adverse impacts on their utilization of natural resources were identified. The Participatory Rural Appraisal (PRA) findings demonstrate a negligible dependence on forest resources from the project area, as detailed in section 5.2 of this document.

Furthermore, the project has initiated collaborative efforts with the communities to enhance their governance structures. This involves formalizing community boards, crafting comprehensive life plans, and progressing towards the titling of their lands.

No significant other socio-economic impacts were observed, positive or negative.

## 2.2 Local Stakeholder Consultation

The project prioritizes on-going communication with local stakeholders, especially with the sixteen (16) beneficiary communities and other communities that neighbour the project area of influence. When the project was in the process of being designed, due to COVID 19 restrictions, the consultation process was disrupted. At the time, it was not possible to held meetings with communities (as they did not have internet access making it impossible to meet remotely). However, an initial meeting was held in Iquitos in November 2020 with the president of the Federation of Native Communities of the Middle Napo Curaray and Arabela (FECONAMNCUA) and with the North Regional Director of the Center for Amazon Development (CEDIA), where the project was described in detail, including opportunities for the participation of communities in the sustainable development of economic activities through non-timber forest products. Given the circumstances in regard of COVID during 2020 and 2021, the project proponent requested to proceed to VCS validation without completing a full local stakeholder consultation, considering:

1. The long-standing relationship between GGF and the surrounding communities and other stakeholders
2. The meeting held in November 2020 with the president of FECONAMNCUA and with the North Regional Director of CEDIA at which the project was described in detail
3. GGF's existing knowledge regarding the communities' interests and grievances from 10 years of previous consultations and meetings as part of GGF's FSC certification requirements
4. The benefits for the local communities that are embedded in the VCS project design, where they stand to gain more than without the project

Since then, GGF has developed strategies to involve the communities in the design and development of the project activities, and to ensure that constant communication with them and other stakeholders is maintained. The overall objective is to ensure that local stakeholders are fully informed and consulted on the project and that there are no negative impacts. Specially, GGF has developed a strong relationship with FECONAMNCUA<sup>1</sup>, who has supported the project since its beginnings. These stakeholders related activities are:

**Table 1:Local Consultation Activities**

| Related project activity | Local Consultation | Date | Source |
|--------------------------|--------------------|------|--------|
|--------------------------|--------------------|------|--------|

<sup>1</sup> La Federación de Comunidades Nativas del Medio Napo, Curaray y Arabela (FECONAMNCUA) is a federation of native communities that includes the 14 neighboring communities of the Napo basin.

|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                            |                                                            |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------|
| Involving neighboring communities in the project | Presentation of projects to the communities: GGF presented the carbon project and the “Sustainable Management of Forest Concessions” <sup>2</sup> conservation project to a total sixteen (16) communities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | June 2021<br>July 2021 (community by community)<br>March 2022<br>June 2022 | Activity reports prepared by Community Relations (CR) team |
|                                                  | Consultation of potential projects to be implemented in the communities: GGF, with the support of NGO CEDIA, gathered information on the social and economic indicators to elaborate a baseline through the revision of secondary information and the conduction of surveys to a sample of families in each of a total of sixteen (16) communities. Once the information was reviewed, the company elaborated an action plan, identifying a group of potential social, productive, and environmental projects that could reduce socioeconomic gaps identified by the baseline. Then, the Community Relationship (CR) team presented to each of the participating communities the results and the action plan to not only informed them but to discuss with them whether or not the projects and activities proposed are aligned with their priorities and perspectives. | March 2022                                                                 | Activity reports prepared by CR team                       |

<sup>2</sup> The “Sustainable Management of Forest Concessions” (SMFC) project, implemented by GGF and funded by USAID, is a conservation project with the objective demonstrating that multi-stream revenues business models can benefit biodiversity and native communities.

|                                                                                         |                                                                                                                                                                               |            |                            |
|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------|
| Regularly patrolling the project area with teams of forest rangers                      | During March 2022, the team of forest custodians presented themselves to 14 communities in the Napo basin.                                                                    | March 2022 | Forest custodians' reports |
| Erecting signs along all fluvial access points and existing logging roads to inform and | Before installing a boundary marker, the forest custodians discuss the activity with the corresponding community to inform the objective and how the activity will take place | March 2020 | Forest custodians' reports |

GGF has ongoing communication with the communities. After an activity has been approved by the company, the Community Relations (CR) team sends a letter to the governing authorities of the community of interest to request an informational meeting or permission of entry (depending on the type of activity). During these meetings, assistance is taken and a report by the CR team is drawn up. When agreements are made or something is delivered during these meetings, minutes are taken and signed by the GGF team present and the community.

The process of communicating the VCS and CCB audits was undertaken in two phases. The first phase took place in September 2022 and involved holding assemblies in each of the 16 communities. The GGF team presented the VCS and CCB standards to the community management committees and explained the benefits and impacts of the project. Following the presentation, the communities were asked if they wished to continue participating in the project. After agreeing to participate, a letter of acceptance was signed by the participants.

The second phase took place a few weeks before the site visit and was conducted by the GGF team. Its aim was to identify the pool of individuals who would be interviewed by the auditors, according to the planned schedule.

In regard of communicating laws and regulations regarding workers' rights, GGF's Internal Work Regulations (IWR) states in article 48, section 12, that it is the worker's responsibility to stay informed of all provisions issued by the company through established communication channels, such as email, talks, trainings, and others. Additionally, according to article 75 of the labor law, the company is required to provide talks and training on labor and occupational safety matters for all employees on the payroll throughout the year, and for personnel hired from communities who work in community and temporary camps. This training must be documented with an attendance record. The company conducted labor training for community personnel, which covered topics on the rights and obligations of workers as outlined in the IWR.

Communities have the opportunity to voice concerns regarding potential adverse impacts of the project by following the procedures outlined in the "Protocol of Conflict Resolution." According to this manual, grievances can be formally communicated either in writing, by submitting or

delivering a letter to the company, or in-person to a member of the Community Relations (CR) team. Detailed information on the entire procedure can be found in section 2.3 of this document.

To ensure constant awareness, the protocol is shared with each community semi-annually, emphasizing the importance of keeping community members informed about the resolution process. Finally, regarding other stakeholders, in July 2021, GGF held an event in the Hilton Hotel in Iquitos to introduce the carbon and the SMFC project to our NGO partners, the regional authorities, and FECONAMNCUA. During the activity, GGF explained the motivation behind the change of its business model and shared the objectives and activities of the projects. Additionally, GGF uses its social media accounts<sup>3</sup> and web page<sup>4</sup> to inform the public.

## 2.3 AFOLU-Specific Safeguards

As discussed in Section 2.1.2 the project is not expected to generate negative socio-economic impacts for local stakeholders.

The project will not impact local stakeholders' property rights or access rights to resources. The project areas and natural resources within them are physically and legally separate from any such local stakeholders' rights.

It is important to note that Green Gold Forestry Perú SA has forest concessions registered with the National Superintendence of Public Registries (SUNARP), the public entity responsible for organizing, maintaining, and guaranteeing legal security for individuals and companies. The registered concessions are: 16-IQU/C-J-170-04, 16-IQU/C-J-171-04, and 16-IQU/C-J-099-04, which are part of the GGL 1 project. Additionally, there are concessions in the process of being registered, such as forestry contracts No. 16-IQU/C-J-217-04, 16-IQU/C-J-243-04, and 16-IQU/D-C-001-12. Furthermore, there are also forest concessions No. 16-LOR-MAY/CON-MAD-2018-005, 16-LOR-MAY/CON-MAD-2018-006, 16-LOR-MAY/CON-MAD-2018-008, and 16-LOR-MAY/CON-MAD-2018-009 that will begin the registration process with SUNARP once the registration process for the three ongoing forestry contracts is completed.

These legal guarantees allow us to balance the economic utilization of forest resources with environmental conservation, biodiversity, and the well-being of local communities. Additionally, they secure the territorial rights of the concessions.

If any problem arises from the overlap of the project zone with the territory of any local community, such as a native community, there is a legal mechanism of 'exclusion and compensation' to resolve the issue.

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<sup>3</sup> See <https://www.facebook.com/GGFPeru> and <https://www.linkedin.com/company/ggfperu/>

<sup>4</sup> See <https://www.ggfgroup.pe/>

Article 77 of the forest management regulations under Forestry Law No. 29763, approved by Supreme Decree No. 018-2015-MINAGRI, stipulates that if part of a forest concession area overlaps with the territory of a native or peasant community, natural areas protected by the State, privately owned areas or other forms of use granted or recognized by the State, the relevant Regional Forestry Authority must be contacted to exclude the area from the concession territory, using maps verified by the competent authorities that accredits their ownership. Once the application for exclusion is approved, an official resolution of exclusion is published. Subsequently, compensation should be provided with an available area of similar or lower extent from the excluded area around the concession.

The relevance of this mechanism lies in ensuring the integrity of native community territories. Therefore, there exists the possibility that the concessionaire may voluntarily choose not to apply for compensation. This might occur, for example, if the surrounding areas of the concession are not eligible as compensatory areas, or if the concessionaire determines that the excluded area has negligible impact on their project.

Regarding the legal right to forest exploitation and other relevant elements of forest concessions in Peru, these are not affected by the change of contract due to a series of legal guarantees aimed at ensuring the proper management and sustainable use of forest resources. These guarantees ensure their legal recognition and facilitate the defense of the concessionaire's rights in case of disputes. These protections are primarily established in the Forestry and Wildlife Law (Law No. 29763, Article 51) and its regulations.

GGF actively collaborates with neighboring native communities to its concessions to conduct territorial sanitation, including the signing of boundary agreements, demarcation works, placement of banners, and construction of landmarks. These efforts significantly reduce the likelihood of future overlapping cases.

Currently, the neighboring native communities are physically and legally regularized, holding property titles granted by the competent authority. Each community also has recognized boundaries and clearly defined demarcations. GGF's forestry contracts adjoining these native communities are duly registered in public records.

#### Feedback and Grievance Redress Procedure:

The Protocol of Conflict Resolution details the procedure to address any complaint or (potential) conflict that can arise from the communities. The complaint can be made either in writing, by delivering a letter to the company or in-person to one of the members of the CR team. The complaints can also be made to the administrative area. If they are made in Iquitos, to a member of the forestry team, or the complaint is made in-person during an activity. They are then, communicated to the CR team so they can start implementing the protocol.

When a complaint or a conflict is presented, the intervention is one of four instances:

1. First Instance: Engaging in dialogue between the community relations officer and the relevant community representative to identify and resolve conflicts, culminating in a formalized agreement document.
2. Second Instance: If initial negotiations prove unsuccessful, involving a social facilitator as an intermediary to assist in reaching a consensus. The process includes signing a document, with a witness and the facilitator validating the agreed-upon solution.
3. Third Instance: In cases where negotiations with a facilitator do not yield resolution, seeking an arbitrator to facilitate an agreement within a specified timeframe, ultimately resulting in an arbitration ruling.
4. Fourth Instance: Following conflict resolution, the company undertakes the responsibility of communicating the resolution and lessons learned to the wider population, communities, etc., ensuring transparency and shared understanding.

During the monitoring period the following disputes/conflicts were attended:

1. Borders with the community of Berlin (2022)
  - On May 25, 2022, the company Green Gold Forestry Perú S.A. submitted a request for support to the Regional Management of Forestry and Wildlife Development (GERFOR) to carry out the work of delimiting the area of the native community of Berlin, a community that is recognized and is now titled. The objective of this request was to achieve the exclusion of 557.20 ha of forestry contract No. 16-LOR-MAY/CON-MAD-2018-010 belonging to the forestry company Consorcio GGF Group, that overlapped with the community's territory, to avoid conflicts. Prior to this request, an agreement had been reached with the community regarding the boundaries, but an official resolution from the authority was necessary.
  - During the verification audit process, the dispute regarding the titling of the Native Community of Berlin was resolved through Regional Managerial Resolution No. 158-2023-GRL-GGR-GRDFFS dated August 18, 2023. Article 1 of this resolution approves the Partial Exclusion of 557.20 hectares corresponding to the area of Timber Forest Concession Contract No. 16-LOR-MAY/CON.MAD-2018-10 (representing 10.61% of the concession area), held by the company CONSORCIO GGF GROUP, due to partial overlap with the territory of the Native Community of Berlin. In addition, the Second Clause of the Forestry Concession Contract No. 16-LOR-MAY/COM-MAD-2018-010 was modified. Consequently, the Native Community Berlin obtains its Property Title N°098-2023-GRL-GERDAGRI-L. This title grants the ownership to the native community "BERLIN", located in the Sector of the Tacsha-Curaray river, tributary of the Napo River, Napo district, Maynas province, Loreto region, in the sector "A", containing 306 ha, 8,568 m<sup>2</sup>, are lands suitable for Permanent Crops \*C\*\* (Owned areas) ; with sufficient merit for registration in the National Superintendence of Public Registries (SUNARP). This resolution resolves the overlap

between the forest concession and the NNCC Berlin, ensuring that each has clear title to their respective areas free of overlap.

- It is important to note that the dispute did not affect the execution of the project activities nor the generation of GHG benefit as the disputed area overlapped with GGF's concessions that lie outside of the project boundaries. Subsequently, GGF only requested to formalize the exclusion of the overlapping area with the native community of Berlin, but did not request any compensation for the 557.2012 ha of excluded area. Compensation was not requested due to a business and strategic decision. This decision would allow for better surveillance due to the proximity to the project area and maintain good relations with the native community of Berlín. Additionally, since the compensation area is small, it is unlikely that the Regional Forestry Authority will concede any territory, as the minimum extension for a Use Unit is 5'000 hectares.
- The Addendum signed between ARFFS-GERFOR and Green Gold Forestry Peru SA took place in 2018. According to Law No. 29763 (Forestry and Wildlife Law), forest concessions are granted for 40 years and are renewable. Thus, Contract No. 16-LOR-MAY/CON-MAD-2018-007 is valid until the year 2058. The approval process for compensation was carried out from July 5, 2022, to July 7, 2023. This process does not affect the validity period of the forestry contract; therefore, it currently has 34 more years remaining. If necessary, the years would be counted, totalling 18 years. However, this does not imply that activities in that area will cease, provided that the conflict does not interfere with the process.

## 2. Borders with the Pampa Caño and Villa Monte communities (2021-2022)

- In 2021, the communities of Pampa Caño and Villa Monte, situated in the Marañón zone, initiated a process to seek the expansion of their indigenous territories, particularly over the areas allocated to the San Regis Perú SA forest concession. This concession, originally granted by the Peruvian State in 2014 to Green Gold Forestry (GGF), prompted the communities to submit a request for territorial expansion.
- In response, GGF took proactive measures by submitting a letter of abstention to the Loreto Legal Physical Sanitation Directorate – DISAFILPA, the governmental body responsible for land sanitation. This letter requested the nullification of all documentation related to the territory expansion request, citing overlaps with the permanent protected forest and GGF's electronically recorded property area. Following a comprehensive analysis, DISAFILPA declared the request from both communities as inadmissible.
- While the communities did not persist in pursuing their territorial expansion request, GGF recognizes the importance of ongoing engagement to foster positive relations. The GGF Community Relations team is actively present in the region, frequently interacting with the local population to enhance mutual understanding and cooperation. Despite the legal resolution, GGF remains committed to involving both communities in the indirect benefits

of the project, demonstrating a proactive approach to community relations and sustainable development in the Marañón zone.

### 3. Boundaries with the Bellavista and San Felipe communities (2018-2022)

- Forestry concession No. 16-LOR-MAY/CON-MAD-2018-007, was granted by the Regional Forestry and Wildlife Development Management through an Abbreviated Procedure in 2018, in favour of the company GGF. The company, through letter S/N -2020 dated August 25, 2020, Reg. 23550, announced that said area was overlapping with two native communities, Bellavista and San Felipe.
- In response to the letter presented, the Sub-management of Forest and Wildlife Management - SGGFFS, issues official letter No. 442-2020-GRL-GGR-GRDFFS-SGGFFS dated October 2, 2020, where it mentions the situational status of the aforementioned contract and the procedure to follow for an exclusion and compensation in accordance with the provisions of article 77; at the same time, it indicates that the company must request from DISAFILPA, the map endorsed as a document that proves the area overlap.
- On November 04, 2020, the company requested the DISAFILPA, the Visa Map / Plan and reports and titling resolution of the native communities San Felipe and Bellavista, without obtaining a response, which regarding the letter issued on November 4 was not addressed in due time and this in turn did not allow the presentation of the management documents.
- Again, on February 22, 2021, exclusion and compensation of the forestry contract mentioned above was requested, indicating the requests submitted with previous dates and that up to now there was no progress. Being June 01, 2021, the Forestry and Wildlife Management Sub-Management through the Regional Forestry and Wildlife Development Management issues a letter No. 116-2021-GRL-GRDFFS-SGGFFS where it indicates that it has been managing with the authority in DISAFILPA, the spatial analysis of 141 Forest Exploitation units to carry out compensation, however they mention that they will take into account our request when there are areas that can be granted.
- By June 4, 2021, the Green Gold Forestry company already has an original copy of the Visa Map, Reports and Resolution of the San Felipe and Bellavista native communities, these documents being the means of proof that there is an overlap of their territories with the concession of the Green Gold Forestry company. Until the instance, a new letter has been resubmitted on July 15, 2022 requesting the exclusion and compensation of forest contract No. 16-LOR-MAY/CON-MAD-2018-007 and as evidence all the letters issued and received as well as the maps, reports and plans to the Regional Management of Forestry and Wildlife Development, obtaining as a response that the request submitted is in the process of issuing a resolution where they accept the exclusion of the areas. GGF continues to monitor the case since we need to reach a definitive and permanent solution that closes the possibility of conflicts or territorial disputes.

- Finally, for the compensation of the contract area, GGF was granted Use Unit (UU) 113 with an area of 7,067.3681 ha and UU 115 with an area of 5,000.0000 ha, for a total compensated area of 12,067.3681 ha.
  - The situation with the Bellavista and San Felipe Native Communities is currently resolved through the issuance of REGIONAL MANAGERIAL RESOLUTION No. 247-2022-GRL-GGR-GRDFFS, dated November 16, 2022. Article 1 of the resolution declares the EXCLUSION of the entire area covered by the Timber Concession Contract No. 16-LOR-MAY/COM-MAD-2018-007, held by the company GGF GROUP CONSORTIUM, due to overlap with titled communal territories belonging to the "BELLAVISTA RIO NAPO AND SAN FELIPE- RIO NAP" communities, as evidenced by Property Titles No. 025-2019-GRL-DRA-L and No. 030-2019-GRL-DRA-L.
4. Logorsa debt assumed by GGF (Napo River Zone) 2021
- In May 2021, as a consequence of the routine activities of the community relations area, socialization meetings were held in the communities. During the meetings, it was possible to identify a discomfort on the part of the Native Communities of Berlin, San Luis de Tacsha, Santa María de Loreto and Santa Teresa, alleging the non-payment of salaries of people who provided services in previous years to the company LOGORSA (GGF contractor). GGF announced an investigation process and honor the pending debt. It was necessary to register more than 27 people for whom said cancellation was pending. The process concluded with the payment of the pending debt and conciliation. Finally, a debt cancellation act was drawn up between those involved, this potential conflict was resolved.
5. Boundary, milestones and agreements (Napo Zone)
- Other potential disputes resolved regarding communal boundaries involved the native communities Patria Nueva, Copal Urco, Huiririma, Sargento Lores, Santa María de Loreto and the town of San Luís de Tacsha Curaray, where meetings were held to determine and check the boundary. Likewise, agreements of conformity and conservation of the limits of the concession were promoted with all these populations, the most representative case being that of Santa María de Loreto, and the construction of a milestone for the recognition of the territorial limits, as well as the GGF concession, which benefited the community knowing how far their territory belongs and making good use of the resources that belong to them. The Apu of the community, the representative of GERFOR, the vice president of FECONAMNCUA and the technical team of GGF were present for the activity. Signaling work was also carried out with the support of the Huiririma and Sargento Lores native communities and the accompaniment of a technical professional from the area of the Forest and Wildlife Management Unit, placing a banner on the boundaries of the concession adjoining the community, this activity aims to recognize the territorial limits of the community and the concession of the GGF company. These activities are of the utmost importance since it makes it easier for them to identify the distance between the community and the concession, as well as to make sustainable use of resources,

respecting forest and wildlife resources, and it will also be a means of information for people from other communities who they carry out their subsistence activities in the zone and therefore with this tool we seek to mitigate the impact of subsistence activities on the concession of the GGF company.

## 2.4 Public Comments

| Summary of comments received                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Actions taken                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>The public comment received on February 9th, 2024, was outside the designated public comment period for the project but coincided with an ongoing VCS verification and CCB validation audit. Responses to the comments regarding the baseline scenario are provided here, while those regarding employment creation are addressed in the CCB PDD.</p> <p><i>“The Project ID 2345 has built its baseline scenario assuming a harvest intensity of 15 M3 per hectare (validation report pages 20, 37 and 44). We are not timber experts, but we have researched OSINFOR and SEFOR databases, and found that this number differs hugely from the historical harvest rate in the forest concession and the whole Loreto Region. The numbers we retrieved from SERFOR and OSINFOR, available at the web, are the following:</i></p> <p>i) <i>The forest concession harvested 0.13 M3 per hectare in the Forest concession Unit number 10, from which the inventory is considered to project the baseline scenario.”</i></p> | <p>The following is the response for the public comment.</p> <ul style="list-style-type: none"> <li>• It is unclear what the correspondent means by ‘Forest concession Unit number 10’, but we assume that the reference is confused with GGF’s POA10 – this is GGF’s tenth ‘Plan Operacional Annual’ (a detailed annual forest survey of all available trees in a designated forest plot, required by Peru’s forest authorities in advance of a logging campaign).</li> <li>• Likewise, we do not know from where the correspondent sourced ‘0.13m3 per hectare’</li> <li>• POA10 was undertaken in 2018, in preparation for GGF’s expanded business plan, and demonstrated commercially-viable harvestable volumes of more than 15m3/ha (the results of POA10 are shown on pages 32-24 of the Project ID 2345 PD).</li> <li>• The volumes in POA10 were inspected and authorised by Peru’s authorities, demonstrating that the POA was accurate and that the trees were available to harvest without any restrictions.</li> <li>• GGF maintained Forest Stewardship Council (FSC) certification for Forest Management and Chain of Custody since 2010. The FSC audit verifies data, as well as relevant authorisation, thereby providing further assurance.</li> <li>• As set out in the VCS PD (pages 30, 31-32, 47 and 54), GGF had developed a full business plan</li> </ul> |

and investment memorandum to finance this expanded production in 2018 and fully exploit the timber potential of its forest concessions.

- This was the culmination of years of business development, in which GGF invested heavily in developing capacity to extract and process timber at scale. This included expanding forest holdings to 254,000ha, building a large modern sawmill at Iquitos, engaging sub-contractor plants to manufacture specialist products (such as finger-jointed timber and kiln sticks), developing market and product knowledge, constructing forest infrastructure, acquiring a fleet of forestry machinery (including skidders, bulldozers, front-end loaders, road graders, trucks, and barges), and sub-contracting logistics companies, so to create the capacity to undertake the 15m<sup>3</sup>/ha log harvest in POA10. Additionally, GGF engaged community partners, and maintained FSC certification for Forest Management and Chain of Custody. (GGF prioritised best-practice forest and operational management, and has been FSC certified since 2010).

