Gold Standard for the Global Goals

TEMPLATE

KEY PROJECT INFORMATION & PROJECT DESIGN DOCUMENT (PDD)

PUBLICATION DATE **14.04.2023**

VERSION **v. 1.3**

RELATED SUPPORT

- TEMPLATE GUIDE Key Project Information & Project Design Document v.1.3

This document contains the following Sections

SECTION A. DESCRIPTION OF PROJECT

SECTION B. APPLICATION OF APPROVED GOLD STANDARD METHODOLOGY (IES) AND/OR DEMONSTRATION OF SDG CONTRIBUTIONS

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Appendix 1 - Safeguarding Principles Assessment (mandatory)

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Appendix 4 - Design

This template has been revised to aid a consistent interpretation and to better support project developers submitting documentation for certification. Please read the accompanying guide to understand how to complete this template accurately.
TEMPLATE GUIDE Key Project Information & Project Design Document v.1.3

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KEY PROJECT INFORMATION

GS ID of Project	2940
Title of Project	CO2OL Tropical Mix
Time of First Submission Date	12/07/2016
Date of Design Certification	07/10/2013
Version number of the PDD	4
Completion date of version	27/11/2023
Project Developer	FORLIANCE GmbH
Project Representative	Mr. Julian Ekelhof / Mr. German Rodriguez
Project Participants and any communities involved	Eco Cebaco S.A. (EC) Forest Finance S.A. (FoFi) Sustainable Timbers S.A. (ST)
Host Country (ies)	Panama
Activity Requirements applied	☐ Community Service Activity ☐ Renewable Energy ☒ Land-Use and Forests Activity Requirements/Risks & Capacities ☐ N/A
Scale of the project activity	☐ Micro scale ☐ Small Scale ☒ Large Scale

Other Requirements applied	
Methodology (ies) applied and version number	Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology Version 2.0 A/R Soil Carbon Tool V.1.1.0
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A
Project Cycle:	☒ Regular ☐ Retroactive

Land-use & Forest Key Project Information[1]

(delete below table if N/A)

Scope:	☒ Forestry ☐ Agriculture
Silvicultural system:	☐ Conservation (no use of timber) ☒ Selective Harvesting ☐ Rotation Forestry
Project Area (ha):	

Company	Area (ha)
FF	3,548.27
EC	1,748.98
ST	7,945.06
Total	**13,242**

Eligible Area (ha):	

Company	Area (ha)
FF	2,418

[1] Please refer to **Fehler! Verweisquelle konnte nicht gefunden werden.** for detailed information on LUF projects

<table>
<tr><td></td><td>
<table>
<tr><td>EC</td><td></td><td>1081</td></tr>
<tr><td>ST</td><td></td><td>4,979</td></tr>
<tr><td>Total</td><td></td><td>8,478 [2]</td></tr>
</table>
</td></tr>
<tr><td>10% Set Aside Conservation area (ha):</td><td>
<table>
<tr><th>Company</th><th>Area (ha)</th><th>Source</th></tr>
<tr><td>FF</td><td>943.7</td><td>Shapefiles</td></tr>
<tr><td>EC</td><td>Ca. 939.0</td><td>Shapefiles</td></tr>
<tr><td>ST</td><td>Ca. 1583.5</td><td>FSC report 2022[3] (31% conservation area)</td></tr>
<tr><td>Total</td><td>Ca. 3466,2 = 26 % of project area</td><td></td></tr>
</table>
</td></tr>
<tr><td>Evidence that Project Area Boundary is clearly distinguishable in the field:</td><td>Areas indicating indigenous, administrative limits, road and poblados (local communities) have been included. Most of the farms are fenced. The Isla Cebaco area is not fenced but as these farms are based on an island, the difference between reforested and managed areas and other areas is obvious.</td></tr>
<tr><td>Planting Area</td><td>8,478 ha</td></tr>
<tr><td>How many Modelling Units (MUs) are included in the eligible area:</td><td>55 (see SHP TMIX_Panama_Database_MU_241123):
FF: 41
ST: 11</td></tr>
</table>

[2] *Note: In the previous PDD (Transition Annex 2019), there was an inconsistency regarding the eligible planted area. While the project shapefiles show a total eligible area of 8,478 ha, only 8,450 ha (2,402 from FOFI and 1069 from EC) were included in the carbon model and the standard's templates. As the 8,478 ha were also included in the Issuance Control Tool in 2019, and were the basis for the calculation of credits to be issued, this number is now applied consistently.*

[3] TMIX22_FSC_2022_ST-QB; this source had to be taken as exact spatial information on protected areas was not available

SUSTAINABLE DEVELOPMENT GOALS TARGETED	SDG IMPACT (DEFINED IN B.6)	ESTIMATED ANNUAL AVERAGE	UNITS OR PRODUCTS
	EC: 3		
Summary of New Areas added (copy and insert as needed):			
Size (ha):	NA		
Date Added	NA		

Table 1 – Estimated Sustainable Development Contributions

SUSTAINABLE DEVELOPMENT GOALS TARGETED	SDG IMPACT (DEFINED IN B.6)	ESTIMATED ANNUAL