- GGF was aligned with the goals at the time of the Loreto government and SERFOR, which made considerable efforts to increase Peru's capacity in the timber industry in the region.

- However, following a strategic review, GGF decided to instead raise capital to enact its conservation-focused business (i.e., Logged to Protected Forest under VCS VM0010).

- The 15m<sup>3</sup>/ha harvestable volumes are higher than average for Peru because most forestry companies selectively harvest a few, specific, high-value species.

- GGF was able to increase volumes in POA10 by including a wider range of species,

|                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|                                                                                                                                                                                                                                                                                                                                                               | <p>including lesser-known medium- and high-density woods.</p> <ul style="list-style-type: none"> <li>Note that the 15m<sup>3</sup>/ha harvestable log volumes are conservative, as discussed on pages 39 and 47 of the VCS PD.</li> <li>These lesser-known species were to be utilised to manufacture FSC-certified kiln sticks, for which there is considerable demand in the US.</li> <li>GGF's 254,000ha forest concessions were acquired between 2009-19, and the due diligence process included identifying targets with high log yield potential.</li> <li>It is commercially logical that GGF focused on acquiring concessions with full stocks of available timber, rather than concessions that were depleted in available timber through previous logging campaigns, and therefore GGF focused on acquiring inactive concessions, or those with very low historic extraction yields.</li> </ul> |
| <p>ii) <i>The forest concession historically harvested 0.43 M3 per hectare (harvest years 2008-2009 to 2019-2020).</i></p>                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>The correspondent has not provided a reference for the 0.43m<sup>3</sup> per hectare extraction rate and such a low extraction rate is not commercial</li> <li>GGF undertook limited harvests over small areas of its concessions as it built capacity, expertise, market knowledge, and commercial relationships ahead of fully expanding its business (as described above) .</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p>iii) <i>The total volume of timber extracted in the Loreto Region is 136,366 M3 in 2022 and 249,164 M3 in 2021 (including forest concession and other forest producers). Using 15 M3 per hectare would mean that only the company's forest concessions will harvest 137,583 M3 per year. This is more than the 2022 harvested volume for the whole</i></p> | <ul style="list-style-type: none"> <li>Loreto has had historically lower logging production than Peru's main logging regions of Ucayali, and Madre de Dios.</li> <li>It was for this reason GGF chose to set up in Loreto in 2008, given availability of forest concessions with potential high timber yields.</li> <li>GGF's average annual harvest would have been 137,583 m<sup>3</sup>. To put this in context, concession</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><i>Loreto Region. The company has 183,445 hectares of forest concessions, which means around 6.6% of the total forest concessions area in the Loreto Region.</i></p>                                                                                                                                                                           | <p>holders in Peru harvested more than 2million m3 in 2022 (source SERFOR).</p> <ul style="list-style-type: none"> <li>• GGF is one of Peru's largest forest concession owners, and would have been the largest single producer in Loreto if it had not ceased logging, instead adopting a conservation-focused business model (i.e., Project ID 2345).</li> <li>• GGF's planned volumes would have made it a medium- to large-sized timber company by Peru's standards, but by no means the biggest. For comparison, Madera Bozovich processed 440,336m3 of logs in 2023</li> </ul>                                                                                                                                                                             |
| <p><i>iv) The baseline scenario, based on the volume expected of 15 M3 per hectare, estimated annual timber sales of \$17,177,000. Searching at Custom numbers, the company has exports of \$401,000 in 2015, \$76,000 in 2016, \$267,000 in 2017, \$17,000 in 2018 and \$0 in 2019, the year previous to the project start. (PD page 27)</i></p> | <ul style="list-style-type: none"> <li>• As explained above, GGF acquired forest concessions, built processing capacity, and developed market knowledge and expertise, ahead of full expansion.</li> <li>• Logging volumes to 2018 were relatively modest, reflecting GGF's low-risk approach to developing its business.</li> <li>• The export data that the correspondent has found is misleading as GGF sold semi-finished goods to intermediaries in Peru, who processed timber and then exported products in their own name.</li> <li>• GGF halted its logging operations in 2019 as the company reviewed strategic options, and after a feasibility study and extensive analysis, we devoted our resources to developing the VCS VM0010 project</li> </ul> |

## 3 IMPLEMENTATION STATUS

### 3.1 Implementation Status of the Project Activity

Table 2: Implementation Status of the Project Activity

| # | Activity                                                                                                                                                                                             | Implementation Status                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Document                   |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| 1 | Involving the neighbouring communities in the project, to ensure their participation in, and commitment to, forest conservation, by making them project stakeholders and beneficiaries.              | During the implementation of the project, more 300 job opportunities and purchasing goods and services US\$108,568 were generated. Regarding training, over 100 people were trained in topics like NTFP harvesting, conservation and management activities were created. Additionally, socioeconomic and infrastructure gaps were identified through the elaboration of a baseline. With this information, and after consultation with the communities, GGF will develop 26 projects, to reduce those gaps.                                                                                                                                          | Social Base Line report    |
| 2 | Regularly patrolling the project area with teams of forest rangers, who will be hired from neighbouring communities and trained and equipped to deal with potential incursions adequately and safely | At the end of December 2021, GGF trained and accredited its forest custodians. Since February 2022, they have conducted 5 field entries that included on-field and fluvial patrols. They have also collected information about resources and activities of the communities and whether there is any overlapping between those activities and GGF forest concessions through the resource mapping methodology. The information of this method showed that there are some informal roads through which the communities use to get wood. The forest custodians have been using this information to plan their ground surveys and monitoring activities. | Forest custodians' reports |
| 3 | Erecting signs along all fluvial access points and existing logging roads to inform and warn potential intruders of the conservation status of the project area                                      | The forest custodians have installed 3 boundary markers in the concession that borders the communities' territories to discourage unwanted to entry by third parties and to signal the limits of GGF forest. More boundary markers will be installed in the future.                                                                                                                                                                                                                                                                                                                                                                                  | Forest custodians' reports |

|   |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                        |
|---|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| 4 | Remote monitoring using drone and satellite surveys. | During this monitoring period, Space Intelligence, our consulting partner, has been using satellite monitoring to elaborate biomass maps to determinate the value of the parameter $D_{DIST}$ . GGF also monitor the change in forest cover, analyzing disturbances in the area of interest using satellite imagery. Finally, to complement the work of the forest custodians, we are in the process of buying drones. | Space Intelligence report<br><br>GGF monitoring report |
|---|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|

## 3.2 Deviations

### 3.2.1 Methodology Deviations

The following deviations were followed during the monitoring period

#### Deviation #1

The project proponent must deviate from VM0010 in Section 8.1.1 ‘Calculation of [baseline] carbon stocks in commercial timber volumes’, which states that “Yield tables or allometric equations must be used to convert field measurements of diameter (DBH, at typically 1.3m [4.3 ft] above ground level or above buttress where they exist), and total height H of each tree in the sample plots to merchantable volume,  $VI_{j,i,sp}$ . Instead, in its forest inventory the project proponent has calculated merchantable volume from DBH and commercial height by applying Smalian’s formula (utilizing a Form Factor of 0.65), which is mandatory forestry practice in Peru (Directiva 046-2016 of SERFOR, 2016). Smalian’s formula calculates the volume of a tree from its Diameter at Breast Height (DBH) and bole height as if it were a cylinder, then applying a Form Factor to simulate the conicity of the bole (in effect reducing the bole’s top diameter).

The project proponent must demonstrate that this deviation results in a more conservative or more accurate estimate of baseline emissions. In order to compare the deviated method with an allometric equation we are unfortunately restricted to calculating with commercial height, not total height, as this is what has been estimated in POA10. Benitez Romero et al (2020) found six allometric equation to calculate volume from diameter and commercial height (the fact that these were all from the 1930s to 1960s demonstrates how difficult it is to find such equations in the modern literature) and tested them to harvested trees from the Brazilian Acre State, south-western Amazonia (to the south-east of Loreto). Applying Benitez Romero’s best fit equation (Model MV2) to calculate the commercial volume of each tree in POA10 results in a consistently higher volume ( $59,085m^3$  in 3,000ha) than estimated using the proposed deviation ( $47,606m^3$ ).

In principle, GGF had decided in its business plan to extract no more than  $15m^3/ha$ . In terms of the baseline emissions being claimed by the project there is not much difference between a more or less conservative volume estimation method, since either way the emissions related to  $15m^3/ha$  extracted would be claimed. However, this decision was based on a lower inventoried volume, and had Model MV2

been used for the inventory (resulting in nearly  $20m^3/ha$  standing extractable volume) GGF would likely have decided to take out more volume. After all, GGF's business is based on selling real products, not estimated volumes. Less trees means less income. While GGF's corporate ethos is highly geared towards sustainability it must balance this with profitability. The proposed method is therefore conservative (as well as mandatory forestry practice in Peru).

If GGF had still decided to limit its extraction to  $15m^3/ha$  this would have resulted in less inventoried trees being harvested. Since GGF would have prioritized the denser species (which are generally more valuable) the weighted average wood density of harvested trees would have been higher and thus claimed baseline emissions would have been higher. This is another reason the proposed method is conservative.

#### Deviation #2:

The project proponent wishes to deviate from the exact way VM0010 calculates baseline carbon stock changes in the logging slash, residual stand damage and damage from infrastructure establishment fractions of the dead wood pool and proposes an alternative that is very similar but more direct and more accurate because it can use results from peer reviewed scientific publications that are applicable to the project region and to logging operations generally. Specifically:

VM0010's Section 8.1.1 Calculation of [baseline] carbon stocks in commercial timber volumes contains the following text: "Once the timber harvest plan is complete and  $VEX_{j,i}|BSL$  as well as  $VEX, INF_{j,i}|BSL$  is calculated, the Biomass Conversion and Expansion Factors (BCEF) method must be used to determine the carbon stock in harvested biomass. This method is appropriate as forest inventory data and allowable harvest must be based on volume estimates to which expansion factors can be readily applied." (p.20).

The method outlined in VM0010 uses the BCEF to calculate dead wood from logging slash in Section 8.1.2. To this is added the dead wood resulting from residual stand damage and from infrastructure establishment (the fraction that is not extracted). Residual stand damage is calculated as the extracted carbon stock multiplied by a Residual Stand Damage Factor ( $F_{RSD/BSL}$ ).

The proposed deviation consists of applying a Logging Damage Factor (LDF in  $tC/m^3$ ) (Pearson et al, 2014) which combines logging slash and residual stand damage into a single factor that is applied to extracted volume to calculate carbon content in these two dead wood fractions. Dead Wood remaining in the forest from infrastructure establishment will be calculated separately applying a Logging Infrastructure Factor (LIF, in  $tC/m^3$ ) (Pearson et al, 2014), which combines biomass mortality from road construction, skid trails and log decks, camps and ports. LDF and LIF were derived from 6 studies that quantified logging impacts. While the Pearson et al (2014) paper reviews studies from the tropics of all three continents the results are consistent across sites and are of high statistical significance. Half of the sites are in the Amazon or Guiana Shield regions. Their results can therefore be considered applicable to the project area. In contrast, no species-specific BCEFs exist for the Peruvian Amazon and there are no data available for an applicable Residual Stand Damage Factor ( $F_{RSD/BSL}$ ), which makes the method as prescribed by VM0010 less accurate than the proposed deviation.

This deviation is consistent with VM0010's requirement that "forest inventory data and allowable harvest must be based on volume estimates to which expansion factors can be readily applied."

The deviation renders Equations 3, 6 and 7 of VM0010 obsolete and replaces Equation (5) with the following equation:

$$\Delta C_{DWSLASH,i,p|BSL} = \sum_{j=1}^i ((V_{EX,j,i|BSL} * LDF) + (V_{EX,j,i|BSL} * LIF))$$

Where:

$\Delta C_{DWSLASH,i,p|BSL}$  = Change in carbon stock of dead wood as logging slash resulting from timber harvest per unit area in stratum i in land parcel p, in  $tC\ ha^{-1}$ .

$V_{EX,j,i|BSL}$  = Mean volume of extracted timber per unit area for species j in stratum i; in  $m^3\ ha^{-1}$ .

$LDF$  = Logging Damage Factor, in  $tC/m^3$

$LIF$  = Logging Infrastructure Factor, in  $tC/m^3$

Deviation #3:

In Section 8.1.3, VM0010 lumps the carbon stocks of extracted timber of all species together (Equation 8), then asks to portion this into wood product classes k. Then it apportions default percentages of the WW, SLF and OF fractions to each wood product class k. This approach is useful when the project proponent does not have any specific data on wood products per species and on recovery rates in the sawmill, but due to applying global default data it is not accurate. GGF does have the mentioned specific data, thus applying them is more accurate than using the defaults. And since GGF is the baseline agent it is appropriate to use these specific data. GGF has invested in modern sawmill equipment, so its recovery rates will be higher than that achieved by the global defaults reported in Winjum (1998), resulting in a more conservative estimate of baseline emissions. However, log recovery rates are highly product specific, with the more processed, higher-value products having lower recovery rates (more processing means more sawing, thus more waste).

The project proponent can assign one of four wood product classes to each species in its Timber Harvest Plan, based on its wood density and value. These wood product classes are: High Density – High Value, High Density – Low Value, Low Density – High Value, and Low Density – Low Value). For each of the products k in these four classes GGF has recorded and verifiable log recovery rates from its sawmill operations (see Table 11, Section 3.4.4). Each product has been assigned to the longevity 0 years (WW and SLF) and longevity 3-100 years (OF) fractions (Table 11).

Therefore, for each species the extracted carbon in logs can be divided into the fraction that is immediately emitted (longevity 0 years), the fraction that is emitted between years 1 and 20 (86% of the products with longevity 3-100 years – see data table p.69 of VM0010), and the fraction that remains in wood products forever (14% of the products with longevity 3-100 years).

This renders Equation 8 obsolete. The project proponent proposes to replace it with:

$$OF_j = 1 - (WW_j + SLF_j) \quad (8)$$

Where:

$OF_j$  = Fraction of biomass carbon from the ‘oxidised fraction’ that is assumed to be emitted to the atmosphere from wood products between years 3-100 after harvest for species j, dimensionless;

$WW_j$  = Fraction of biomass carbon from wood waste that is assumed to be emitted to the atmosphere immediately at the time of harvest for species j, dimensionless;

$SLF_j$  = Fraction of biomass carbon from the short-lived wood product pool that is assumed to be emitted to the atmosphere immediately at the time of harvest for species j, dimensionless

Equation 9 is modified to:

$$C_{WP0,i,t|BSL} = \sum_{j=1}^j C_{EX,i,j,t|BSL} * (WW_i + SLF_i) \quad (9)$$

Where:

$C_{WP0,i,t|BSL}$  = Carbon stock of extracted timber from stratum i that is assumed to be emitted immediately at the time of harvest t, in tC/ha;

$C_{EX,i,j,t|BSL}$  = Carbon stock of extracted timber from species j in stratum i at time t, in tC/ha;

$WW_j$  = Fraction of biomass carbon from wood waste that is assumed to be emitted to the atmosphere immediately at the time of harvest for species j, dimensionless;

$SLF_j$  = Fraction of biomass carbon from the short-lived wood product pool that is assumed to be emitted to the atmosphere immediately at the time of harvest for species j, dimensionless

And Equation 10 is modified to:

$$C_{WP20,i,t|BSL} = \sum_k^j C_{EX,i,j,t|BSL} * OF_j * 0.86 \quad (10)$$

Where:

$C_{WP20,i,t|BSL}$  = Carbon stock of extracted timber from stratum i at time t that is assumed to be emitted between years 1 and 20, in tC/ha;

$C_{EX,i,j,t|BSL}$  = Carbon stock of extracted timber from species j in stratum i at time t, in tC/ha;

$OF_j$  = Fraction of biomass carbon from the ‘oxidised fraction’ that is assumed to be emitted to the atmosphere from wood products between years 3-100 after harvest for species j, dimensionless;

Deviation #4:

The project proponent proposes to deviate from VM0010 on the criteria for the selection of a reference area for the development of the common practice baseline scenario. VM0010 states in Section 6.2.2 that this reference area “must be in the same region as the project area and must match the project area

in terms of forest types, climate and elevation (identical mix of forest types  $\pm 20\%$ ; identical annual precipitation  $\pm 20\%$ ; elevation classes (500 m classes) in the reference region shall be in the same proportion as in the project area ( $\pm 20\%$ ))”

VM0010 then also states that “Where there is limited capacity to generate the baseline scenario using a reference site in the region of the project area, multiple reference areas may be selected to cover a country so long as the reference area criteria regarding forest types, climate and elevation are met.”

The VCS approach of a baseline reference area is that it is representative for what would occur within the project area in the baseline scenario. There must therefore be criteria for ‘representativeness’. The wording in VM0010 on the reference area provides these criteria in terms of forest types, climate and elevation. It allows the project proponent to find a reference area outside the project region so long as these geographical criteria are met. However, the wording in VM0010 does not include any other criteria. It does not consider business model as a criterion, perhaps because VM0010 was developed with a specific project in mind, the April Salumei project in Papua New Guinea (the only validated VCS project so far to have applied VM0010), which does not identify a specific baseline logging agent but a hypothetical one in an area that was sanctioned for logging by the government but where there was no logging history. The methodology developers apparently did not foresee a situation where an already operational logging company would need to use a baseline reference area.

For GGF, business model is an essential criterion because its business model is not at all represented within the common practice of logging in Loreto or even in Peru. GGF’s business model is that of an FSC-certified, vertically integrated, capital-intensive company that is able to process a wide range of tree species. These include many lesser-known species for which no market demand exists, which can be commercialised because they can be processed into non-species-specific composite products and/or kiln sticks. Due to its FSC certification, its processing capacity and its production volume GGF can target international markets effectively, making a return on its capital investment.

In contrast, the majority of logging companies in Peru operate on the extraction and commercialisation of a much narrower selection of higher-value species. This means the volume they extract is generally much lower (see for example Goodman et al, 2019). Furthermore, there are few FSC-certified logging companies in Peru and none in Loreto. Finally, most companies in Peru, or even in the Amazon, have not invested in processing capacity and international market access, and therefore often engage with illegality to maintain profitability (EIA, 2012). We therefore argue that a reference area limited by regional or national boundaries will not provide baseline representativeness for this project. It would be more accurate to find reference companies that apply a similar business model to GGF’s and to look at their extraction practices, as extracted volume per ha is the only parameter that is used for the common practice baseline in GGF’s case. The use of reference companies would be allowable so long as the criteria regarding forest types, climate and elevation are met.

GGF has identified three companies that operate with a similar business model to its own within the Amazon basin (two in Brazil, one in Peru), within a similar forest type, climate and elevation (see Section 3.4.2). GGF proposes to deviate from VM0010 by using these companies as the reference for its common practice baseline scenario of extracted timber volume per hectare.

#### Deviation #5

The project recalculated its baseline emissions (see PD Deviation #5). During this process it was noted that in order to apply equation 41 considering the differences in area of the harvesting parcels, the project needed to deviate slightly from section 8.1 of the methodology which calls for the annual emissions to be averaged across the project crediting period and then multiplied by " $t^*$ ," the time elapsed since the initiation of project activity.

Instead, the project calculated the average annual baseline emissions per hectare (by dividing the average annual baseline emissions by the area of the whole project) and multiplying this by the area of the parcel that would have been logged in year  $t$ .

This modification relates to the criteria and procedures for measurement and was deemed necessary for the recalibration process, while still adhering to the overarching methodology because due to the distinct areas of each parcel, a simple average of baseline emissions would not have sufficed for accurate emission calculations, as it would hinder the proper summation of emissions from the project. This deviation is considered conservative as it is following the same criteria of using the average of the annual emissions to be averaged across the project crediting period to apply equation 41, deviating enough to accommodate the difference in area of the parcels that would have been logged each year.

#### Deviation #6

The project proponent proposes a Methodology Deviation to accompany the Monitoring Report, subject to the rules in VCS Standard version 4.5 section 3.20.2, which state that 'methodology deviations shall not negatively impact the conservativeness of the quantification of reductions or removals, except where they result in increased accuracy of such quantification.' Specifically, we propose deviating from the procedure set out in Section 8.3.2. of the VM0010 methodology Version 1.3, which describes the calculation of market leakage.

Our proposed Methodology Deviation increases the accuracy of quantification of potential market leakage by analysis of Peru's timber products export data to demonstrate whether other producers increased logging in the monitoring period to fill the gap in the market caused by cessation of production by GGF. To determine whether trends in Peru's timber exports were linked to factors other than the cessation of production by GGF (i.e., that export data did not accurately reflect Peru's timber production in the monitoring period), we consider the impact of external factors that might have caused a variation in timber exports during the monitoring period.

#### Current VM0010 Methodology

The current VM0010 methodology for calculating leakage due to market effects involves multiplying the net emissions from planned timber harvest activities in the baseline scenario by an appropriate leakage factor (Box 2 and Equation 40 in the methodology). The leakage factor is determined by considering where in the country logging will be increased because of the decreased timber supply caused by the Project. However, there are weaknesses in this approach:

- The existing methodology implicitly assumes that other timber producers increase production and harvest of merchantable biomass outside the project area to fill the gap caused by cessation of timber production by the project proponent (i.e., that demand elasticity exerts equal pressure on other forests within the country). This could consequently lead to an overestimation of the actual market leakage attributed to the project proponent if other producers do not respond by increasing production.
- It does not consider the context of the timber industry in a specific country. This is relevant in a country like Peru, that is not a leading producer or exporter of forest products (as defined by the United Nations Food and Agriculture Organization [Forest product statistics \(fao.org\)](http://fao.org)), and which can be by-passed by international buyers who can source alternative supplies from other countries (and market leakage would not arise in Peru).

The accuracy of the current methodology can be improved through an analytical approach that quantifies potential market leakage based on an analysis of verifiable ex-post market data during the monitoring period:

### Proposed Deviation

#### Modification of Equation 40

We propose the following modification to Equation 40, which provides a more accurate measure of market leakage by quantifying ex-post market variations, which are used to assess the potential extent of increased logging elsewhere in Peru during the monitoring period.

$$GHG_{LK|LtPF,t^*} = LK_{ME} * GHG_{NET|BSL,t^*} * LP_{ME}$$

Where:

|                     |                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| $GHG_{LK LtPF,t^*}$ | Total market leakage resulting from IFM LtPF activities, in the year $t^*$ since the start of the Project activity, tCO <sub>2</sub> e |
| $LK_{ME}$           | Leakage factor for market-effects calculations, dimensionless                                                                          |
| $GHG_{NET BSL,t^*}$ | Net greenhouse gas emissions in the baseline scenario in the year $t^*$ since the start of the Project activity, tCO <sub>2</sub> e    |
| $LP_{ME}$           | The percentage of log volumes that potentially could be subject to market leakage                                                      |

Where,  $LP_{ME}$  is calculated as follows:

$$LP_{ME} = \frac{\sum_{x=1}^X LP_{ME_x} * Vol_{GGF_x}}{Vol_{GGF}}$$

$$LP_{ME_x} = \frac{Average(Exports_{x,t=1}, Exports_{x,t=2}) - Exports_{x,t=0}}{Revenue_{GGF_x}}$$

|                   |                                                                                                  |
|-------------------|--------------------------------------------------------------------------------------------------|
| $LK_{ME_x}$       | The percentage of log volumes of product 'x' that potentially could be subject to market leakage |
| $Vol_{GGF}$       | The total log annual production of GGF, m <sup>3</sup>                                           |
| $Exports_{x,t^*}$ | Peruvian exports of product x in year t*, USD FOB                                                |
| $Revenue_{GGF_x}$ | Annual GGF revenue of product 'x', USD FOB                                                       |

#### Assumptions:

- We conservatively assume that, during the monitoring period, increases in exports of products that would have been produced by GGF were a result of increased production by other producers to satisfy buying interest that otherwise would have been fulfilled by GGF.
- We conservatively assume that all timber products that would have been produced by GGF for sale in domestic markets were replaced by production elsewhere in-country.

This approach leads to three cases:

Case 1: There is no market leakage for product 'x'

$$Average(Exports_{x,t=1}, Exports_{x,t=2}) - Exports_{x,t=0} \leq 0$$

- $LP_{ME_x} = 0\%$
- No Peruvian timber producer replaced what GGF would have produced in the baseline scenario for product 'x'

Case 2: There is potential partial leakage for product 'x'

$$0 < Average(Exports_{x,t=1}, Exports_{x,t=2}) - Exports_{x,t=0} < Revenue_{GGF_x}$$

- $0\% < LP_{ME_x} < 100\%$
- A limited portion of GGF's projected production of product 'x' was taken up by other Peruvian timber producers

Case 3: There is potential full market leakage for product 'x'

$$0 < Average(Exports_{x,t=1}, Exports_{x,t=2}) - Exports_{x,t=0} \geq Revenue_{GGF_x}$$

- $LP_{ME_x} = 100\%$
- Peruvian timber producers replaced at least as much as GGF would have produced in the baseline scenario for product 'x'

#### Increased accuracy of our proposed deviation

- The purpose of our proposed deviation is to increase the accuracy of the quantification of market leakage under conservative assumptions. To do this, we analyse the behaviour of the market (i.e., changes in production by other Peruvian companies of timber products that GGF would have produced under the baseline scenario) to determine the extent of market leakage that is attributable to the cessation of production by GGF.
- The extent of market leakage will be assessed in each monitoring report throughout the lifetime of the Project. As there are multiple factors (that can never be definitively determined) that could impact levels of production by other producers (e.g., price changes, availability of finance, pandemic effects, strikes, etc.), we adopt the most conservative scenario, i.e., that the cessation of production by GGF is the sole cause of increases in production of like-for-like products by other producers. In this way, we never underestimate the impact on the market of GGF's cessation of production.
- We track changes in production of like-for-like products that in the baseline scenario GGF would have produced for sale in international markets. As almost all GGF's timber products were destined for export, we analyse ex-post export data of like-for-like products from other producers in Peru, and compare these with what would have been produced by GGF from the project area in the baseline scenario (set out in section 3.4.4 of the PD). Where products would have been sold domestically (low-value and offcuts), we conservatively assume all would be replaced by production elsewhere in-country.
- To determine whether export data accurately reflect production in the relevant monitoring period we assess whether external factors, such as the COVID-19 pandemic, disrupted exports and skewed the link between production and exports in that monitoring period.
- Conservative assumptions: We assume that all increases in export volumes of the like-for-like products resulted from increased production by other producers to satisfy buying interest that would otherwise have been fulfilled by GGF (i.e., market leakage). This is highly conservative as our default assumption is that all variation in export volumes result from the cessation of production by GGF.

### **Main conclusions**

Through this analysis, we show whether other producers increased production to fill the shortfall in supply created by the cessation of production by GGF and demonstrate the market variability exclusively attributable to GGF's VM0010 project. As established in our analysis below, we demonstrate no market leakage of some timber product categories (e.g., sleepers, Smooth-four-sides timber); potential partial leakage of kiln stick production; and potential full market leakage for some other products (e.g., decking and deck tiles).

Overall, we conclude that a market leakage factor of 0.4 should be applied to 23.40% of GGF's projected log harvest volume.

### **Financial stability of the Project**

Although Peru's timber industry has experienced a declining trend since 2014, it is possible that future production might increase if other producers take up the export opportunities that GGF identified. In this

scenario, the Project remains financially secure as the maximum discount due to market leakage would be capped by applying a leakage factor of 0.4 across all GGF's projected production (i.e.,  $LP_{ME} = 100\%$ ). The financial stability of the Project has been stress-tested under various scenarios, including reduced VCU yields and sustained low carbon prices. All operational costs, including payroll, administration costs, fees, and financing costs, can be adequately covered in these instances (see Non-Permanence Risk Report). Furthermore, GGF will generate additional non-VCU revenues from 2025 onwards, when its new fruit-oil processing facility at Santa Clothilde becomes operational, which further assure long-term financial resilience.

### Market Leakage Analysis

1. Our starting point is to set out what GGF's log harvest and timber production would have been under a business-as-usual scenario – i.e., in the absence of the carbon project
  - i. GGF's logging operations in the Project area terminated before the Project start-date of August 1<sup>st</sup> 2020
  - ii. Under a business-as-usual scenario, the 183,445ha of forest concessions would have been logged over a 20-year period, yielding an average 15m<sup>3</sup> per hectare of logs
  - iii. Unlike most forest operations in Peru, which target selected high-value species, GGF planned to extract a wide mix of species and produce a range of products
  - iv. GGF's concessions were (and still are) FSC-certified for forest management, and GGF also maintained FSC certification for chain-of-custody (i.e., production and logistics)
  - v. 95.2% of GGF's baseline production would have been exported, with only low-value products and off-cuts sold to local markets
  - vi. GGF's timber buyers sought certified timber – this is especially the case in US and EU markets
  - vii. GGF based its timber production schedule using log harvest data in POA10 – a complete inventory of harvestable trees in 3,000ha undertaken in 2018
  - viii. GGF established four broad categories of timber, based on density and market recognition: high-density high-value (HDHV); high-density low-value (HDLV); low-density high-value (LDHV); low-density low-value (LDLV). The allocation of each species is shown in the 'POA 10 by timber category' tab of 'Leakage Analysis VCM Project 2345.xls'
  - ix. A detailed production plan was developed to maximise the commercial value of this log harvest, with a mix of products including decking, S4S (Smooth-four-Sides), sleepers, kiln sticks (also known as 'fillers'), RSAD (rough-sawn air-dried) and RSKD (rough-sawn kiln-dried), shorts, etc.
  - x. The plan takes account of expected recovery rates (based on GGF's experience of sawing and processing timber products) and market prices, to optimise the commercial value of each species of tree (see NIR20 in Validation audit, and 'GGF margin analysis including kiln sticks.xls')
  - xi. By categorising each species in POA 10, the expected volume of each marketable product can be calculated, together with the volumes of logs used for each product (see 'POA 10 Production analysis' tab of 'Leakage Analysis VCM Project 2345.xls')

- xii. The mix of products derived from each species is based on expected recovery rates and market prices – the objective being to maximise commercial value
    - HDHV species are processed into decking, S4S, decking tiles, sleepers, kiln sticks, and others
    - HDLV are processed into sleepers, kiln sticks ('fillers'), and others
    - LDHV are processed into various grades of RSKD
    - LDLV are processed into RSAD and RSAD shorts
  - xiii. The processing of these products was to be undertaken at GGF's own sawmill, and sub-contracted to two specialist plants in Iquitos (under GGF's FSC chain of custody certification)
  - xiv. To derive GGF's timber production under a business-as-usual scenario, the volumes derived from POA 10 must be multiplied by a factor of 3.058 (to scale up to the average 9,173ha harvested each year – i.e., 1/20<sup>th</sup> of 183,455ha) – the result of this is shown in the 'Baseline Timber Production' tab of 'Leakage Analysis VCM Project 2345.xls'
  - xv. The same tab calculates the market value of these products (note that prices are quoted FOB Iquitos – i.e., excluding onward transport costs to Lima or other port). Prices are conservative estimates, based on GGF's trade prior to 2019
  - xvi. The total value of timber products is around \$31million
  - xvii. Excepting products categorise as 'Other' (low-value timber and off-cuts), all GGF's production was scheduled to be sold in export markets
2. To assess potential market leakage resulting from the carbon project, we have analysed:
    - Peru's overall timber production and exports in 2019-22
    - Peru's export timber trade in 2019-22
  3. Analysis of trends in Peru's overall timber production and exports
    - i. In the absence of the carbon project, GGF would have been one of Peru's major timber exporters (around \$31million annually)
    - ii. Peru's overall timber production has declined by around 30% since 2010, with all regions showing a fall, excepting Ucayali (see 'Peru Timber Industry' tab of 'Leakage Analysis VCM Project 2345.xls'). This trend would have been reversed if GGF had not ceased production
    - iii. Peru's overall timber export data suggests that no other producer has stepped in to replace GGF's absent production – Peru's timber (all products) exports have fallen since 2019 (\$89million in 2023, compared with \$124.9million in 2019 (source ADEX – Peru's Association of Exporters – and ITTO p.14) [https://www.itto.int/direct/topics/topics\\_pdf\\_download/topics\\_id=7723&no=1](https://www.itto.int/direct/topics/topics_pdf_download/topics_id=7723&no=1))
    - iv. The decline in Peru's overall timber production is mirrored by the fall between 2019 and 2023 of active forest concessions which dropped from 9.15million to 7.21million hectares (21%), which further confirms that no other producers in Peru picked up the shortfall in supply that resulted from GGF's carbon project. Furthermore, no new forest concessions were granted by Peru's government in that period <https://repositorio.serfor.gob.pe/bitstream/SERFOR/696/1/SERFOR%202019%2002-07-19%20GeoSERFOR.jpg>

- v. All GGF's timber production would have been FSC-certified, and GGF's clients required certified timber. Any potential supply gap resulting from GGF's carbon project would therefore have had to derive from other certified forests. However, excluding GGF's own 175,560ha of FSC-certified forest, the area of FSC-certified forest in Peru fell in the monitoring period by 51,207ha to 1,004,441ha (i.e., between August 1<sup>st</sup> 2020 and July 31<sup>st</sup> 2022) <https://connect.fsc.org/es/impacto/datos-y-cifras>
        - vi. GGF's production could not be replaced by illegally harvested timber, as international buyers require proof of legality and, in most cases, certification. In any case, Peru has made substantial progress in recent years in implementing policies and enforcement to eliminate illegal logging, e.g., <https://www.gob.pe/institucion/osinfor/noticias/904247-osinfor-y-prevenir-de-usaid-unen-esfuerzos-para-contribuir-a-una-gestion-forestal-sostenible> and <https://www.gob.pe/institucion/osinfor/noticias/889618-profesionales-supervisores-fortalecen-knowledges-para-realizar-labores-de-fiscalizacion-forestal-con-el-osinfor>
4. As a next step, we examine the mix of Peru's export timber trade in 2019-22, and ask whether, against a general trend of decline in exports, there was an increase in certain products that GGF would have produced in the absence of the carbon project (i.e., market leakage)
  - i. We have used data from Veritrade and Peru's tax authority (SUNAT) to analyse Peru's timber exports from 2019-22 [World trade databases on global imports and exports \(veritrade.com\)](https://www.veritrade.com). Veritrade undertakes global trade analysis, classifying products using unique codes, tracking exporters and counterparts for international trade across a broad range of products.
  - ii. The tab 'Peru's Timber Exports' of 'Leakage Analysis VCM Project 2345.xls' shows the US dollar value of each product category in the years 2019 through 2022.
  - iii. US dollar prices are a good proxy for timber volumes, and conservatively we have assumed no price inflation in the period 2019-22 (in fact, according to ITTO data prices rose by around 10% over this period, meaning that our analysis here overestimates 2022 timber exports by volume – see 'Peru Timber Prices ITTO' tab of 'Leakage Analysis VCM Project 2345.xls')
  - iv. We have applied a filter to identify exports from FSC-certified producers (Forest Management and/or Chain-of-Custody)
  - v. We have used 2019 as a baseline, given the economic disruption caused by the COVID-19 pandemic in 2020
  - vi. There were zero exports of sleepers in this period
  - vii. GGF's own production would have taken four or five months to complete a cycle of production from harvest to export – therefore, as the Project monitoring period was 1<sup>st</sup> August 2020 to 31<sup>st</sup> July 2022, the relevant export years for the purposes of market leakage analysis are 2021 and 2022
  - viii. We consider external factors that might have skewed Peru's export data during the monitoring period to give assurance that exports are a reliable proxy for production in the relevant period
5. To assess potential market leakage, we compare Peru's 2021 and 2022 exports with those in 2019
  - i. With respect to the specific products and quantities that GGF would have produced in the absence of the Project, our analysis provides the following conclusions:

- Decking export sales in 2022 were 13% lower than in 2019. The average annual sales over 2020 and 2021 were the same as 2019, but there appears to have been a slowdown in 2020 that was made up in 2021. This is likely caused by a COVID-19 related backlog being cleared the following year, but we will conservatively assume that there could be partial leakage (GGF's annual production would have been valued at \$3.5million)
  - S4S export sales fell by 52% between 2019 and 2022 – our conclusion is that there is no market leakage of S4S (GGF's annual production would have been valued at \$1.4million)
  - Deck tiles export sales remained minimal throughout 2019-22, although increasing in 9% in that period. Our conclusion is that there could be market leakage of deck tiles (GGF's annual production would have been valued at \$75,000)
  - Kiln stick exports rose from \$111,000 in 2019 to \$421,000 in 2021 and \$637,000 in 2022. GGF's production would have produced additional annual export sales of \$14.16million. We conclude that there is a possibility that a small part of GGF's production could have leaked
  - Sleepers were not exported in any year in 2019-22 (last exports were in 2015) – our conclusion is that there is no market leakage of sleepers as a result of the Project (GGF's annual production would have been valued at \$3.35million)
  - RSKD exports (including shorts) fell in 2021 and 2021, recovering to near 2019 levels in 2022 – our conclusion is that there is no market leakage of RSKD (GGF's annual production would have been valued at \$6.8million)
  - RSAD exports (including shorts) were \$4.6million in 2019; \$8.4million in 2020; \$16.0million in 2021; and \$17.0million in 2022. A minimal quantity was sourced from FSC-certified forests, although around 20% was from producers with FSC Chain of Custody (CoC) certification. RSAD is typically sold in export markets where FSC certification is not required (e.g., Mexico, China). From this data we conclude that there is a possibility that GGF's projected annual RSAD production of \$1.526million could have leaked to other Peruvian producers
  - Other products produced by GGF would have been waste by-products (such as off-cuts) and would have been sold in local markets, with the possibility of leakage (annual value \$258,000)
6. To determine whether export data accurately reflect production in the relevant monitoring period, we reviewed social and economic events in the relevant period and assessed these to determine whether external factors, such as the COVID-19 pandemic, disrupted exports and skewed the link between production and exports in that monitoring period.
- i. Impact of the COVID-19 pandemic
- The first recorded case of Covid in Peru was reported on 6<sup>th</sup> March 2020 (<https://www.reuters.com/article/health-coronavirus-peru-idUSE6N29R02T/>)

and in response the government undertook a series of measures to prevent contagion, including lockdowns

- Supreme Decree N° 080-2020-PCM was issued on May 3<sup>rd</sup> 2020, which approved resumption of economic activities within the framework of the National Health Emergency (<https://busquedas.elperuano.pe/dispositivo/NL/1865987-1>). This included, in the Annex, forestry (timber and non-timber)
- Alongside this measure, the Peru government provided a stimulus package ([Reactiva Perú - Campaigns - Ministry of Economy and Finance - Peruvian State Platform \(www.gob.pe\)](#)) to support the private sector with credit guarantees and other measures
- According to an August 2020 Forest Trends survey of twelve Peruvian timber companies, collectively responsible for 35% of the country's 2019 timber exports, surveyed companies had begun to restart operations by the end of May 2020, and all had restarted by August ([Peruvian timber industry in the time of COVID-19: Effects and recovery efforts - Forest Trends \(forest-trends.org\)](#))
- The August 2020 survey noted that companies were experiencing cancelled orders, shortages in raw materials, and other factors that affected their activities. However, Forest Trends concluded that the full impact of COVID-19 on Peru's timber industry would only become apparent at the end of 2020
- Peru's timber (all products) export data for 2020 shows a 24.8% drop on the previous year (\$93.9million versus \$124.9million in 2019), but this was almost fully recovered in 2021 (\$122.8million) and 2019 levels were exceeded in 2022 (\$126million) (source [ADEX | Association of Exporters2 \(adexperu.org.pe\)](#))
- This analysis shows that while COVID-19 likely contributed to the variation in timber exports in 2020, its impact did not carry through to exports in 2021 and 2022
- We therefore conclude that COVID-19 did not contribute to the variation in Peru's overall timber exports in the monitoring period

ii. We consider other macro-factors that might have contributed to variations in exports of specific timber products during the monitoring period

- Export embargos – from time to time, the harvest of certain species is restricted through the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). In November 2022, the Convention added Cumaru (*Dipteryx spp.*) and Ipe (*Tabebuia spp.*) to CITES Appendix II, meaning that international trade must be covered by an export permit or re-export certificate. The Convention permits 24 months to implement these measures. As this restriction was made after the monitoring period, and as a 24-month window has been authorised, this does not impact Peru's export

data in the time-period, and is therefore not an influence in estimating leakage factors (<https://www.atibt.org/en/news/13248/cites-towards-an-appendix-ii-listing-for-cumaru-ipe-african-mahogany-padouk-and-doussiequestion>)

- Sustained industrial action or civil unrest might impact production and cause logistical delays, thereby skewing export data at that time. There were no significant events during the monitoring period, but following the ousting of President Castillo on December 7<sup>th</sup> 2022, there was a three-week period of unrest and a declaration of a state of emergency ([Explainer: Why are there protests in Peru and what comes next? | Reuters](#)). The economic impact of this was largely felt by the tourism industry, and its effect on industry was tempered by the fact that the unrest occurred at year-end when most industries shut down anyway. As the unrest occurred at year-end and outside the monitoring period, we conclude that there was no impact on timber export data

## 7. Market Leakage Conclusions

- i. This analysis, using conservative assumptions, shows that, at most, other producers in Peru could have replaced only a small fraction of GGF's projected share of production for export markets during the monitoring period
- ii. Of GGF's projected \$31million production value, the majority was not picked up by other producers
  - The data show zero market leakage of S4S, Sleepers, RSKD (including shorts)
  - In 2021 and 2022 Peru exported a total of \$1.059million value of kiln sticks, or an annual average of \$417,000 above 2019 levels. This represents 2.95% of GGF's projected production. We conclude that it is possible that a small part of GGF's baseline production of kiln sticks was taken up by other producers (i.e., partial market leakage)
  - Peru's exports of decking totalled \$32.2million in 2019, and averaged \$34.7million in 2021 and 2022. As GGF's production would have been an annual \$3.5million, it is possible that other producers in Peru took part of this up (i.e., partial market leakage)
  - Peru's exports of deck tiles increased from a low base in 2019, and it is possible that other producers took up part of GGF's proposed production (i.e., partial market leakage)
  - Peru's exports of RSAD increased from \$4.6million in 2019, and averaged \$16.5million in 2021 and 2022. GGF's production would have been an annual \$1.525million, and it is possible that other producers in Peru took this up (i.e., market leakage)
  - All GGF's products categorised as 'Other' would have been sold in local markets, and possibly other producers stepped in to supply this (i.e., market leakage)
- iii. To calculate market leakage, we have applied a leakage factor of 0.4 (see section 5.3 of the MR) to that part of GGF's production that could have been taken up by other producers (i.e., market leakage)

- iv. The results are shown in 'GGL Leakage calculation.xls' in Appendix 5
- 71.55% Decking, 74.96% Deck Tiles, 2.95% kiln sticks, 100% RSAD, 100% Other
  - Leakage factor 0.4 per the procedure stated in Box 2 of the methodology (as leakage would have occurred in similar forest)
  - Leakage factor applies to 23.40% of log volume

## Results

| Full harvest baseline (9,173ha) |                |                                   | Results from leakage analysis |                                                                 |
|---------------------------------|----------------|-----------------------------------|-------------------------------|-----------------------------------------------------------------|
| Production                      | m <sup>3</sup> | Logs input (logs m <sup>3</sup> ) | Market Leakage (%)            | Log volume leakage m <sup>3</sup> (Logs input * market leakage) |
| Decking                         | 4,324          | 9,609                             | 71.55%                        | 6,875                                                           |
| S4S                             | 2,820          | 6,266                             | 0%                            | -                                                               |
| Deck tiles                      | 940            | 2,089                             | 74.96%                        | 1,566                                                           |
| Sleepers                        | 6,263          | 9,489                             | 0%                            | -                                                               |
| Kiln sticks                     | 23,607         | 40,800                            | 2.95%                         | 1,203                                                           |
| RSKD                            | 25,346         | 38,994                            | 0%                            | -                                                               |
| RSKD shorts                     | 5,069          | 7,799                             | 0%                            | -                                                               |
| RSAD                            | 11,058         | 13,322                            | 100%                          | 13,322                                                          |
| RSAD shorts                     | 2,212          | 2,664                             | 100%                          | 2,664                                                           |
| Other                           | 4,298          | 6,573                             | 100%                          | 6,573                                                           |
| Total                           |                | 137,605                           |                               | 32,204                                                          |

$$LP_{ME} = \frac{\text{Total log volumen leakage}}{\text{Total loginput}} = \frac{32,204}{137,605} = 23.40\%$$

Therefore, after applying the equation 40, the total market leakage is:

Leakage Y1:

$$GHG_{LK|LTPF,1} = LK_{ME} * GHG_{NET|BSL,1} * LP_{ME}$$

$$GHG_{LK|LTPF,1} = 0.4 * 382,383 * 0.2340$$

$$GHG_{LK|LTPF,1} = 35,796$$

Leakage Y2:

$$GHG_{LK|LTPF,2} = LK_{ME} * GHG_{NET|BSL,2} * LP_{ME}$$

$$GHG_{LK|LTPF,2} = 0.4 * 471,244 * 0.2340$$

$$GHG_{LK|LTPF,2} = 44,115$$

| Year  | Average estimated baseline emissions or removals (tCO <sub>2</sub> e) (20 years) | 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) | Total GHG credits adjusted for uncertainty (tCO <sub>2</sub> e) | Deduction for pooled AFOLU buffer account (tCO <sub>2</sub> e) | VCUs eligible for issuance (tCO <sub>2</sub> e) |
|-------|----------------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------------|
| 1     | 382,383                                                                          | -                                                  | 35,796                                 | 346,586                                                      | 346,586                                                         | 53,534                                                         | 293,052                                         |
| 2     | 471,244                                                                          | -                                                  | 44,115                                 | 427,129                                                      | 427,129                                                         | 65,974                                                         | 361,155                                         |
|       |                                                                                  |                                                    |                                        |                                                              |                                                                 |                                                                |                                                 |
| Total | 853,626                                                                          | -                                                  | 79,911                                 | 773,715                                                      | 773,715                                                         | 119,508                                                        | 654,207                                         |

### 3.2.2 Project Description Deviations

#### Deviation #1

A 25 x 25 m resolution land cover map has been used for the disturbance analysis. This is different to that indicated in the PD in sections 3.6 (specifically deviation #3 and #4) and 5.3.7 of the PD. This was done because the higher resolution was thought likely to reduce uncertainty (most likely), and at worst do not increase uncertainty, and thus is a conservative change. Thus, this deviation does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario.

#### Deviation #2

To detect any areas of disturbance, i.e., significant reduction in carbon stocks (>5tC/ha), a grid of 16x16 pixels (pixel size is 25x25m, so the grid covers 160,000 m<sup>2</sup>) were moved over the biomass map in a Geographic Information System (GIS) and any central pixel that has more than 6 pixels having lost more than 5 tC within its 16 X 16 neighborhood is flagged as an indication of disturbances. This differs from what was stated in the PD in sections 3.6 (specifically deviation #3 and #4) and 5.3.7 of the PD. The 3 x 3 window itself does not add any additional information over simply viewing the change map at the native resolution. Thus, this deviation does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario. The results of the application of this deviation can be found in section 4.3.5.

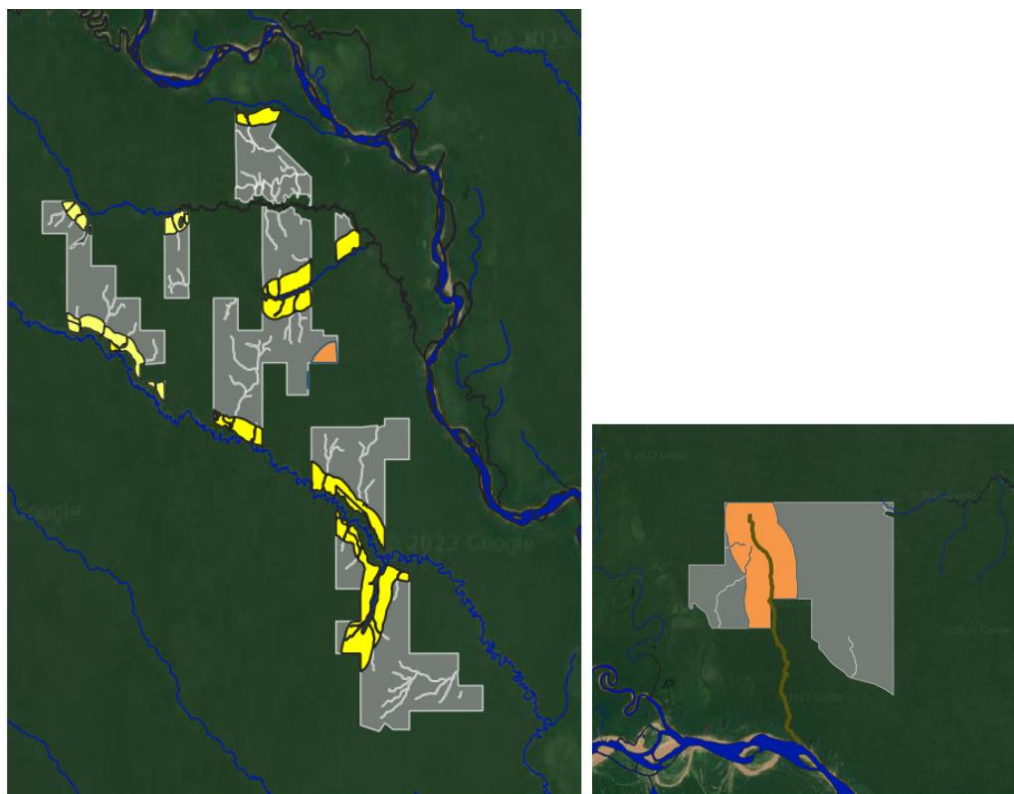
#### Deviation #3

We are describing a Project Description Deviation, to accompany the Monitoring Report, subject to the rules in the VCS Standard version 4.5 section 3.21.2 (2) - 'deviation that does not impact the applicability of the methodology...'

Space Intelligence did not have access to a height map at the point in time that the field campaign was being planned. Therefore, the following approach was undertaken, deviating from section 5.3.6 of the PD. Please note, that, while the project has decided to no longer account for the optional sequestration due to ongoing growth in the project scenario for the current monitoring period (see PD Deviation #5),

the 30 permanent monitoring plots were installed and will be used not only to calibrate the carbon stocks maps (that during this period are being used only for the disturbance analysis) but for future biodiversity monitoring (see section 5.4.1 of the this project's CCB PD):

1. A risk assessment completed by the field team found that placing field plots more than 3 km from access points (rivers or roads) was too dangerous. Evacuation in the case of an event such as a snake bite would not have been possible without serious risk of death. All points were therefore located within 3 km of access points, with the exception of the road in Tachsa where 5 km was possible. Only 24% of the Project Area was therefore available for field sampling, see figure and table below.



Areas accessible for the location of the plots. In yellow, 3km buffer from rivers. In orange 3 km buffer from roads (\*a 5km buffer was applied in the road near Tachsa after discussions with the field team). Left is Tachsa and Mazan, on the right in San Regis.

|        | Area AOI (ha) | Area buffer 3km rivers (ha) | Area buffer 3km* roads (ha) | Total accessible area (ha) | % Accessible |
|--------|---------------|-----------------------------|-----------------------------|----------------------------|--------------|
| Mazan  | 30,619.63     | 6,739.93                    |                             | 6,739.93                   | 22.01        |
| Tachsa | 125,557.53    | 25,833.42                   | 1,288.70                    | 27,122.13                  | 21.60        |

|       |           |          |          |          |       |
|-------|-----------|----------|----------|----------|-------|
| Regis | 27,268.38 | 1,173.87 | 6,536.78 | 7,710.66 | 28.28 |
| Total | 183445.54 |          |          |          | 23.96 |

2. Plot locations were stratified to be located in two different vegetation types, 'Bosque de colina baja' and 'bosque de terraza alta', according to their proportions in each of the three regions, based on a vegetation map used in the preparation of the PD (Vegetation Cover Map (MINAM, 2015) (R. M. N.° 059-2015-MINAM).
3. GEDI LiDAR footprints are distributed across the Project Area. We attempted to place field plots under these footprints, which would have enabled direct regression between LiDAR and field-measured tree height. Ultimately it was found that the geolocation of field plots under the tall forest canopy was too poor for their placement exactly under GEDI footprints, but when placing them points were placed under the footprints.

The resulting plot locations were randomly generated using QGIS given the requirements as above, and given to the field team, who placed plots as near as possible to these points given field constraints. The number of plots in each vegetation type and area are given here:

*Number of sample plots within the AOI per land cover class*

| Land cover class       | Consolidado Tacsha (ha) / number of plots | Consolidado Mazan (ha) / number of plots | San Regis (ha) / number of plots | Total number of plots |
|------------------------|-------------------------------------------|------------------------------------------|----------------------------------|-----------------------|
| Bosque de colina baja  | 116565 / 13 plots                         | 30050 / 4 plots                          | 27268 / 5 plots                  | 22                    |
| Bosque de terraza alta | 9030 / 7 plots                            | 586 / 1 plot                             | 0 / 0 plots                      | 8                     |
| Total                  | 125595 / 20 plots                         | 30636 / 5 plots                          | 27268 / 5 plots                  | 30                    |

It should be noted that this corresponds well to the equivalent table in the SOP, as created before the fieldwork started:

|                               | San Regis            |              | Consolidado Mazan    |              | Consolidado Tacsha    |                |                |
|-------------------------------|----------------------|--------------|----------------------|--------------|-----------------------|----------------|----------------|
|                               | AREA (HA)            | PLOTS        | AREA (HA)            | PLOTS        | AREA (HA)             | PLOTS          | TOTAL          |
| <b>Bosque de colina baja</b>  | 27280.71<br>(98.32%) | 7 (5)        | 30797.59<br>(90.56%) | 6            | 119667.32<br>(87.34%) | 20             | <b>33</b>      |
| <b>Bosque de terraza baja</b> | 48.58<br>(0.18%)     |              | 2619.97<br>(7.70%)   |              | 4548.21<br>(3.32%)    |                | <b>0</b>       |
| <b>Bosque de terraza alta</b> |                      |              | 589.83<br>(1.73%)    | 1            | 12794.67<br>(9.34%)   | 3              | <b>4</b>       |
| <b>TOTAL</b>                  | <b>27746.41</b>      | <b>7 (5)</b> | <b>34007.39</b>      | <b>7 (5)</b> | <b>137010.19</b>      | <b>23 (20)</b> | <b>37 (30)</b> |

Overall, Space Intelligence still believes the plots represent the range of forest types and locations in the study area and are unlikely to be biased. And as the total biomass of the area is based not on the field plots, but on remote sensing-based observations of every 0.0625 ha pixel (25m x 25m), biases in the field data set are less of an issue.

#### Deviation #4

We are describing a Project Deviation Description, to accompany the Monitoring Report, subject to the rules in the VCS Standard version 4.5 section 3.21.2 (2).

The project is recalculating the baseline emissions (and thus the estimated leakage emission and estimated net GHG emissions reductions or removals) after identifying two calculation errors in the calculation worksheet. This deviation does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario as the changes made are required to faithfully apply the validated methodology in computing baseline emissions. Additionally, methodology deviation #5 is applied.

First, the calculations presented in section 4 of the PD for the baseline were conducted utilizing a total area of 183,445.00 ha, as opposed to the precise project total area of 183,445.54 ha. Second, it was identified that the validated baseline was calculated using the average annual area loggable instead of the areas stated in the validated harvesting plan (see section 3.3 of the PD), not complying with the requirement of Box 1 of the methodology ("The description of harvesting in the form of a timber harvest plan forms the basis of the baseline scenario for greenhouse gas accounting").

In addition to the recalculation of the baseline, the estimated project emissions for the crediting period (20 years) were updated as well as the initial projection used the average annual area loggable instead of the harvesting plan. None of the other parameters were changed.

The result from this deviation is below and replaces the information on section 1.10 and section 4.4(specifically table 12) from the PD.

| Year  | Average estimated baseline emissions or removals (tCO <sub>2</sub> e) (20 years) | Estimated project emissions or removals (tCO <sub>2</sub> e) | Estimated leakage emissions (tCO <sub>2</sub> e) | Estimated net GHG emission reductions or removals (tCO <sub>2</sub> e) |
|-------|----------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------|
| 1     | 382,383                                                                          | - 13,689                                                     | 30,591                                           | 365,481                                                                |
| 2     | 471,244                                                                          | - 30,558                                                     | 37,699                                           | 464,102                                                                |
| 3     | 446,944                                                                          | - 46,558                                                     | 35,756                                           | 457,747                                                                |
| 4     | 362,259                                                                          | - 59,526                                                     | 28,981                                           | 392,804                                                                |
| 5     | 367,002                                                                          | - 72,665                                                     | 29,360                                           | 410,306                                                                |
| 6     | 364,301                                                                          | - 85,706                                                     | 29,144                                           | 420,863                                                                |
| 7     | 379,154                                                                          | - 99,279                                                     | 30,332                                           | 448,100                                                                |
| 8     | 377,032                                                                          | - 112,776                                                    | 30,163                                           | 459,645                                                                |
| 9     | 373,672                                                                          | - 126,153                                                    | 29,894                                           | 469,931                                                                |
| 10    | 215,784                                                                          | - 133,878                                                    | 17,263                                           | 332,399                                                                |
| 11    | 394,381                                                                          | - 147,996                                                    | 31,551                                           | 510,827                                                                |
| 12    | 418,340                                                                          | - 162,972                                                    | 33,467                                           | 547,844                                                                |
| 13    | 426,943                                                                          | - 178,255                                                    | 34,155                                           | 571,043                                                                |
| 14    | 414,241                                                                          | - 193,085                                                    | 33,139                                           | 574,187                                                                |
| 15    | 371,272                                                                          | - 206,375                                                    | 29,702                                           | 547,946                                                                |
| 16    | 363,876                                                                          | - 219,402                                                    | 29,110                                           | 554,167                                                                |
| 17    | 363,706                                                                          | - 232,422                                                    | 29,097                                           | 567,032                                                                |
| 18    | 346,101                                                                          | - 244,812                                                    | 27,688                                           | 563,224                                                                |
| 19    | 315,852                                                                          | - 256,119                                                    | 25,268                                           | 546,703                                                                |
| 20    | 361,329                                                                          | - 269,053                                                    | 28,906                                           | 601,476                                                                |
| Total | 7,515,815                                                                        | - 2,891,277                                                  | 601,265                                          | 9,805,827                                                              |
|       |                                                                                  |                                                              | Average annual ERs                               | 490,291                                                                |

#### Deviation #5

For the current monitoring period (August 2020 to July 2022), the project is opting out of accounting for the optional sequestration due to ongoing growth in the project scenario. Specifically, the project is deviating from sections 3.6, 4.2.1, 4.4 and 5.2 and 5.3.7 of the PD

This deviation does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario. The project remains aligned with a no logging regime and the reduction emission from this activity is accounted for in the baseline estimation. Additionally, the impact from disturbances is still monitored and accounted for in the calculations.

#### Deviation #6

We are describing a Project Deviation Description, to accompany the Monitoring Report, subject to the rules in the VCS Standard version 4.5 section 3.21.2 (2).

During the current monitoring period, parameters related to fossil fuel emissions were not included in sections 5.1 “Data and Parameters Available at Validation” nor 5.2 “Data and Parameters Monitored”. Baseline emissions from fuel combustion are considered insignificant (see section 4.1.5 of the PD). Parameters “ $EF_{Fuel}$ ” and “FC (harvest, hauling, barging, processing)” are now added to section 4.1 “Data and parameters available at validation”. Similarly,  $A_{1,i,p}$ ,  $A_{2-10,i,p}$ ,  $A_{11-20,i,p}$  and  $A_{t+}$  that should have been listed in the PD but were not, are not added to section 4.1 of this document.

This deviation does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario as the changes made are required to faithfully apply the validated methodology.

### 3.3 Grouped Projects

This is not a grouped project.

## 4 DATA AND PARAMETERS

### 4.1 Data and Parameters Available at Validation

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $V_{EX,j,i BSL}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Data unit                                                                                    | $m^3 ha^{-1}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Description                                                                                  | Mean volume of timber extracted for wood processing per unit area for species j in stratum i                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Source of data                                                                               | Forest inventory records of the project proponent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Value applied                                                                                | 15 $m^3/ha$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Justification of choice of data or description of measurement methods and procedures applied | <p>All infrastructure areas are initially part of the area from which timber is extracted. This means that the commercial volume of 15 <math>m^3/ha</math> will be extracted from all areas that will subsequently be converted into roads, skid trails, log landings (decks) and port areas.</p> <p>Log volumes have been calculated for each harvestable tree on an area of 3000ha, using DBH and commercial stem height and applying Smalian's formula with a Form Factor of 0.65 (see Section 3.2.1: <i>Methodology deviation #1</i>)</p> |
| Purpose of Data                                                                              | Calculation of baseline emissions: calculation of carbon stocks in harvested timber.                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Comments                                                                                     | No comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                  |                                                                                                                                                          |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter | $V_{EX,INF,j,i BSL}$                                                                                                                                     |
| Data unit        | $m^3 ha^{-1}$                                                                                                                                            |
| Description      | Mean volume of timber extracted for wood processing during the process of forestry infrastructure establishment per unit area for species j in stratum i |
| Source of data   | Forest inventory records of the project proponent                                                                                                        |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Value applied                                                                                | 15 $m^3/ha$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Justification of choice of data or description of measurement methods and procedures applied | <p>All infrastructure areas are initially part of the area from which timber is extracted. This means that the commercial volume of 15 <math>m^3/ha</math> will be extracted from all areas that will subsequently be converted into roads, skid trails, log landings (decks) and port areas.</p> <p>Log volumes have been calculated for each harvestable tree on an area of 3000ha, using DBH and commercial stem height and applying Smalian's formula with a Form Factor of 0.65 (see Section 3.2.1: <i>Methodology deviation #1</i>)</p> |
| Purpose of Data                                                                              | Calculation of baseline emissions: calculation of carbon stocks in harvested timber.                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Comments                                                                                     | No comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                                                                              |                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $D_j$                                                                                                                                                                                                  |
| Data unit                                                                                    | $t.dm.m^{-3}$                                                                                                                                                                                          |
| Description                                                                                  | Basic wood density of species $j$                                                                                                                                                                      |
| Source of data                                                                               | Species specific wood densities from Peruvian data tables and literature (see Table 9, Section 3.4.4. of the PD).                                                                                      |
| Value applied                                                                                | 0.614 (volume-weighted average for all species inventoried in POA10)                                                                                                                                   |
| Justification of choice of data or description of measurement methods and procedures applied | <p>This is the most accurate and realistic approach to establishing the wood density of extracted timber</p> <p>Species-specific wood densities are presented in Table 9, Section 3.4.4. of the PD</p> |
| Purpose of Data                                                                              | Calculation of baseline emissions: calculation of carbon stocks in harvested timber.                                                                                                                   |
| Comments                                                                                     | No comments                                                                                                                                                                                            |

| Data / Parameter                                                                             | $CF_j$                                                                                                                                                    |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data unit                                                                                    | $tC \cdot td.m. -1$                                                                                                                                       |
| Description                                                                                  | Carbon fraction of dry matter for species j                                                                                                               |
| Source of data                                                                               | IPCC default                                                                                                                                              |
| Value applied                                                                                | 0.5                                                                                                                                                       |
| Justification of choice of data or description of measurement methods and procedures applied | No species-specific values could be found in literature. The large variety of species to be harvested in the baseline justify the use of a default value. |
| Purpose of Data                                                                              | <ul style="list-style-type: none"> <li>• Calculation of baseline emissions</li> <li>• Calculation of project emissions</li> </ul>                         |
| Comments                                                                                     | No comments                                                                                                                                               |

|                                                                                              |                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | Logging Damage Factor (LDF)                                                                                                                                                                                                                                                                                                 |
| Data unit                                                                                    | $tC/m^3$ extracted timber                                                                                                                                                                                                                                                                                                   |
| Description                                                                                  | This factor determines the addition to the Dead Wood pool in the forest in $tC$ for each $m^3$ of timber extracted, caused by harvesting. It combines dead wood from logging slash (stumps and crowns of harvested trees) and residual stand damage (biomass not in harvested trees killed by tree felling).                |
| Source of data                                                                               | Pearson et al (2014)                                                                                                                                                                                                                                                                                                        |
| Value applied                                                                                | $1.134 tC/m^3$                                                                                                                                                                                                                                                                                                              |
| Justification of choice of data or description of measurement methods and procedures applied | Pearson et al (2014) introduce a complete accounting method for estimating emission factors from selective timber harvesting, which accounts separately for emissions from the extracted log, from incidental damage to the surrounding forest, and from logging infrastructure. Emissions are expressed as units of carbon |

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | <p>per cubic meter of timber extracted to allow for simple application to timber harvesting statistics. They applied the method in six tropical countries (Belize, Bolivia, Brazil, Guyana, Indonesia, and Republic of Congo).</p> <p>Their results include statistically significant relationships between LDF and total aboveground biomass carbon stock (regression equation <math>y = -0.0039x + 1.7817</math>, <math>R_2 = 0.86</math>), and between LDF and extracted log length (regression equation <math>y = -0.0569x + 1.8388</math>, <math>R_2 = 0.98</math>).</p> <p><i>LDF and total aboveground biomass carbon stock</i></p> <p>Application of aboveground biomass carbon stock in Bosque de Colina Baja ACS<sub>0,i</sub> (140tC/ha – see the data table below) to the regression equation results in an LDF of 1.236</p> <p><i>LDF and extracted log length</i></p> <p>POA10 estimated the commercial height of over 15,000 standing trees to be harvested (i.e., excluding seed trees), which is the closest we can get to log length. The average commercial height was 14.17m. Application of this figure to the regression equation results in an LDF of 1.033</p> <p>We have calculated the LDF to be applied in this project as the average of the two regression equation results, resulting in an LDF of 1.134</p> |
| Purpose of Data  | Calculation of baseline emissions: calculation of carbon stocks in the dead wood pool.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Comments         | No comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Data / Parameter | Logging Infrastructure Factor (LIF)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Data unit        | tC/m <sup>3</sup> extracted timber                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                                                  | This factor determines the addition to the Dead Wood pool in the forest in tC for each $m^3$ of timber extracted, caused by infrastructure establishment. It combines dead wood from road construction, skid trails, logging decks and ports. As all these areas will first have their commercial harvest extracted the LIF applies to the remaining biomass after logging.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Source of data                                                                               | Pearson et al (2014)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Value applied                                                                                | Calculated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Justification of choice of data or description of measurement methods and procedures applied | <p>Pearson et al (2014) – see discussion above for LDF – also calculated LIFs for three sites, of which the site in Guyana is the most comparable with the project in terms of extracted timber volume (<math>13 m^3/ha</math> in Guyana compared to <math>15m^3/ha</math> in the Green Gold Loreto 1 Project) and mean log length (16m in Guyana compared to 14.2m in this project). However, the Guyana site had a total aboveground forest carbon stock of 244tC/ha, compared with 140tC/ha for the project site (see above in LDF discussion).</p> <p>The LIF is composed of a factor for skidding damage (SF), a factor for road construction damage (RF) and a damage factor for log deck areas (DF – this also includes camps and port areas). RF and DF quantify a complete removal of biomass, whereas SF quantifies damage from skid trails, which are often less destructive because they try to go around obstructing trees where possible.</p> <p>For SF the damage level is likely to be more determined by extraction rate and size of the extracted logs than by forest carbon stocks. Since the former two factors are similar in the Guyana site we consider it justified to apply the SF of <math>0.17tC/m^3</math> from Guyana to the project.</p> <p>For the quantification of RF and DF we do not consider it justified to use the Guyana factor due to the difference in forest carbon stocks. So, we will add up all areas of road construction, log landings (decks), permanent camps and ports in the project area (<math>A_{RF+DF}</math>). We will then calculate the remaining forest carbon stock after extraction as follows:</p> $C_{non-HARV,i} = ACS_{0,i} - C_{HARV,i   BSL} \quad (BL1)$ <p>Where:</p> |

$C_{non-HARV,i}$  = forest carbon stock not killed by harvesting in stratum i, in tC/ha

$ACS_{0,i}$  = forest carbon stock of unlogged forest in stratum i, in tC/ha

$C_{HARV,i|BSL}$  = carbon stock in biomass killed by harvesting in stratum i, in tC/ha

$C_{HARV,i|BSL}$  is calculated as follows:

$$C_{HARV,i|BSL} = V_{EX,i|BSL} * (LDF + SF) \quad (BL2)$$

Where:

$C_{HARV,i|BSL}$  = carbon stock in biomass killed by harvesting in stratum i, in tC/ha

$V_{EX,i|BSL}$  = Volume of extracted timber in stratum i, in  $m^3/ha$

LDF = Logging Damage Factor, in  $tC/m^3$  extracted

SF = Skidding Factor, in  $tC/m^3$  extracted

$C_{non-HARV,i}$  is assumed to be completely killed. We then calculate a combined (RF+DF) as follows:

$$(RF + DF) = (A_{RF+DF} * C_{non-EX,i}) / (A_{EXpr} * V_{EX,i|BSL}) \quad (BL3)$$

Where:

$(RF + DF)_i$  = Combined Road Factor and Deck Factor in stratum i, in  $tC/m^3$  extracted timber

$A_{RF+DF,i}$  = Sum of areas of road construction, log landings (decks), permanent camps and ports in the project area, in stratum i, in ha.

$C_{non-HARV,i}$  = forest carbon stock not harvested in stratum i, in tC/ha

$A_{EXpr}$  = Area of all land within the project area where timber extraction will take place, in ha

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | <p><math>V_{EX,I BSL}</math> = Volume of extracted timber in stratum i, in <math>m^3/ha</math></p> <p>The Logging Impact Factor is then calculated as:</p> $LIF = SF + (RF + DF)_i \quad (BL4)$ <p>Where:</p> <p>LIF = Logging Impact Factor, in <math>tC/m^3</math> extracted</p> <p>SF = Skidding Factor, in <math>tC/m^3</math> extracted</p> <p><math>(RF + DF)_i</math> = Combined Road Factor and Deck Factor in stratum i, in <math>tC/m^3</math> extracted timber</p> <p>The LIF is applied in Equation 5 (see Section 3.6: <i>Methodology deviations</i>)</p> |
| Purpose of Data | Calculation of baseline emissions: calculation of carbon stocks in the dead wood pool.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Comments        | No comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $ACS_{0,i}$                                                                                                                                                                                                                                                                                                                                                                       |
| Data unit                                                                                    | tC/ha                                                                                                                                                                                                                                                                                                                                                                             |
| Description                                                                                  | Aboveground carbon stock in undisturbed forest in stratum i                                                                                                                                                                                                                                                                                                                       |
| Source of data                                                                               | Literature                                                                                                                                                                                                                                                                                                                                                                        |
| Value applied                                                                                | 140tC/ha for Bosque de Colina Baja/Bosque de Terraza Alta                                                                                                                                                                                                                                                                                                                         |
| Justification of choice of data or description of measurement methods and procedures applied | del Aguila-Pasquel et al (2013) measured 147tC/ha AGB (all sizes trees) in a 1-ha plot in the vicinity of the project area and on the same soil type. Asner et al (2014)'s Carbon density map for Peru indicates values between 120-150tC/ha for the project region. Here we will use 140tC/ha as a reasonable average (and conservative for the purpose of determining the LDF). |

|                 |                                                                                        |
|-----------------|----------------------------------------------------------------------------------------|
| Purpose of Data | Calculation of baseline emissions: calculation of carbon stocks in the dead wood pool. |
| Comments        | No comments                                                                            |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | <i>OF, PF, SLF, WW</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Data unit                                                                                    | <i>Kg kg<sup>-1</sup></i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Description                                                                                  | <p><i>OF</i> = Fraction of wood products that will be emitted to the atmosphere between 3 and 100 years after production;</p> <p><i>PF</i> = Fraction of wood products that will store carbon permanently</p> <p><i>SLF</i> = Fraction of wood products that would decay within 3 years of production, but that will be assumed to be emitted to the atmosphere immediately upon production; and</p> <p><i>WW</i> = Fraction of extracted biomass effectively emitted to the atmosphere during production</p> |
| Source of data                                                                               | <p><i>OF, SLF and WW</i>: Project proponent's historical wood processing data</p> <p><i>PF</i>: Winjum et al ((1998))</p>                                                                                                                                                                                                                                                                                                                                                                                     |
| Value applied                                                                                | <p><math>OF * 0.86 = 45.86\%</math> (86% of <i>OF</i>– Winjum et al (1998))</p> <p><math>PF * 0.14 = 7.47\%</math> (14% of <i>OF</i> – Winjum et al (1998))</p> <p><i>SLF</i>: 0%</p> <p><i>WW</i>: 46.67%</p>                                                                                                                                                                                                                                                                                                |
| Justification of choice of data or description of measurement methods and procedures applied | These fractions apply the historical waste and recovery rates of the project proponent's wood processing practices.                                                                                                                                                                                                                                                                                                                                                                                           |
| Purpose of Data                                                                              | Calculation of baseline emissions: calculation of carbon stocks sequestered in the wood products pool.                                                                                                                                                                                                                                                                                                                                                                                                        |
| Comments                                                                                     | No comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $RGR_i$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Data unit                                                                                    | $tC.ha^{-1}.yr^{-1}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Description                                                                                  | Forest regrowth rate post timber harvest for stratum $i$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Source of data                                                                               | Rutishauser et al (2015)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Value applied                                                                                | 1.02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Justification of choice of data or description of measurement methods and procedures applied | <p>Rutishauser et al (2015) give the best (and only, to our knowledge) data on post-harvest tree carbon stock recovery for managed Amazonian forests. Comparing sites from the southwestern central and eastern Amazon they concluded that % loss of pre-harvest carbon stocks was a much better predictor of post-harvest recovery rate than geographic, climatic or edaphic variables, presenting the regression equation</p> $t_{REC} = (100 * ACS_{loss}/ACS_0)^{1.106} (R^2 = 0.994)$ <p>Where:</p> <p><math>t_{REC}</math> = post-harvest recovery time of above-ground carbon stocks (trees with DBH&gt;20 cm)</p> <p><math>ACS_{loss}</math> = above-ground carbon stock lost through harvesting</p> <p><math>ACS_0</math> = pre-harvest above-ground carbon stock</p> <p>which we used to calculate a <math>t_{REC}</math> of 27.9 years from 28.4tC/ha <math>ACS_{loss}</math> and <math>ACS_0</math> of 140tC/ha. This results in a <math>RGR_i</math> of <math>28.4/27.9 = 1.02tC/ha/yr</math></p> <p>Note that this conservatively assumes that areas of infrastructure (roads, log decks, etc) will regrow at the same rate as logged forest. This is not realistic, as these areas will have been completely cleared and their soils denuded, scraped and compacted. A significant portion of the infrastructure area will also be in use for a longer period than their year of establishment, e.g., primary roads and ports.</p> |
| Purpose of Data                                                                              | Calculation of baseline emissions: Change in carbon stocks due to forest regrowth after harvest                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Comments                                                                                     | No comments                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Data / Parameter                                                                             | Ggi                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Data unit                                                                                    | $g\ kg^{-1}$ dry matter burnt                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description                                                                                  | Emission factor for stratum $i$ for gas $g$                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Source of data                                                                               | Defaults can be found in Volume 4, Chapter 2, of the IPCC 2006 Inventory Guidelines in table 2.5                                                                                                                                                                                                                                                                                                                                                                |
| Value applied                                                                                | Default values                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Justification of choice of data or description of measurement methods and procedures applied | Default values                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Purpose of Data                                                                              | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Comments                                                                                     | <p>Default values shall be updated whenever new guidelines are produced by the IPCC</p> <p>Fire disturbance has been unknown in this part of the Peruvian Amazon, due to the long rainy season and high annual precipitation. Even in a changing global climate this is not expected to change within the foreseeable future. Should any fire disturbance be monitored the project proponent can look up the most updated default value for this parameter.</p> |
| Data / Parameter                                                                             | $COMF_i$                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Data unit                                                                                    | dimensionless                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description                                                                                  | Combustion factor for stratum $i$                                                                                                                                                                                                                                                                                                                                                                                                                               |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source of data                                                                               | Defaults can be found in Volume 4, Chapter 2, of the IPCC 2006 Inventory Guidelines in table 2.6                                                                                                                                                                                                                                                                                                                                                                |
| Value applied                                                                                | Default values                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Justification of choice of data or description of measurement methods and procedures applied | Default values                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Purpose of Data                                                                              | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Comments                                                                                     | <p>Default values shall be updated whenever new guidelines are produced by the IPCC</p> <p>Fire disturbance has been unknown in this part of the Peruvian Amazon, due to the long rainy season and high annual precipitation. Even in a changing global climate this is not expected to change within the foreseeable future. Should any fire disturbance be monitored the project proponent can look up the most updated default value for this parameter.</p> |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $BCEF_R$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Data unit                                                                                    | $t. dm. m^{-3}$ (tonnes of dry matter per cubic meter)                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Description                                                                                  | Biomass conversion and expansion factor applicable to volume of wood removals in the project area                                                                                                                                                                                                                                                                                                                                                                                                           |
| Source of data                                                                               | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Value applied                                                                                | 0.607                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Justification of choice of data or description of measurement methods and procedures applied | <p><math>BCEF_R</math> is used for the purpose of calculating project emissions resulting from fire disturbance in Equation 34.</p> <p>VM0010 states that fire emissions attributable to the project are limited to the burning of the biomass portion that would have been removed in the baseline scenario, i.e., only the logs. It logically follows that <math>BCEF_R</math> is used to calculate extracted log biomass from its volume. Thus, <math>BCEF_R</math> is equivalent to wood density D.</p> |

|                 |                                  |
|-----------------|----------------------------------|
| Purpose of Data | Calculation of project emissions |
| Comments        | No comments                      |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | <i>BCEF</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Data unit                                                                                    | $tC/m^3$ (tonnes of dry matter per cubic meter)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Description                                                                                  | Biomass carbon conversion and expansion factor applicable to volume of all trees > 10 cm DBH in carbon stock permanent sampling plots                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Source of data                                                                               | Goodman et al (2019)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Value applied                                                                                | 0.986                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Justification of choice of data or description of measurement methods and procedures applied | <p>BCEF is used for the purpose of calculating sample plot tree carbon stocks in Equation 29, together with the calculation of tree stem volume using Smalian's formula and a Form Factor of 0.65 (SERFOR, 2016). This replaces the allometric equation <math>fj(X, Y \dots)</math>. The result of this calculation will be used to recalibrate the model used to produce the carbon stock maps from remotely-sensed data if the map shows too high an error with the new plot measurements.</p> <p>Goodman et al (2019) report as one of their results that the relative portions of crop tree residuals and log carbon stocks are 65:40. This ratio can be used to calculate the carbon stock of crop tree residuals from the per-hectare carbon stock in extracted logs. When this is divided by the extracted volume per ha this gives the crop tree residual carbon stocks per <math>m^3</math> harvested. The total crop tree (or measured tree in sample plots) carbon stock per <math>m^3</math>, i.e., the BCEF, can then be calculated by adding the wood density.</p> <p>While the above calculation method is specific to larger crop trees, and not to all trees to be measured, we consider it to be conservative, because larger trees will have a lower BCEF than smaller trees. It will therefore result in an underestimation of biomass carbon accumulation in the project scenario.</p> |

|                 |                                  |
|-----------------|----------------------------------|
| Purpose of Data | Calculation of project emissions |
| Comments        | No comments                      |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $PML_{FT}$                                                                                                                                                                                                                                                                                                                                    |
| Data unit                                                                                    | %                                                                                                                                                                                                                                                                                                                                             |
| Description                                                                                  | mean merchantable biomass as a proportion of total aboveground tree biomass for each forest type                                                                                                                                                                                                                                              |
| Source of data                                                                               | <p>Merchantable biomass: 9.2 t/ha; source: 15 <math>m^3</math> extraction rate multiplied by the weighted average wood density (see also data table for WD in PDD).</p> <p>Total aboveground tree biomass: 280 t/ha; source: assumption based on Peruvian carbon map (Asner et al, 2014) – see also data table for <math>ACS_{0,i}</math></p> |
| Value applied                                                                                | 0.033                                                                                                                                                                                                                                                                                                                                         |
| Justification of choice of data or description of measurement methods and procedures applied | The project has a single stratum, consisting of Bosque de Colina Baja/Bosque de Terraza Alta (these two forest types are indistinguishable in terms of tree species composition and biomass and are lumped together in the GGF forest inventory).                                                                                             |
| Purpose of Data                                                                              | Calculation of project emissions                                                                                                                                                                                                                                                                                                              |
| Comments                                                                                     | No comments                                                                                                                                                                                                                                                                                                                                   |

|                  |                                                                                                                                                  |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter | $FC$ (harvest, hauling, barging, processing)                                                                                                     |
| Data unit        | L/m <sup>3</sup>                                                                                                                                 |
| Description      | Fuel Consumption (each for harvesting operations, haulage to port, barging to the sawmill in Iquitos and generating electricity for the sawmill) |
| Source of data   | GGF company records                                                                                                                              |
| Value applied    | $FC_{Harvest} = 7.0 \text{ L/m}^3$<br>$FC_{Roads} = 2.4 \text{ L/m}^3$                                                                           |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                              | $FC_{Hauling} = 5.3 \text{ L/m}^3$<br>$FC_{Barging} = 8.5 \text{ L/m}^3$<br>$FC_{Processing} = 7.4 \text{ L/m}^3$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Justification of choice of data or description of measurement methods and procedures applied | These fuel consumption data are highly project specific and verifiable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Purpose of Data                                                                              | Calculation of baseline emissions: Calculation of baseline emissions from the combustion of fossil fuels in forestry and wood processing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Comments                                                                                     | <p><math>FC_{Roads}</math> is the fuel consumption for road establishment and maintenance (this includes log landings). GGF has been keeping records for this category and we will include this in the harvesting fuel consumption as this is part of forestry operations. The project will also monitor fuel consumption for any road maintenance in the project scenario.</p> <p><math>FC_{Hauling}</math> and <math>FC_{Barging}</math> replace the calculations of fuel consumption from log transport in Equations 16, 17 and 18, because these offer an indirect way of calculating fuel consumption, whereas this information is available directly. Also, for <math>FC_{Barging}</math> these equations are not applicable because log transport is done by river barges and fuel consumption and thus emissions are variable depending on river water level (if it is low the trip becomes considerably longer!).</p> <p><math>FC_{Processing}</math> is the fuel consumption recorded for the diesel generator in GGF's sawmill. This is the sole source of power to the sawmill.</p> |

|                  |                                                                      |
|------------------|----------------------------------------------------------------------|
| Data / Parameter | $EF_{Fuel}$                                                          |
| Data unit        | gCO <sub>2</sub> e/l                                                 |
| Description      | Emission Factor for diesel                                           |
| Source of data   | IPCC, 2006, Volume 2, Chapter 3, Section 3.3.1, Table 3.3.1, p. 3.36 |

|                                                                                              |                                                                                                                                          |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Value applied                                                                                | 2,660.56                                                                                                                                 |
| Justification of choice of data or description of measurement methods and procedures applied | VM0010 stipulates that the IPCC default factor must be used.                                                                             |
| Purpose of Data                                                                              | Calculation of baseline emissions: Calculation of baseline emissions from the combustion of fossil fuels in forestry and wood processing |
| Comments                                                                                     | No comment.                                                                                                                              |

|                                                                                              |                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $A_{1,i,p}$                                                                                                                                                                                                                                                                                                                 |
| Data unit                                                                                    | Ha                                                                                                                                                                                                                                                                                                                          |
| Description                                                                                  | The area of stratum i in land parcel p that was harvested 1 year ago                                                                                                                                                                                                                                                        |
| Source of data                                                                               | Geodetic coordinates, GIS Files or legal parcel records                                                                                                                                                                                                                                                                     |
| Value applied                                                                                | Calculated in the project's calculation workbook (Appendix 1)                                                                                                                                                                                                                                                               |
| Justification of choice of data or description of measurement methods and procedures applied | The data is provided by planned forestry infrastructure for baseline forest management, which provides the areas that would have been logged based on a 20-year rotation and that divides each project region into 20 land parcels of similar size. See section 3.3 of the PD and the Appendix 1 of this Monitoring Report. |
| Purpose of data                                                                              | Calculation of baseline emissions                                                                                                                                                                                                                                                                                           |
| Comments                                                                                     | No comments                                                                                                                                                                                                                                                                                                                 |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| Data / Parameter | $A_{2-10,i,p}$                                                                       |
| Data unit        | Ha                                                                                   |
| Description      | The area of stratum i in land parcel p that was harvested between 2 and 10 years ago |
| Source of data   | Geodetic coordinates, GIS Files or legal parcel records                              |

|                                                                                              |                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Value applied                                                                                | Calculated in the project's calculation workbook (Appendix 1)                                                                                                                                                                                                                                                               |
| Justification of choice of data or description of measurement methods and procedures applied | The data is provided by planned forestry infrastructure for baseline forest management, which provides the areas that would have been logged based on a 20-year rotation and that divides each project region into 20 land parcels of similar size. See section 3.3 of the PD and the Appendix 1 of this Monitoring Report. |
| Purpose of data                                                                              | Calculation of baseline emissions                                                                                                                                                                                                                                                                                           |
| Comments                                                                                     | No comments                                                                                                                                                                                                                                                                                                                 |

|                                                                                              |                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $A_{11-20,i,p}$                                                                                                                                                                                                                                                                                                             |
| Data unit                                                                                    | Ha                                                                                                                                                                                                                                                                                                                          |
| Description                                                                                  | The area of stratum i in land parcel p that was harvested between 11 and 20 years ago                                                                                                                                                                                                                                       |
| Source of data                                                                               | Geodetic coordinates, GIS Files or legal parcel records                                                                                                                                                                                                                                                                     |
| Value applied                                                                                | Calculated in the project's calculation workbook (Appendix 1)                                                                                                                                                                                                                                                               |
| Justification of choice of data or description of measurement methods and procedures applied | The data is provided by planned forestry infrastructure for baseline forest management, which provides the areas that would have been logged based on a 20-year rotation and that divides each project region into 20 land parcels of similar size. See section 3.3 of the PD and the Appendix 1 of this Monitoring Report. |
| Purpose of data                                                                              | Calculation of baseline emissions                                                                                                                                                                                                                                                                                           |
| Comments                                                                                     | No comments                                                                                                                                                                                                                                                                                                                 |

|                                                   |                                                                                                                                                                                                |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                  | $A_{t+}$                                                                                                                                                                                       |
| Data unit                                         | Ha                                                                                                                                                                                             |
| Description                                       | Cumulative area harvested until time t*                                                                                                                                                        |
| Source of data                                    | Geodetic coordinates, GIS Files or legal parcel records                                                                                                                                        |
| Value applied                                     | Calculated in the project's calculation workbook (Appendix 1)                                                                                                                                  |
| Justification of choice of data or description of | The data is provided by planned forestry infrastructure for baseline forest management, which provides the areas that would have been logged based on a 20-year rotation and that divides each |

|                                            |                                                                                                                              |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| measurement methods and procedures applied | project region into 20 land parcels of similar size. See section 3.3 of the PD and the Appendix 1 of this Monitoring Report. |
| Purpose of data                            | Calculation of baseline emissions                                                                                            |
| Comments                                   | No comments                                                                                                                  |

## 4.2 Data and Parameters Monitored

|                                                                 |                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $\Delta C_{AB,t PRJ-Gross}$                                                                                                                                                                                                                                          |
| Data unit                                                       | $tCO_2e/yr$                                                                                                                                                                                                                                                          |
| Description                                                     | Sum of carbon stock changes observed by comparing the carbon stock values of all pixels within the project boundary on the carbon stock map from one monitoring campaign with their equivalent pixels on the carbon stock map from the previous monitoring campaign. |
| Source of data                                                  | Carbon stock maps from remote sensing data.                                                                                                                                                                                                                          |
| Description of measurement methods and procedures to be applied | During the monitoring period, the project decided to opt out of accounting for the optional sequestration due to ongoing growth in the project scenario.<br>See project deviation #5.                                                                                |
| Frequency of monitoring/recording                               | Every 2 years after the project start date                                                                                                                                                                                                                           |
| Monitoring equipment                                            | Satellite imagery, GIS                                                                                                                                                                                                                                               |
| QA/QC procedures to be applied                                  | Quality control / quality assurance (QA/QC) procedures for image processing and data handling will be applied in SOPs.                                                                                                                                               |
| Purpose of data                                                 | Calculation of project emissions                                                                                                                                                                                                                                     |
| Calculation method                                              | $\Delta C_{AB,t PRJ-Gross} = \sum (\Delta C_{AB,pixel1} + \Delta C_{AB,pixel2} + \Delta C_{AB,pixel3} + \dots)$                                                                                                                                                      |
| Comments                                                        | See project description deviation #5.                                                                                                                                                                                                                                |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | Illegal Logging PRA Results                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Data unit                                                       | Dimensionless                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Description                                                     | Assessment whether illegal logging is a risk within the project boundary and whether an on-the-ground survey must be triggered                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Source of data                                                  | PRA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Description of measurement methods and procedures to be applied | See Appendix 3 (PRA results)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Frequency of monitoring/recording                               | Every two years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Value applied                                                   | <p>Only 3.8% of those interviewed reported using timber from the project area. According to the data in the 'Illegal Logging PRA Results' table in section 9.2 of the methodology, if “<i>≥10% of those interviewed/surveyed believe that illegal logging may be occurring within the project boundary, then the limited on-the-ground illegal logging survey must be triggered</i>”.</p> <p>As the percentage of those interviewed that actually use timber from inside the project area is below that threshold, then the PRA concludes that there is no potential pressure for anthropogenic activities within the area of the project and illegal logging can be assumed to be zero and no monitoring is needed.</p> |
| Monitoring equipment                                            | Community surveys in the communities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| QA/QC procedures to be applied                                  | PRA results will be kept in paper (if relevant) and digital format in the project office for the duration of the project and will be available at verification events.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Purpose of data                                                 | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Calculation method                                              | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Comments                                                        | No comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

| Data / Parameter                                                | $A_{burn,i,t}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data unit                                                       | Hectare                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Description                                                     | Area burnt in stratum i at time t                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Source of data                                                  | GPS coordinates and Remote Sensing data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Description of measurement methods and procedures to be applied | <p>Disturbance will be observed by comparing biomass maps between monitoring events and delineating areas of at minimum one hectare where a biomass reduction above 5tC is observed since the last monitoring event.</p> <p>Sites of disturbance observed on satellite imagery or during field patrols will be visited, the nature of the disturbance will be determined and the boundaries of the burnt area will be verified by GPS. See Section 5.3: <i>Monitoring Plan</i> for more detail.</p> <p>When there is disturbed area within the buffer created by PRA results that is unsurveyed, they will be conservatively classed as <math>A_{burn,i,t}</math> as stated in section 5.3.7 of the PD.</p> |
| Frequency of monitoring/recording                               | Areas disturbed will be monitored in accordance with the monitoring and reporting schedule.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Value applied                                                   | 89.69 ha.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Monitoring equipment                                            | Satellite imagery and GPS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| QA/QC procedures to be applied                                  | Quality control / quality assurance ( <i>QA/QC</i> ) procedures for image processing and data handling, as well as for field verification visits will be set out in SOPs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Purpose of data                                                 | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Calculation method                                              | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Comments                                                        | No comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $A_{dist,i,t}$                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Data unit                                                       | Hectare                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Description                                                     | Area disturbed (non-fire) in stratum $i$ at time $t$                                                                                                                                                                                                                                                                                                                                                                                  |
| Source of data                                                  | GPS coordinates and/or Remote Sensing data                                                                                                                                                                                                                                                                                                                                                                                            |
| Description of measurement methods and procedures to be applied | <p>Disturbance will be observed by comparing biomass maps between monitoring events and delineating areas of at minimum one hectare where a biomass reduction above 5tC is observed since the last monitoring event.</p> <p>Sites of disturbance observed on satellite imagery or during field patrols will be visited, the nature of the disturbance will be determined, and the boundaries of the area will be verified by GPS.</p> |
| Frequency of monitoring/recording                               | Areas disturbed will be monitored in accordance with the monitoring and reporting schedule.                                                                                                                                                                                                                                                                                                                                           |
| Value applied                                                   | 0 ha                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Monitoring equipment                                            | Satellite imagery and GPS                                                                                                                                                                                                                                                                                                                                                                                                             |
| QA/QC procedures to be applied                                  | Quality control / quality assurance (QA/QC) procedures for image processing and data handling, as well as for field verification visits will be set out in SOPs.                                                                                                                                                                                                                                                                      |
| Purpose of data                                                 | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                      |
| Calculation method                                              | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Comments                                                        | No comment.                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                  |                                                             |
|------------------|-------------------------------------------------------------|
| Data / Parameter | $A_{DIST\_IL,i}$                                            |
| Data unit        | Hectare                                                     |
| Description      | Area potentially impacted by illegal logging in stratum $i$ |

|                                                                 |                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source of data                                                  | GPS coordinates and/or Remote Sensing data                                                                                                                                                                                                                                                                              |
| Description of measurement methods and procedures to be applied | The PRA concludes that there is no potential pressure for illegal logging within the area of the project as only 3.8% of interviewed people use timber from the project area. This is far below the 10% threshold stated in the table of the parameter "Illegal Logging PRA Results" in section 9.2 of the methodology. |
| Frequency of monitoring/recording                               | Areas disturbed by illegal logging will be monitored in accordance with the monitoring and reporting schedule.                                                                                                                                                                                                          |
| Value applied                                                   | 0 ha                                                                                                                                                                                                                                                                                                                    |
| Monitoring equipment                                            | Satellite imagery and GPS                                                                                                                                                                                                                                                                                               |
| QA/QC procedures to be applied                                  | Quality control / quality assurance ( <i>QA/QC</i> ) procedures for image processing and data handling, as well as for field verification visits will be set out in SOPs.                                                                                                                                               |
| Purpose of data                                                 | This parameter is not used for the calculation of project emissions, as these are directly observed in the $\Delta C$ from comparing carbon stock maps. GGF knows the location and size of areas affected in order to formulate appropriate response strategies.                                                        |
| Calculation method                                              | N/A                                                                                                                                                                                                                                                                                                                     |
| Comments                                                        | No comment.                                                                                                                                                                                                                                                                                                             |

|                  |                                         |
|------------------|-----------------------------------------|
| Data / Parameter | $A_{plot}$                              |
| Data unit        | Hectare                                 |
| Description      | Total area of carbon stock sample plots |
| Source of data   | Ground measurement                      |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description of measurement methods and procedures to be applied | Around 30 0.5 ha permanent sample plots have been established at project start and remeasured in Year 2 after project start, according to the RAINFOR/ForestPlot.net methodology (Phillips et al, 2018). The number of 30 plots is recommended by Space Intelligence Ltd. as being sufficient to calibrate their model to produce carbon stock maps, considering the homogenous vegetation type covering the project area. They are randomly spaced throughout the project area, but within 1 km of a road or navigable river for accessibility. |
| Frequency of monitoring/recording                               | Plots were established at project start and remeasured in Year 2. After that the measuring frequency will be every 4 years.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Value applied                                                   | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Monitoring equipment                                            | Field measurement equipment (e.g., measuring tapes) to be specified in field measurement SOP.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| QA/QC procedures to be applied                                  | Standard quality control / quality assurance (QA/QC) procedures for forest inventory including field data collection and data management shall be applied. Use or adaptation of QA/QCs already applied in national forest monitoring, or available from published handbooks, or from the IPCC GPG LULUCF 2003, is recommended.                                                                                                                                                                                                                   |
| Purpose of data                                                 | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Calculation method                                              | According to the RAINFOR/ForestPlot.net methodology (Phillips et al, 2018).                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Comments                                                        | While we are no longer accounting for the optional sequestration due to ongoing growth in the project scenario for the current monitoring period, the 30 permanent monitoring plots were installed and will be used not only to calibrate the carbon stocks maps (that during this period are being used only for the disturbance analysis) but for future biodiversity monitoring (see section 5.4.1 of this project's CCB PD).                                                                                                                 |
| Data / Parameter                                                | DBH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data unit                                                       | Cm                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Description                                                     | Diameter at Breast Height                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Source of data                                                  | Field measurement in sample plots                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Description of measurement methods and procedures to be applied | <p>According to the RAINFOR/ForestPlot.net methodology (Phillips et al, 2018).</p> <p>DBH is used for the purpose of calculating sample plot tree carbon stocks using local or regional allometric equations which relate stem biomass to stem diameter and height. The result of this calculation is used to recalibrate the model used to produce the carbon stock maps from remotely sensed data if the map shows too high an error with the new plot measurements.</p> |
| Frequency of monitoring/recording                               | Plots were established at project start and remeasured in Year 2. After that the measuring frequency will be every 4 years.                                                                                                                                                                                                                                                                                                                                                |
| Value applied                                                   | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Monitoring equipment                                            | Field measurement equipment (e.g., measuring tapes) to be specified in field measurement SOP.                                                                                                                                                                                                                                                                                                                                                                              |
| QA/QC procedures to be applied                                  | Standard quality control / quality assurance (QA/QC) procedures for forest inventory including field data collection and data management shall be applied. Use or adaptation of QA/QCs already applied in national forest monitoring, or available from published handbooks, or from the IPCC GPG LULUCF 2003, is recommended.                                                                                                                                             |
| Purpose of data                                                 | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Calculation method                                              | According to the RAINFOR/ForestPlot.net methodology (Phillips et al, 2018).                                                                                                                                                                                                                                                                                                                                                                                                |
| Comments                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $H_{Stem}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Data unit                                                       | M                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Description                                                     | Stem Height of tree stems >10cm DBH in carbon stock permanent sample plots                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Source of data                                                  | Ground measurement/estimation                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Description of measurement methods and procedures to be applied | <p>According to the RAINFOR/ForestPlot.net methodology (Phillips et al, 2018).</p> <p><math>H_{Stem}</math> is used for the purpose of calculating sample plot tree carbon stocks using local or regional allometric equations which relate stem biomass to stem diameter and height. The result of this calculation is used to recalibrate the model used to produce the carbon stock maps from remotely sensed data if the map shows too high an error with the new plot measurements.</p> |
| Frequency of monitoring/recording                               | Plots were established at project start and remeasured in Year 2. After that the measuring frequency will be every 4 years.                                                                                                                                                                                                                                                                                                                                                                  |
| Value applied                                                   | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Monitoring equipment                                            | Field measurement equipment (e.g., measuring tapes) to be specified in field measurement SOP.                                                                                                                                                                                                                                                                                                                                                                                                |
| QA/QC procedures to be applied                                  | Standard quality control / quality assurance (QA/QC) procedures for forest inventory including field data collection and data management shall be applied. Use or adaptation of QA/QCs already applied in national forest monitoring, or available from published handbooks, or from the IPCC GPG LULUCF 2003, is recommended.                                                                                                                                                               |
| Purpose of data                                                 | Calculation of project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Calculation method                                              | According to the RAINFOR/ForestPlot.net methodology (Phillips et al, 2018).                                                                                                                                                                                                                                                                                                                                                                                                                  |

| Comments                                                        |                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                 |                                                                                                                                                                                                                                                                                                                                             |
| Data / Parameter                                                | $PMP_i$                                                                                                                                                                                                                                                                                                                                     |
| Data unit                                                       | %                                                                                                                                                                                                                                                                                                                                           |
| Description                                                     | Merchantable biomass as a proportion of total aboveground tree biomass for stratum i within the project boundaries                                                                                                                                                                                                                          |
| Source of data                                                  | Census data from GGF forest concessions, Biomass maps/Literature                                                                                                                                                                                                                                                                            |
| Description of measurement methods and procedures to be applied | The project has a single stratum, consisting of Bosque de Colina Baja/Bosque de Terraza Alta (these two forest types are indistinguishable in terms of tree species composition and biomass and are lumped together in the GGF forest inventory)                                                                                            |
| Frequency of monitoring/recording                               | Every 2 years                                                                                                                                                                                                                                                                                                                               |
| Value applied                                                   | <p>Merchantable biomass: 9.2 t/ha; source: 15 m3 extraction rate multiplied by the weighted average wood density which is 0.614 (see also data table for WD in PDD).</p> <p>Total aboveground tree biomass: 273 t/ha; source: data from forest inventory from 30 installed sample plots.</p> <p>Final value: <math>9.2/281=0.034</math></p> |
| Monitoring equipment                                            | Field equipment to collect census data (GPS, tape diameter, others), satellite images                                                                                                                                                                                                                                                       |
| QA/QC procedures to be applied                                  | Standard quality control / quality assurance (QA/QC) procedures for forest inventory including field data collection and data management shall be applied. Use or adaptation of QA/QCs already applied in national forest monitoring, or available from published handbooks, or from the IPCC GPG LULUCF 2003, is recommended.              |
| Purpose of data                                                 | Calculation of project emissions                                                                                                                                                                                                                                                                                                            |
| Calculation method                                              | When the project is accounting for the option sequestration due to ongoing growth in the project scenario, the total aboveground tree biomass will be calculated from carbon stock maps, which use the measured aboveground tree carbon stock in sample plots directly                                                                      |

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | <p>as input for that model. For additional details regarding the carbon stock maps, please refer to section 4.3.4.5 in this document. While these maps weren't utilized for calculating project emissions, they did play a crucial role in the disturbance analysis.</p> <p>When the project is not accounting for the optional sequestration due to ongoing growth in the project scenario, the aboveground tree biomass will be calculated using an allometric approach, using the pantropical allometric equation from Chave et al. (2014)<sup>5</sup>, using the data from the latest forest inventory from the 30 sample plots installed during the first period of monitoring.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Comments | <p>During the current monitoring period, the project is no longer accounting for the optional sequestration due to ongoing growth in the project scenario. As a result, we determined the total aboveground tree biomass using an allometric approach based on data gathered from the forest inventory conducted when installing the 30 sample plots. See “Leakage Y1Y2” in Appendix 1 to see the full calculation.</p> <p>Additionally, the “CDM Tool for Calculation of the Number of Sample Plots for Measurements within A/R CDM Project Activities” was used to demonstrate that 30 plots are sufficient to calculate the total aboveground tree biomass for the parameter. Given that the area sample is less than 5% of the area, equation 2 of the tool was used. According to the tool's calculation, a minimum of 20 sample plots would suffice for accurate estimation. Therefore, 30 plots are more than sufficient to calculate the total aboveground biomass in this parameter when the project is not accounting for the optimal sequestration due to ongoing growth in the project scenario. See “Leakage Y1Y2” in Appendix 1 to see the full calculation.</p> |

## 4.3 Monitoring Plan

### 4.3.1. Overview of the monitoring process

Monitoring campaigns were organized and overseen by GGF's COO and Monitoring Specialist. Remote sensing work was carried out by Space Intelligence Ltd. ([www.space-intelligence.com](http://www.space-intelligence.com)), based in

<sup>5</sup> Chave, J., Réjou-Méchain, M., Búrquez, A., Chidumayo, E., [...] and Vieilledent, G. (2014), Improved allometric models to estimate the above-ground biomass of tropical trees. *Glob Change Biol*, 20: 3177-3190. <https://doi.org/10.1111/gcb.12629>

Edinburgh, UK. Ground surveys were conducted by forest custodians with the help of supporting staff and community surveys were conducted by the community relationships team with the support of the forest custodians

Field plot measurements were conducted by trained forest engineers and/or ecologists.

Monitoring campaigns will take place every two years from the project start date, i.e., around August/September. The process starts with the community surveys, which help assess the risk of illegal logging and other illegal incursions into the project area, and community feedback on the implementation of project activities with the communities and/or in communal areas. The next component is remote sensing, which may detect areas of natural and/or anthropogenic disturbance that may require a field survey. Following on from that are the field surveys that confirm disturbances observed by remote sensing or informed by the community surveys.

In year two, after the project start date (the first monitoring campaign), and every four years thereafter, a field plot measurement campaign will be carried out to remeasure field plots for changes in carbon stocks. These will be used to confirm the continued applicability of the model to produce carbon maps from remote sensing data, or to recalibrate it.

In between monitoring campaigns data will be gathered from regular and irregular patrols, access point lookouts, field surveys, observations by visiting scientists, community visits and drone flights. This information is also used in the monitoring campaigns to assess areas of natural or anthropogenic disturbance.

### 4.3.2. Scope

Monitoring is required to:

- a) Confirm project activity; and
- b) Determine changes in forest carbon stocks and greenhouse gas emissions from disturbances

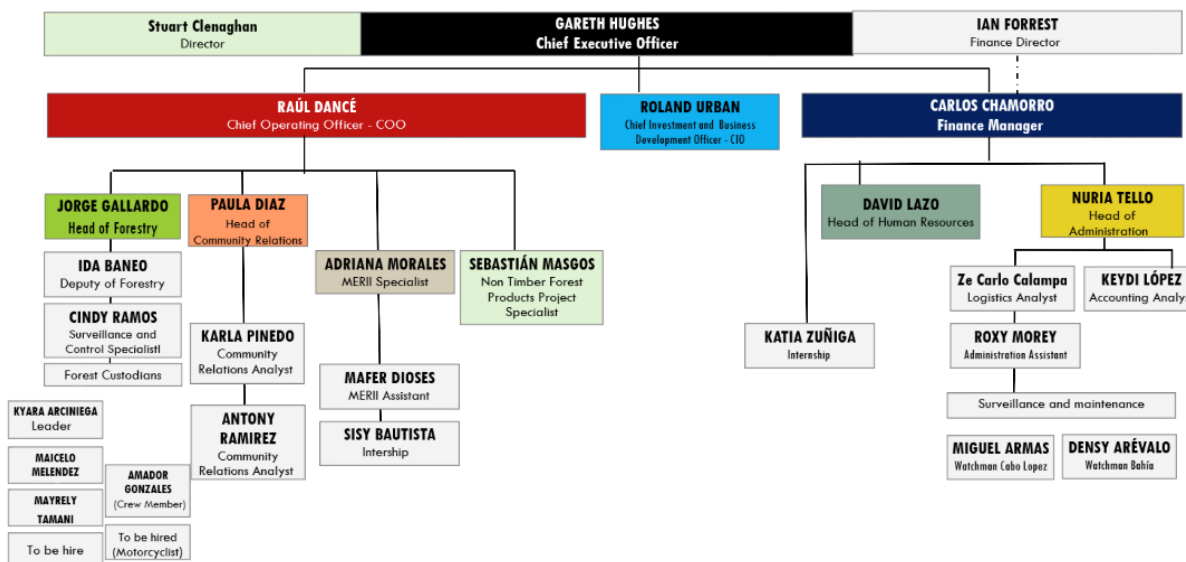
### 4.3.3. Organizational Structure

Table 3:Organizational Structure

| Position                      | Area       | Responsibilities and competencies in relation to the monitoring activities                                                                                                                                                                                           |
|-------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chief Executive Officer (CEO) | Management | <ul style="list-style-type: none"> <li>- Supervise the implementation of monitoring activities in accordance with the project design.</li> <li>- Coordinate with Space Intelligence on the progress of satellite monitoring and the data to be monitored.</li> </ul> |

|                                                                   |                                                        |                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chief Operating Officer (COO)                                     | Management                                             | <ul style="list-style-type: none"> <li>- Supervise the implementation of monitoring activities in accordance with the project design.</li> <li>- Coordinate with Space Intelligence on the progress of satellite monitoring and the data to be monitored.</li> </ul>                                                               |
| Head of Forestry Area                                             | Forestry Area                                          | Supervise the implementation of monitoring activities in accordance with the project design.                                                                                                                                                                                                                                       |
| Head of Community Relations                                       | Community Relations Area                               | Support the forestry area with the coordination and integration of the beneficiary communities to the project's activity                                                                                                                                                                                                           |
| Forestry specialist                                               | Forestry Area                                          | Support the forest custodians' monitoring activities                                                                                                                                                                                                                                                                               |
| Community Relations specialist                                    | Community Relations Area                               | Support the forestry area with the coordination and integration of the beneficiary communities to the project's activity                                                                                                                                                                                                           |
| Forest custodians                                                 | Forestry Area                                          | <ul style="list-style-type: none"> <li>- Implement monitoring activities such as forest monitoring, territory delimitation and communication with communities.</li> <li>- Upon notification of a change in forest cover and/or detection of an anomaly, verify and analyze whether an illegal activity has taken place.</li> </ul> |
| Monitoring, Evaluation, Report and Institutional Image specialist | Monitoring, Evaluation, Report and Institutional Image | Report the activities carried out by the forestry and community relations areas to the corresponding institutions.                                                                                                                                                                                                                 |

Figure 2: GGF Organization Chart



#### 4.3.4. Monitoring Activities

##### 4.3.4.1. Remote sensing

Given that during this monitoring period the project is no longer accounting for the optional sequestration due to ongoing growth in the project scenario, remote sensing and satellite imagery were the primary tools used to identify areas of disturbance, using the biomass and deforestation reports, and was conducted primarily by Space Intelligence (SI).

##### 4.3.4.2. Ground Surveys and Observations

GGF forest custodians were recruited and certified in December 2021. Since then, the forest custodians have made 5 entries to the GGF concessions and beneficiary communities, of which 5 have carried out fluvial and field monitoring activities.

- Identification of access-points: Using georeferenced data and the information from the PRA, the team identified different access points to the concessions. With that information, the forest custodians visited the routes and evaluated their state.
- Routine fluvial monitoring: Using GGF's monitoring boat, the "Napuruna", GGF forest custodians conducted routine fluvial monitoring to monitor the state of the concession. In each of these trips, using GPS to track the routes, the team logged any observations (location, description, pictures) of disturbances.
- Routine field monitoring: This type of monitoring was made using identified field access routes like existing roads. The team also used fluvial routes to monitor areas deep in the forest.
- Incident-based controls: Since the forest custodians have started their activity, there has not been any incident-based field trip. However, in July 2022, a consulting team that was

identifying vulnerable zones inside the Forest Management Units (FMU) reported a potential case of illegal logging near the zone they were at the time.

#### 4.3.4.3. Community Surveys

At the end of the first semester of 2022, the forest custodians collected information from communities through the resource mapping methodology. By doing so, GGF identified the communities' use of land, the allocation of their resources and some land overlapping with the concessions. The results and a more in-depth description of the methodology used is explained in section 4.3.4.5 and in Appendix 3 of this MR.

#### 4.3.4.4. Field Plot Measurements

Using a protocol made by Space Intelligence based on the RAINFOR/ForestPlot.net methodology and following what was explained in section 5.3.6. of GGF VCS PD, a total of 30 Permanent Monitoring Plots (PMP) were allocated inside the concessions. Given that we are no longer accounting for the optional sequestration due to ongoing growth in the project scenario for the current monitoring period, the 30 permanent monitoring plots were used to calibrate the carbon stocks maps that were used only for the disturbance analysis. Additionally, they were used to calculate the total aboveground biomass for parameter  $PMP_i$  (see section 4.2 of this document). Finally, the information they provide will be use during the future biodiversity monitoring (see section 5.4.1 of this project's CCB PD).

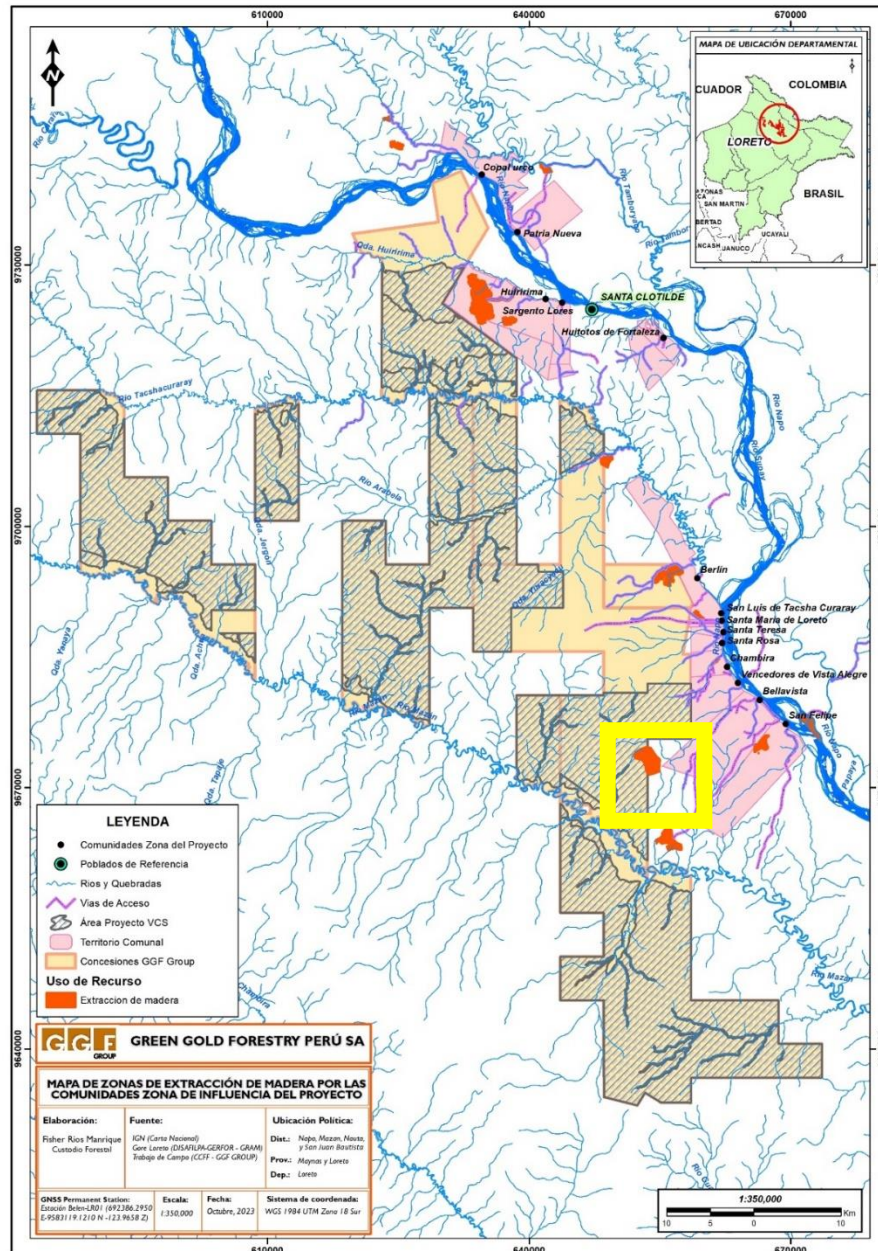
#### 4.3.4.5. Determining changes in forest carbon stocks and greenhouse gas emissions from disturbance measurements

During the current monitoring period, the project decided to no longer account for the optional sequestration due to ongoing growth in the project scenario (see project description deviation #5), therefore the following is a description on the determination of changes in forest carbon stocks and greenhouse gas emissions from disturbance measurements:

**Step 0.** During the first semester of 2022, GGF conducted its inaugural Participatory Rural Approach (PRA) in 14 partner communities, utilizing resource mapping and surveys. Resource mapping involved leaders and members from each community identifying fields, ravines, and locations where they gather fruits, hunt, or extract timber on white and black maps. It's worth noting that the maps intentionally did not specify the project area's boundaries to prevent potential bias in reporting activities within the project area. The results revealed that out of the 14 communities, only 1 reported timber extraction within the project area<sup>6</sup>.

**Figure 3: Map of Timber Extraction Zones in the Communities within the Influence Area of the Green Gold Forestry Project Loreto 1**

<sup>6</sup> There were 2 communities (San Luis de Tacsha and Berlin) that extract timber from within GGF concessions but outside of the Green Gold Loreto 1 area.



Regarding the surveys, a total of 184 individuals were interviewed across the 14 communities. The sampling method employed was probabilistic, entailing the random selection of respondents within each community and population center. The sample size varied depending on the number of families residing in each area. The survey results indicated that 160 people engaged in timber extraction. However, there was no specific question about the exact location of this extraction. Consequently, data from both tools were combined.

According to the "Illegal Logging PRA Results" parameter in section 9.2 of the methodology, if 10% or fewer of the interviews suggest timber extraction within the project area, the PRA may conclude that there is minimal potential pressure for illegal logging, and the incidence of illegal logging can be assumed to

be negligible, thus requiring no further monitoring. The PRA results demonstrated that out of the 160 individuals involved in timber extraction, only 7 were from the community identified in the resource mapping as conducting this activity within the project area. This accounts for 3.8% of the total survey respondents. Therefore, illegal logging is assumed to be 0. Please also refer to Appendix 3: PRA Results for additional details.

| Where timber extraction happens?          | # Surveys | % Surveys |
|-------------------------------------------|-----------|-----------|
| Within GGL1                               | 7         | 3.80%     |
| Within the concession but outside of GGL1 | 17        | 9.24%     |
| Within community territory                | 136       | 73.91%    |
| No extraction                             | 24        | 13.04%    |
| Grand Total                               | 184       | 100.00%   |

**Step 1.** Space Intelligence Ltd. produced a carbon stock map of the project area using space- borne LiDAR samples (25m diameter circles, 0.05 ha) collected during the 6 months before the monitoring date. The LiDAR footprints were run through a model that has been trained (using machine learning approaches) using other satellite imagery and field plots from within and outside the project area to create a canopy height map, which is then converted to a carbon stock map using an allometric equation.

**Step 2.** Run a pixel-by-pixel comparison to determine  $\Delta C$  between the new carbon stock map and the one from the previous monitoring campaign (2 years previous). In this first monitoring campaign (2020 - 2022) two carbon stock maps were made using the same model: one using imagery from the start date of the project activity (2020) and one using imagery from the monitoring date (2022). Using the timber harvest plan, the areas that would have been harvested in the baseline scenario up until the monitoring date were delineated.

**Step 3.** Within the parcels  $p$  that would have been harvested in the baseline scenario up until the monitoring date  $t=2$ , areas where more than 6 25x25m pixels in any grid of 16x16 pixels have lost the equivalent of 5tC/ha or more were detected. These were areas where either a natural (fire, windfall) or an anthropogenic disturbance may have occurred (intense felling, conversion). In other words, they were areas where a significant reduction in carbon stocks ( $>5tC/ha$ ) can be observed. To detect such areas, the 16x16 pixel moving grid was used (pixel size is 25x25m, so the grid covers 160.000 m<sup>2</sup>).

**Step 4.** Detect areas within the entire project area that are within  $D_{DIST\_IL,i}$  distance from access routes (roads and navigable rivers) and where within any grid of 16x16 pixels more than 6 pixels show a negative  $\Delta C$  greater than 5tC.

Using the results from the PRA, it was found that only 3.8% of interviewed people use timber from the project area. They do not sell it but use it for their own consumption (like to fix their boats or houses). Therefore, the PRA concludes that no potential pressure for these activities and illegal logging ( $\Delta CDIST\_IL,i,t|PRJ$ ) can be assumed to be zero and no monitoring is needed

Using the information of remote sensing, it was found that there was a total of 29.55ha that were disturbed in the parcels that would have been logged in year 1 and 2 (PC1 and PC2 according to the harvesting plan).

| <i>PC</i> | <i>ha</i> | <i>Carbon Loss (MgC)</i> |
|-----------|-----------|--------------------------|
| PC_01     | 28.648    | 88.00                    |
| PC_02     | 0.900     | 1.69                     |
| TOTAL     | 29.55     | 89.69                    |

For the calculation of the emissions of disturbances and given that the PRA concluded that there is no potential pressure from illegal logging (step 0), all the disturbed area was conservatively considered to be caused by fire as stated in the PD.

Therefore, during the monitoring period, the total emissions from disturbances was 37.29 tCO<sub>2</sub>e which is considered insignificant for the current monitoring period (below 5%).

#### 4.3.5. Monitoring of project activity implementation

| Theme        | Activity (PD)                                                                                                                            | Implementation Status                                                                                        |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Conservation | Patrolling of the project area by boat and on land (e.g., on already established logging roads) to prevent and detect illegal incursions | The forest custodians conducted 5 entries to the GGF concessions and beneficiary communities.                |
|              | Patrolling of the project area using drones to detect illegal incursions                                                                 | GGF is in the process of acquiring a suitable drone                                                          |
|              | Permanent observation points at key access points to detect and record any entries and exits from the project area                       | Using the results of the resource mapping, the forest custodians have undertaken entry point reconnaissance. |
|              | Establishment of informative boundary boards at key access points to prevent illegal incursions                                          | 3 Boundary markers were installed in buffer zones between the forest concessions and community               |
|              | Visits to potential incursion sites to request                                                                                           | Since the forest custodians began their activities at the beginning of 2022, no trespassers were reported.   |

|                                     |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                     | the trespassers' departure                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Community outreach activities       | Fruit growing and fruit collection enterprises                                                                                                                                           | During the monitoring period, GGF has been working on strengthen community's governance. This fundamental to stablish community enterprises that grow in an institutionalized environment. The approach is that by strengthening governance in the communities, community enterprises will have a solid foundation and will be able, over time, to grow and sustain themselves.                                                 |
|                                     | Other community-based projects the VCS project may support                                                                                                                               | By the end of the monitoring period, GGF is working with different institutions to develop an action plan in the communities. As an example, GGF is supporting the development of a craft enterprise with the Huitotos de Fortaleza community to thanks to an alliance with the private sector                                                                                                                                  |
|                                     | Regular meetings to discuss project activities; the importance of conservation, biodiversity, and ecosystem services; potential grievances and conflicts and how these will be addressed | GGF is constantly communicating its activities to the communities whether that is through participating in local reunions or talking directly to their local authority, the Apu. Additionally, GGF has been implementing environmental education workshops, primarily to the children of the communities. Finally, when potential grievances and conflicts have arisen, meetings were held in Iquitos and in their communities. |
| Eco-scientific tourism and research | Field excursions                                                                                                                                                                         | During the monitoring period, GGF have received multiple visits. Among the visitors are NGO Huarango Nature, USAID, and other partners.                                                                                                                                                                                                                                                                                         |
|                                     | Hospitality services to visitors                                                                                                                                                         | During the visits, boat rental services were taken as well as the purchase of local products.                                                                                                                                                                                                                                                                                                                                   |

#### 4.3.6. Data archiving

All data collected as part of monitoring is being archived electronically and will be kept at least for 2 years after the end of the project crediting period. All measurements are being conducted according to relevant standards. Data archiving will take both electronic and paper forms.

The archives include:

- Copies of all original field measurement data, laboratory data, data analysis spreadsheets.

- Estimates of the carbon stock changes in all pools and non – CO<sub>2</sub> GHG and corresponding calculation spreadsheets.
- GIS products; and
- Copies of the measuring and monitoring reports.

#### 4.3.7. Quality Assurance and Quality Control (QA/QC)

Monitoring related QA/QC requirements are being documented in a series of Standard Operating Procedures (SOPs) which are mostly summarized in section 4.2 Data and Parameters Monitored. It is important to add that the forest custodians' patrols have been conducted following required QA/QC. These SOPs will be available at the first Project Verification.

## 5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

### 5.1 Baseline Emissions

The baseline emissions calculated in this MR include:

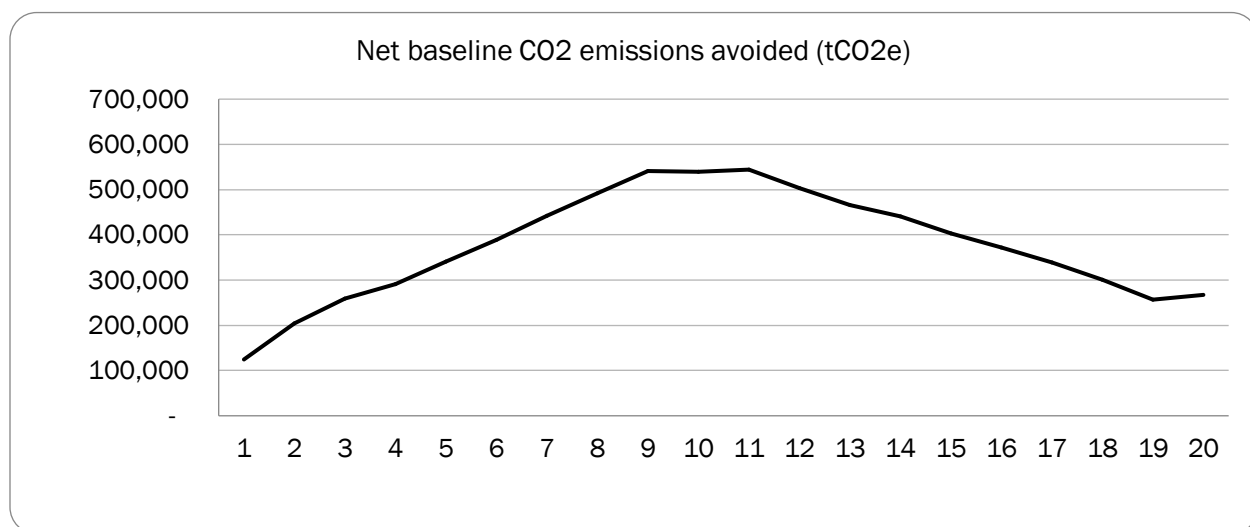
1. Emissions from wood product conversion
2. Decomposition of deadwood from harvested trees
3. Emissions from wood product retirement
4. Stock change due to regrowth following timber harvest
5. Decomposition of trees incidentally killed during tree felling
6. Decomposition of trees killed through skid trail creation
7. Decomposition of trees killed through road construction

As per VM0010, the following baseline emissions have been conservatively excluded from calculations:

1. Emissions through subsequent forest re-entry

The project is following the common practice data pathway, as concluded in Section 3.4 of GGF VCS PD.

The total of baseline  $CO_2$  emissions avoided are the following. It is important to note that during the first monitoring period, the baseline had to be recalculated (see project description deviation #4 and/or Appendix 1 to see the results).



### 5.1.1 Calculation of carbon stocks in commercial timber volumes<sup>7</sup>

For the calculation of carbon stock in commercial timber volumes GGF has established a Timber Harvesting Schedule as per VM0010 and based on its own logging practices. The Timber Harvesting Schedule allows for the calculation of:

- 1) The mean extracted volume of extracted merchantable timber per unit area by species in each stratum in each year ( $V_{EX,j,i|BSL}$  – Equation 4 of VM0010).

There is no legal maximum extraction rate in Peru, but there is a legal minimum DBH established for the main commercial tree species. However, GGF has internally mandated its own minimum DBH for these species, which is on average 18% higher than the legal minimum (see Table 10,

Based on POA10, its most complete forest inventory in terms of species included<sup>8</sup>, which applies its internal minimum DBH list, GGF could take out a volume of  $16.3m^3/ha^9$ . In its business plan and investment memorandum for the expansion and optimisation of its logging business in its ambition to make it profitable while maintaining sustainability the company aimed for an average extraction rate of  $15m^3/ha$ , which is what will be used for baseline modelling. Note this is a

<sup>7</sup> See also GGF VCS PD.

<sup>8</sup> POA10 was conducted in 2017 and does therefore not require a field validation, as it is less than 10 years old (VM0010, p18). Note also that there are many more species included in POA10 than in previous POAs, as a result of GGF's intended change of business model to produce and export non-species-specific products (composite wood products, kiln sticks, etc).

conservative extraction rate relative to the legally allowed extraction volume. This extraction rate is in line with the common practise for logging companies with a similar business model in the Amazon basin.

- 2) All infrastructure areas are initially part of the area from which timber is extracted. This means that the commercial volume of  $15m^3/ha$  will be extracted from all areas that will subsequently be converted into roads, skid trails, log landings (decks) and port areas. In Equation 4,  $V_{EX,j,i|BSL}$  thus includes  $V_{EX,INF,j,i|BSL}$ .

After commercial harvest, all remaining above ground biomass on areas of infrastructure establishment will be converted into dead wood. However, this addition to the dead wood pool in the forest is calculated as a Logging Impact Factor per cubic meter of timber extracted.

Calculation of the carbon stock of timber harvested

Calculation of the carbon stock of timber harvested is done in the GGF Loreto 1 baseline emissions calculation spreadsheet, applying Equation 4 of VM0010.

The parameters used in this equation are:

Mean volume of extracted timber per unit area for species  $j$  in stratum  $i$ ,  $m^3 \cdot ha^{-1}$  ( $V_{EX,j,i|BSL}$ ) – Value applied:  $15 m^3 \cdot ha^{-1}$  (independent of species)

Wood Density ( $D_j$ , biomass per  $m^3$ ) –  $0.614 t/m^3$  (volume weighted average of harvested species, see Table 9)

Carbon Fraction (CF) – 0.5 (IPCC default)

The values applied are discussed in the data tables in Section 4.1.

### 5.1.2 Calculation of dead wood (logging slash) generated in the process of timber harvest

Calculation of the carbon stock changes in the forest dead wood pool is done in the GGF Loreto 1 baseline and project emissions calculation spreadsheet, applying Equation 5.

$$C_{DWSLASH,i,p|BSL} = \sum_{j=1}^j \left( (V_{EX,j,i|BSL} + LDF) + (V_{EX,j,i|BSL} + LIF) \right) \quad (5)$$

Where:  $\Delta C_{DWSLASH,i,p|BSL}$  = Change in carbon stock of dead wood as logging slash resulting from timber harvest per unit area in stratum  $i$  in land parcel  $p$ , in  $tC ha^{-1}$ ;

$V_{EX,j,i|BSL}$  = Mean volume of extracted timber per unit area for species  $j$  in stratum  $i$ ; in  $m^3 \cdot ha^{-1}$ ;

LDF = Logging Damage Factor, in  $tC / m^3$

LIF = Logging Infrastructure Factor, in  $tC / m^3$

The parameters used are:

Mean volume of extracted timber per unit area for species j in stratum i,  $m^3 \cdot ha^{-1}(V_{EX,j,i|BSL})$  – Value applied:  $15 m^3 \cdot ha^{-1}$  (independent of species)

Logging Damage Factor ( $tC/m^3$  extracted) - Value applied: 1.134 Logging Infrastructure Factor ( $tC/m^3$  extracted) - Value applied: 0.458 The values applied are discussed in the data tables in Section 5.1.

### 5.1.3 Calculation of baseline carbon sequestered in wood products

Calculation of the carbon stock changes in the Wood Products pool is done in the GGF Loreto 1 baseline and project emissions calculation spreadsheet, applying Equations 8, 9, 10 and Equation 11 of VM0010.

$$OF_j = 1 - (WW_j + SLF_j) \quad (8)$$

Where:

$OF_j$ = Fraction of biomass carbon from the ‘oxidised fraction’ that is assumed to be emitted to the atmosphere from wood products between years 3-100 after harvest for species j, dimensionless;

$WW_j$ = Fraction of biomass carbon from wood waste that is assumed to be emitted to the atmosphere immediately at the time of harvest for species j, dimensionless;

$SLF_j$ = Fraction of biomass carbon from the short-lived wood product pool that is assumed to be emitted to the atmosphere immediately at the time of harvest for species j, dimensionless

$$CWP_{0,i,t|BSL} = \sum^j C_{EX,i,j,t|BSL} * (WW_i + SLF_i) \quad (9)$$

Where:

$CWP_{0,i,t|BSL}$ = Carbon stock of extracted timber from stratum i that is assumed to be emitted immediately at the time of harvest t, in  $tC$

$C_{EX,i,j,t|BSL}$  = Carbon stock of extracted timber from species j in stratum i at time t, in  $tC \cdot ha^{-1}$ ;

$WW_j$ = Fraction of biomass carbon from wood waste that is assumed to be emitted to the atmosphere immediately at the time of harvest for species j, dimensionless;

$SLF_j$ = Fraction of biomass carbon from the short-lived wood product pool that is assumed to be emitted to the atmosphere immediately at the time of harvest for species j, dimensionless

$$CWP_{20,i|BSL} = \sum^j C_{EX;i,t|BSL} * OF_j * 0.86 \quad (10)$$

Where:

$CWP_{20,i|BSL}$  = Carbon stock of extracted timber from stratum i at time t that is assumed to be emitted between years 1 and 20, in  $tC \cdot ha^{-1}$ ;

$C_{EX,i,j,k|BSL}$  = Carbon stock of extracted timber from species j in stratum i at time t, in  $tC \cdot ha^{-1}$ ;

$OF_j$  = Fraction of biomass carbon from the 'oxidised fraction' that is assumed to be emitted to the atmosphere from wood products between years 3-100 after harvest for species j, dimensionless;

The parameters used in these equations are:

Wood Waste and Short-Lived Wood Products, that are assumed to be emitted immediately into the atmosphere: 46.7%

Long-lived Wood Products, that are assumed to be emitted over a 20-year linear decay function: 45.9%

Wood Products that are assumed to permanently store carbon: 7.5% (14% of the Long-lived Wood Products (as per Winjum et al, 1998)).

The values applied are discussed in the data tables in Section 5.1.

#### 5.1.4 Change in carbon stocks due to forest regrowth after harvest

Calculation of the carbon stock changes in the Wood Products pool is done in the GGF Loreto 1 baseline and project emissions calculation spreadsheet, applying Equation 12 of VM0010.

The parameters used in this equation are:

$RGR_i$ , Regrowth rate of forest post timber harvest post forestry infrastructure establishment for stratum i,  $tCha^{-1}yr^{-1}$  – Value applied:  $1.02tCha^{-1}yr^{-1}$

The values applied are discussed in the data tables in Section 5.1.

#### 5.1.5 Calculation of baseline emissions from the combustion of fossil fuels in forestry and wood processing machinery

Baseline emissions from fuel combustion are considered insignificant as per application of the CDM Tool for testing significance of GHG emissions in A/R CDM project activities, version 1.

#### 5.1.6 Calculation of baseline scenario of greenhouse gas emissions from change in carbon stocks

In this section Equations 23-28 of VM0010 are applied to calculate  $GHGNET|BSL$ , the net greenhouse gas emissions in the baseline scenario, in  $tCO_2e$ . Except for the area A logged each year (according to section 3.3 of the PD), all parameters are calculated. The calculations are performed in the GGF Loreto 1 baseline and project emissions calculation spreadsheet. Results are presented in section 3.2 of the MR and in Appendix 1.

## 5.2 Project Emissions<sup>10</sup>

For the current monitoring period (August 2020 to July 2022), the project is opting out of accounting for sequestration due to ongoing growth in the project scenario (see project description deviation #5).

### Project emissions from natural forest disturbances – Fire

During the monitoring period, 89.69 ha were disturbed in the parcels that would have been logged during years 1 and 2 of the project and were not surveyed. Therefore, as stated in section 5.3.7 of the PD, they were conservatively classed as  $A_{burn,i,t}$ . After applying equation 33 of the methodology, the associated emissions were 37.29 tCO<sub>2e</sub>

### Project emissions from natural forest disturbances – Non – Fire

During the monitoring period, there were no natural non-fire disturbances within the parcels that would have been logged (PC01 and PC02). Therefore  $A_{dist,i,t}$  is 0.

### Project emissions from illegal logging

During the first semester of 2022, GGF conducted its inaugural Participatory Rural Approach (PRA) in 14 partner communities, utilizing resource mapping and surveys. Resource mapping involved leaders and members from each community identifying fields, ravines, and locations where they gather fruits, hunt, or extract timber on white and black maps. It's worth noting that the maps intentionally do not specify the project area's boundaries to prevent potential bias in reporting activities within the project area. The results revealed that out of the 14 communities, only 1 reported timber extraction within the project area.

Regarding the surveys, a total of 184 individuals were interviewed across the 14 communities. The sampling method employed was probabilistic, entailing the random selection of respondents within each community and population center. The sample size varied depending on the number of families residing in each area. The survey results indicated that 160 people engage in timber extraction. However, there was no specific question about the exact location of this extraction. Consequently, data from both tools were combined.

According to the "Illegal Logging PRA Results" parameter in section 9.2 of the methodology, if 10% or fewer of the interviews suggest timber extraction within the project area, the PRA may conclude that there is minimal potential pressure for illegal logging, and the incidence of illegal logging can be assumed to be negligible, thus requiring no further monitoring. The PRA results demonstrated that out of the 160 individuals involved in timber extraction, only 7 were from the community identified in the resource mapping as conducting this activity within the project area. This accounts for 3.8% of the total survey respondents.

| Where timber extraction happens? | # Surveys | % Surveys |
|----------------------------------|-----------|-----------|
|----------------------------------|-----------|-----------|

<sup>10</sup> See Appendix 1

|                                           |     |         |
|-------------------------------------------|-----|---------|
| Within GGL1                               | 7   | 3.80%   |
| Within the concession but outside of GGL1 | 17  | 9.24%   |
| Within community territory                | 136 | 73.91%  |
| No extraction                             | 24  | 13.04%  |
| Grand Total                               | 184 | 100.00% |

Therefore, the PRA concluded that there is no potential pressure for anthropogenic activities within the area of the project. Therefore,  $A_{DIST\_IL,i}$  is 0 ha.

In total, emissions from disturbances during the monitoring period were 37.29 tCO<sub>2</sub>e which is non-significant (less than 5% after applying the significance tool). Therefore, no discounts were made to the calculations.

## 5.3 Leakage

### 5.3.1 Activity shifting leakage

Section 8.3.1 of the VM0010 methodology v1.3 states that “Where the project proponent controls multiple parcels of land within the country the project proponent must demonstrate that the management plans and/or land-use designations of other lands they control have not materially changed as a result of the planned project (...) because such changes could lead to reductions in carbon stocks or increases in GHG emissions”.

Throughout the monitoring period, GGF owned 236,235.71 ha of production forest concessions, delineated across 3 consolidates: Consolidate 1 – Tacsha; Consolidate 2 – Mazán and San Regis. Of this total, 183,445.53 ha were allocated for the GGL1 carbon project, GGL1 (see section 1.7 of this document for the geodetic coordinates). The rest of the concessions are destined for either timber harvesting or for the sustainable harvest of non-timber forest products (no logging), along with preservation activities beyond the scope of GGL1<sup>11</sup>. It is important to note that these activities preceded the start of the project, and are part of the obligations that GGF, as concession title holder, maintains with Peruvian authorities.

In 2020, a total of 255.63 m<sup>3</sup> of timber was harvested, marking the lowest extraction amount per year compared to the period from 2015 to 2019. The extraction rate in 2020 was 0.50 m<sup>3</sup>/ha/yr, significantly lower than the average rate of 2.61 m<sup>3</sup>/ha/yr during 2015-2019. No timber was harvested in 2021 and 2022. Consequently, during the monitoring period, GGF did not increase their harvest rate in their concessions outside of the project area. Moreover, GGF ceased harvesting and mobilizing timber in 2021 and 2022, and in 2020, only timber harvested in 2019 was mobilized.

<sup>11</sup> FSC mandates the preservation of attributes classified as high conservation value. These specific areas were never designated for logging prior to the project's commencement and, therefore, are not encompassed within the scope of GGL1. Throughout the monitoring period, these areas have remained untouched by logging activities, with a portion now designated for non-logging harvesting of non-timber forest products.

### 1. Forest concessions with expired operational plans and without operational plans:

The forest concessions with expired operational plans include the timber contract No. 16-LOR-MAY/CON-MAD-2018-010, and the forest concessions without approved operational plans include the timber contract No. 16-LOR-MAY/CON-MAD-2018-007, as shown in the following table:

| SITUATIONAL STATUS | FOREST CONTRACT             | AREA CONTRACT (ha) | LOCATION   |          |          | OP   | ÁREA OP (ha) | N° APPROVAL RESOLUTION               | PC    | VALIDITY                | AUTHORIZED VOLUME (m3) | EXTRACTED VOLUME (m3) | REFERENCE LETTER                              |
|--------------------|-----------------------------|--------------------|------------|----------|----------|------|--------------|--------------------------------------|-------|-------------------------|------------------------|-----------------------|-----------------------------------------------|
|                    |                             |                    | DEPARTMENT | PROVINCE | DISTRICT |      |              |                                      |       |                         |                        |                       |                                               |
| Expired OP         | 16-LOR-MAY/CON-MAD-2018-010 | 5,250.17           | LORETO     | MAYNAS   | NAPO     | OP I | 506.905      | R.J.N° 174-2020- GRL-GGR-GRDFFS-ODPM | PC 01 | 16/09/2020 - 11/05/2021 | 2,430.13               | 210.17 <sup>12</sup>  | N° 027-2024-GRL-GGR-GRDFFS-UGFFSMAYNAS/ASIFFS |
|                    |                             |                    |            |          |          |      |              |                                      | PC 02 |                         | 1,991.31               | 45.46 <sup>13</sup>   |                                               |
|                    |                             |                    |            |          |          |      |              | R.J.N° 124-2021- GRL-GGR-GRDFFS-ODPM | PC 01 | 11/05/2021 - 06/08/2021 | 2,296.93               | 0.000                 |                                               |
|                    |                             |                    |            |          |          |      |              |                                      | PC 02 |                         | 2,329.87               | 0.000                 |                                               |
| No OP              | 16-LOR-MAY/CON-MAD-2018-007 | 12,585.05          | LORETO     | MAYNAS   | NAPO     |      | -            | -                                    | -     | -                       | 0.00                   | 0.000                 | N° 029-2024-GRL-GGR-GRDFFS-UGFFSMAYNAS/ASIFFS |

### 2. Concessions with valid operational plans from 2021-2024.

Currently, GFF has three operational plans valid from 2021 to 2024 in areas designated for forest utilization. However, according to the extraction balance (extracted volume), it is evident that no mobilization was carried out during these periods, as detailed in the table

| DENOMINATION           | FOREST CONTRACT                                                                                                          | AREA CONTRACT (ha) | LOCATION   |          |              | OP   | OP AREA (ha) | N° APPROVAL RESOLUTION               | PC    | VALIDITY                | AUTHORIZED VOLUME (m3) | EXTRACTED VOLUME (m3) | REFERENCE LETTER                              |
|------------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------|------------|----------|--------------|------|--------------|--------------------------------------|-------|-------------------------|------------------------|-----------------------|-----------------------------------------------|
|                        |                                                                                                                          |                    | DEPARTMENT | PROVINCE | DISTRICT     |      |              |                                      |       |                         |                        |                       |                                               |
| Consolidado 1 - Tacsha | 16-IQU/C-J-170-04, 16-IQU/C-J-1243-04, 16-IQU/C-J-217-04, 16-IQU/C-J-171-04, 16-IQU/C-J-001-12, 16-LOR-MAY/CON-MAD-2018- | 170,310.69         | LORETO     | MAYNAS   | NAPO Y MAZAN | OP I | 2,455.58     | R.J.N° 292-2021- GRL-GGR-GRDFFS-ODPM | PC 12 | 29/09/2021 - 29/09/2024 | 25,773.68              | 0.00                  | N° 030-2024-GRL-GGR-GRDFFS-UGFFSMAYNAS/ASIFFS |

<sup>12</sup> This timber volume was mobilized on October 5, 2020. However, the logging took place in October 2019. The mobilization was delayed due to constant rains and the COVID-19 state of emergency, which prevented movement to the main yards in Bahía and Iquitos during those months. As a result, the timber was eventually moved in October 2020.

<sup>13</sup> This timber volume was mobilized on October 5, 2020. However, the logging took place in October 2019. The mobilization was delayed due to constant rains and the COVID-19 state of emergency, which prevented movement to the main yards in Bahía and Iquitos during those months. As a result, the timber was eventually moved in October 2020.

|                        |                                   |           |        |        |       |         |          |                                                                                |       |                                                    |                        |              |                                               |
|------------------------|-----------------------------------|-----------|--------|--------|-------|---------|----------|--------------------------------------------------------------------------------|-------|----------------------------------------------------|------------------------|--------------|-----------------------------------------------|
|                        | 006 y 16-LOR-MAY/CON-MAD-2018-009 |           |        |        |       |         |          |                                                                                |       |                                                    |                        |              |                                               |
| Consolidado 2 - Mazan  | 16-LOR-MAY/CON-MAD-2018-005       | 36,800.10 | LORETO | MAYNAS | MAZAN | OP I    | 1,310.50 | R.J.N° 273-2021- GRL-GGR-GRDFFS-ODPM<br>R.J.N° 160-2024-GRL-GGR-GRDFFS-UGFFSPM | PC 02 | 10/09/2021 - 13/05/2024<br>13/05/2024 - 10/09/2024 | 46,132.38<br>35,444.36 | 0.00<br>0.00 | N° 028-2024-GRL-GGR-GRDFFS-UGFFSMAYNAS/ASIFFS |
| Forestal San Regis SAC | 16-IQU/C-J-099-04                 | 29,125.00 | LORETO | LORETO | NAUTA | OP VIII | 1,370.84 | R.J.N° 051-2021- GRL-GGR-GRDFFS-ODPL-N                                         | PC 18 | 22/09/2021 - 22/09/2024                            | 20,206.53              | 0.00         |                                               |

**LEYENDA**

- Lugares Poblados
- Capital de Distrito
- Ríos
- Área Concesiones GGF
- Área PO N° 01 - PPM
- Parcela de Corte - PPM
- Parcela de Corte - PPM
- Área Praxedis GGG
- Área de Conservación - Páramo OC-1
- Área para Aprovechamiento PPM - Páramo GGL
- Terrenos Concesionarios
- Concesiones Forestales Colindantes

**MAPA DE UBICACIÓN DEL PERÚ**

**MAPA DE UBICACIÓN DEPARTAMENTAL**

**GREEN GOLD FORESTRY PERÚ SA**

**Mapa de Ubicación Proyecto GGL - Sector Napo**  
Green Gold Forestry Perú S.A.

| Elaboración:               | Fecha: | Utilización: |
|----------------------------|--------|--------------|
| Elaborado por: J. J. J. J. | 2011   | Proyecto     |
| Revisado por: J. J. J. J.  | 2011   | Proyecto     |
| Aprobado por: J. J. J. J.  | 2011   | Proyecto     |

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During the monitoring period logging activities have not shifted from the project areas to other concession areas owned by GGF. Therefore, this type of leakage maintains 0. For more information, see Section 4.3.1 of Green Gold Loreto 1 VCS PD.

### 5.3.2 Market leakage

In this monitoring report, to calculate the market leakage the project is applying a modification of equation 40 (see methodology deviation #6 in section 3.2 of this MR, which is the following.

$$GHG_{LK|LtPF,t^*} = LK_{ME} * GHG_{NET|BSL,t^*} * LP_{ME}$$

Where:

|                     |                                                                                                                                       |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| $GHG_{LK LtPF,t^*}$ | Total market leakage resulting from IFM LtPF activities, in the year $t^*$ since the start of the project activity, tCO <sub>2e</sub> |
| $LK_{ME}$           | Leakage factor for market-effects calculations, dimensionless                                                                         |
| $GHG_{NET BSL,t^*}$ | Net greenhouse gas emissions in the baseline scenario in the year $t^*$ since the start of the project activity, tCO <sub>2e</sub>    |
| $LP_{ME}$           | The percentage of log volumes that potentially could be subject to market leakage                                                     |

#### Leakage factor (LK<sub>ME</sub>)

VM0010 requires that the ratio of merchantable biomass to total biomass is compared between the project forest (consisting of a single stratum) and the displacement forest. Both forests are Bosque de Colina Baja in Loreto, near Iquitos.

$PMP_i = 9.2/273 = 0.034$  for the project forest, and  $PMLFT = 9.2/281 = 0.033$  for the displacement forest.

Where:

$PMP_i$  = merchantable biomass as a proportion of total aboveground tree biomass for stratum  $i$  within the project boundaries, %; and

$PMLFT$  = mean merchantable biomass as a proportion of total aboveground tree biomass for each forest type, %.

For  $PMP_i$ , the merchantable biomass value is derived from the product of the timber extraction volume (15 m<sup>3</sup>) and the weighted average wood density ( $WD: 0.614 \text{ t/m}^3$ ), both obtained as outcomes from the POA10, presented at validation. Given that during this monitoring period the project is no longer accounting for the optional sequestration due to ongoing growth in the project scenario, the value applied for total aboveground tree biomass is derived from the forest inventory conducted during the installation of the sample plots, using allometric equations. Both are discussed in 4.2 of this document.

Additionally, the “CDM Tool for Calculation of the Number of Sample Plots for Measurements within A/R CDM Project Activities” was applied to prove that 30 sample plots were sufficient to calculate the biomass using the information only from the plots. Equation 2 of the tool was applied as the area sample is less than 5% of the project area (0.0082%). As shown below  $n = 20$ , which is less than the 30 plots installed. Therefore, the number of sample plots installed by the project is sufficient to calculate the biomass for the parameter  $PMP_i$ . This is also discussed in section 4.2 of the document and in Appendix 1:

$$n = \left( \frac{t_{VAL}}{E} \right)^2 * \left( \sum_i w_i * s_i \right)^2$$

$$n = \left( \frac{1.699}{14.061} \right)^2 * (1 * 35.49)^2$$

$$n = 20$$

Where,

|           |                                                                                                                                         |                                                                             |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| $n$       | Number of sample plots required for estimation of biomass stocks within the project boundary, dimensionless                             |                                                                             |
| $t_{VAL}$ | Two-sided Student's t-value at infinite degrees of freedom for the required confidence level, dimensionless                             | Degree of freedom = $30 - 1 = 29$<br>Confidence level = 90% (from the tool) |
| $w_i$     | Relative weight of the area of stratum $i$ , dimensionless                                                                              | Only 1 strata in the area of the project:<br>$w_i = w = 1$                  |
| $E$       | Acceptable margin of error (i.e. one-half the confidence interval) in estimation of biomass stock within the project boundary, t.d.m/ha | From tool: $10\% * \text{mean biomass stock} * \text{conversion factor}$    |
| $s_i$     | Estimated standard deviation of biomass stock in stratum $i$ , t.d.m/ha                                                                 | Standard deviation from sample * conversion factor                          |

For  $PML_{FT}$ , the merchantable biomass value is derived from the product of the timber extraction volume ( $15 \text{ m}^3$ ) and the weighted average wood density ( $WD: 0.614 \text{ t/m}^3$ ), both obtained as outcomes from the POA10, presented at validation. The value applied for total aboveground tree biomass is based on Asner et al (2014). Both are discussed in the data tables in Section 4.1 of this document.

The variance between these two ratios stands at 2%, falling within the range of  $\pm 15\%$ , pointing to a deduction factor of 0.4 (VM0010, Box 2).

#### Market Leakage Analysis ( $LP_{ME}$ )

Using information from Veritrade and Peru's tax authority (SUNAT), we analyse Peru's timber exports from 2019-22 to determine in for which products leakage occurred (see methodology deviation #6 in section 3.2 of this MR and appendix 5 for a more detailed analysis).

| Full harvest baseline (9,173ha) |                |                                   | Results from leakage analysis |                                                                 |
|---------------------------------|----------------|-----------------------------------|-------------------------------|-----------------------------------------------------------------|
| Production                      | m <sup>3</sup> | Logs input (logs m <sup>3</sup> ) | Market Leakage (%)            | Log volume leakage m <sup>3</sup> (Logs input * market leakage) |
| Decking                         | 4,324          | 9,609                             | 71.55%                        | 6,875                                                           |
| S4S                             | 2,820          | 6,266                             | 0%                            | -                                                               |
| Deck tiles                      | 940            | 2,089                             | 74.96%                        | 1,566                                                           |
| Sleepers                        | 6,263          | 9,489                             | 0%                            | -                                                               |
| Kiln sticks                     | 23,607         | 40,800                            | 2.95%                         | 1,203                                                           |
| RSKD                            | 25,346         | 38,994                            | 0%                            | -                                                               |
| RSKD shorts                     | 5,069          | 7,799                             | 0%                            | -                                                               |
| RSAD                            | 11,058         | 13,322                            | 100%                          | 13,322                                                          |
| RSAD shorts                     | 2,212          | 2,664                             | 100%                          | 2,664                                                           |
| Other                           | 4,298          | 6,573                             | 100%                          | 6,573                                                           |
| Total                           |                | 137,605                           |                               | 32,204                                                          |

$$LP_{ME} = \frac{\text{Total log volumen leakage}}{\text{Total loginput}} = \frac{32,204}{137,605} = 23.40\%$$

Emissions from market leakage are calculated in the Green Gold Loreto 1 Calculation Spreadsheet (Appendix 1). Results are also shown in section 5.4 of this document.

## 5.4 Net GHG Emission Reductions and Removals

### Uncertainty Analysis

As per the methodology, uncertainty is expressed as a variance greater than  $\pm 15\%$  of the mean at the 95% confidence interval. For the monitoring period August 2020 to July 2022, the variance estimated at validation for the baseline scenario does not change as the parameters that were checked were validated and contained either historic or secondary information. During this period, the project decided to not consider the optional sequestration due to ongoing growth in the project scenario (see project description deviation #5). Therefore, only uncertainty from the baseline scenario is being accounted for.

#### A. Baseline Scenario

The following is a recount of the analysis and estimation of the variance of the following relevant input parameters in the baseline scenario:

- **Project area:** no variance
- **Harvestable volume inventory data:** no variance. All trees were inventoried on 3,000ha, in effect a single data point. Measurement errors were not quantified. Diameter measurements

generally have uncertainties of no more than a few percent, which will be normally distributed and cancel each other out in such a large dataset. Tree height estimates tend to have higher uncertainty attached to them; however, no quantitative data exist for this within GGF, and any bias would be strongly person-dependent so that in a large inventory team the errors would probably cancel each other out. The method to calculate volume from DBH and commercial height (Smalian's equation, see Methodology Deviation #1) has uncertainty attached to it. However, as has been demonstrated in a comparison with an allometric equation method, this method results in an under-estimation of volume (this method to estimate commercial standing volume was designed to deliver an *at least* estimate, so that foresters can build a low-risk business case on it). In addition, the baseline extraction rate is 5.5% lower than the inventoried average volume per ha, which likely cancels out a significant part of the uncertainty due to measuring and estimation error. In view of the above, no uncertainty will be propagated for extracted volume.

- **Above ground C content:** This is an estimated average without variance. However, the Asner et al (2014) map of above ground carbon density for Peru shows a relatively homogenous carbon density for the project areas. In the paper's supplementary information, a map of estimated relative uncertainty (as a % of the mean C density) is published (Fig 9), showing the uncertainty for the project areas to be <5%.
- **Forest regrowth:** the regression equation that calculates recovery time from % loss of aboveground carbon content from logging presented by Rutishauser et al (2015) gives a standard error of 0.022 on the value of 1.106 for the variable  $\theta$ , which equals an uncertainty of 1.99%.
- **Wood densities:** no variance data available. However, with the use of species-specific wood densities and with a low number of species without known wood density the assumption is that of low uncertainty for this input parameter.
- **Logging Damage Factor (LDF):** this is based on the average value of two linear regression equations in Pearson et al (2014), one relating LDF (tC/m<sup>3</sup> extracted) with the standing biomass carbon stock, the other with log length. The first equation has a coefficient of determination R<sup>2</sup> of 0.98, meaning that 98% of the variance of the dependent variable (LDF) has been accounted for by the regression equation, i.e., 2% uncertainty. The second equation has an R<sup>2</sup> of 0.86, i.e., 14% uncertainty. The average uncertainty is thus 8%.
- **Skidding Factor (SF):** no variance data available (Pearson et al, 2014).
- **Wood product class percentages:** full set of GGF historical data, not based on sampling so no variance.

Thus, the uncertainty propagation in the baseline will be done using the uncertainties of forest regrowth and LDF. This is calculated as the square root of the sum of the squares of the two parameters (see Equation 42 below, applied *mutatis mutandis*).

Baseline uncertainty is therefore:  $UBSL = \text{SQRT}(0.0199^2 + 0.08^2) = 0.0824$  (8.24%). If a 5% uncertainty were to be added for the aboveground C content estimate (this would not be quite correct because this is the uncertainty in the map, not around the estimate), this would result in a baseline uncertainty of 9.64%.

#### B. Project Uncertainty

During this period, the project decided to not consider the optional sequestration due to ongoing growth in the project scenario (see project description deviation #5). Therefore, the project uncertainty is considered as 0.

#### Total Uncertainty

The total uncertainty is calculated as the square root of the sum of the squares of the baseline and project uncertainty, through propagating the error in the baseline stocks and the error in the project stocks by applying Equation 42 of VM0010.

The total uncertainty is  $\text{SQRT}(0^2 + 0.0964^2) = 9.64\%$ .

$$U_{TOTAL|LtPF} = \sqrt{U^2_{PRJ} + U^2_{BSL}} \quad (42)$$

Where:

|                  |                                                                                                             |
|------------------|-------------------------------------------------------------------------------------------------------------|
| $U_{total LtPF}$ | Total uncertainty for LtPF Project, dimensionless;                                                          |
| $U_{PRJ}$        | Total uncertainty for the improved forest management activities in the project scenario, dimensionless; and |
| $U_{BSL}$        | Total uncertainty for the baseline scenario, dimensionless.                                                 |

The estimated net GHG emission reductions and removals in each year of the project monitoring period are given in Table 4. They are the results from the Green Gold Loreto 1 Calculation Spreadsheet, in which Equation 41 of VM0010 is applied

$$GHG_{CREDITS|LTPF,t*} = GHG_{NET|BSL,t*} - GHG_{NET|PRJ,t*} - GHG_{LK|LTPF,t*} \quad (41)$$

Where:

|                         |                                                                                                                                                                                                                                                                    |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $GHG_{CREDITS LTPF,t*}$ | project greenhouse gas credits associated with the implementation of improved forest management (IFM) activities in the year $t^*$ since the start of the project activity, in the project scenario, $tCO_2e$ ;                                                    |
| $GHG_{NET BSL,t*}$      | net greenhouse gas emissions in the baseline scenario in the year $t^*$ since the start of the project activity, $tCO_2e$ ;                                                                                                                                        |
| $GHG_{NET PRJ,t*}$      | net greenhouse gas emissions in the project scenario in the year $t^*$ since the start of the project activity, $tCO_2e$ ; and                                                                                                                                     |
| $GHG_{LK LTPF,t*}$      | total greenhouse gas emissions due to leakage arising outside the project boundary as a result of the implementation of improved forest management (IFM) activities in the year $t^*$ since the start of the project activity, in the project scenario, $tCO_2e$ . |

While VM0010 requires that the estimated baseline emissions be averaged over the project crediting period, and that the annual average emissions be calculated each year, this project is applying methodology deviation #5.

To determine the estimated net GHG emission reductions and removals for each year of the project monitoring period, Equation 41 of VM0010 is applied. Note that these values have been discounted for the buffer, which results in the number of verified carbon units. Given the uncertainty levels are below 15%, no additional discounts are necessary.

To determine the number of buffer credits that are deposited in the AFOLU pooled buffer account, the overall risk rating was converted to a percentage as stated by the AFOLU Non-Permanence Risk Tool. This percentage then was multiplied by the net change in the project's carbon stocks.

Buffer pool allocation<sub>t</sub>=(Overall risk rating)%\*net change in project's carbon stocks<sub>t</sub>

Buffer pool allocation<sub>t</sub>=(Overall risk rating)%\* (Baseline emissions or removals ( $tCO_2e$ ) – Project emissions or removals ( $tCO_2e$ ))

*Buffer pool allocation Y1:* 53,534 = (14)% \* (382,383 – 0)

*Buffer pool allocation Y2:* 65,974 = (14)% \* (471,244 – 0)

**Table 4: Net GHG Emission Reductions and Removals**

| Year | Baseline emissions or | Project emissions or | Leakage emissions ( $tCO_2e$ ) | Net emission reductions or | GHG or | Buffer pool allocation <sup>14</sup> | VCUs eligible |
|------|-----------------------|----------------------|--------------------------------|----------------------------|--------|--------------------------------------|---------------|
|------|-----------------------|----------------------|--------------------------------|----------------------------|--------|--------------------------------------|---------------|

<sup>14</sup> The overall non-permanence risk for this period is 0.14. See Appendix 2 for the Non-Permanence Risk Report.

|                                         | removals<br>( <i>tCO<sub>2</sub>e</i> ) | removals<br>( <i>tCO<sub>2</sub>e</i> ) |               | removals<br>( <i>tCO<sub>2</sub>e</i> ) |                | for<br>issuance |
|-----------------------------------------|-----------------------------------------|-----------------------------------------|---------------|-----------------------------------------|----------------|-----------------|
| Year 1<br>(01-August-2020—31-July-2021) | 382,383                                 | -                                       | 35,796        | 346,586                                 | 53,534         | 293,052         |
| Year 2<br>(01-August-2021—31-July-2022) | 471,244                                 | -                                       | 44,115        | 427,129                                 | 65,974         | 361,155         |
| <b>Total</b>                            | <b>853,626</b>                          | <b>-</b>                                | <b>79,911</b> | <b>773,715</b>                          | <b>119,508</b> | <b>654,207</b>  |

**Table 5: Net GHG Emission Reductions and Removals by Calendar Year**

| Year         | Baseline<br>emissions or<br>removals<br>( <i>tCO<sub>2</sub>e</i> ) | Project<br>emissions<br>or<br>removals<br>( <i>tCO<sub>2</sub>e</i> ) | Leakage<br>emissions<br>( <i>tCO<sub>2</sub>e</i> ) | Net GHG<br>emission<br>reductions<br>or removals<br>( <i>tCO<sub>2</sub>e</i> ) | Buffer pool<br>allocation <sup>15</sup> | VCUs<br>eligible for<br>issuance |
|--------------|---------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------|----------------------------------|
| 2020         | 160,286                                                             | -                                                                     | 15,005                                              | 145,281                                                                         | 22,440                                  | 122,841                          |
| 2021         | 419,631                                                             | -                                                                     | 39,283                                              | 380,348                                                                         | 58,748                                  | 321,600                          |
| 2022         | 273,709                                                             | -                                                                     | 25,623                                              | 248,086                                                                         | 38,320                                  | 209,766                          |
| <b>Total</b> | <b>853,626</b>                                                      | <b>-</b>                                                              | <b>79,911</b>                                       | <b>773,715</b>                                                                  | <b>119,508</b>                          | <b>654,207</b>                   |

<sup>15</sup> The overall non-permanence risk for this period is 0.14. See Appendix 2 for the Non-Permanence Risk Report.

**Table 6: Difference between estimated ex-ante GFG emission reductions and removals and achieved emission reductions and removals**

| <u>Ex-ante emissions reductions /removals</u> | <u>Achieved emissions reductions /removals</u> | <u>Percent difference</u> | <u>Justification for the difference</u>                                                                                                                                                                                                    |
|-----------------------------------------------|------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 829,583                                       | 773,715                                        | -6.73%                    | The current monitoring period does not account for sequestration due to ongoing growth in the project scenario. For more, see project description deviation #5. Also, the baseline was recalculated (see project description deviation #4) |

APPENDIX 1: GREEN GOLD LORETO 1 ER  
CALCULATION SPREADSHEET V11  
July2024

APPENDIX 2: VCS-NON-PERMANENCE-  
RISK-REPORT V9 March23

APPENDIX 3: PRA RESULTS NOV23

APPENDIX 4: SDG EVIDENCE

APPENDIX 5: LEAKAGE ANALYSIS VCM  
PROJECT 2345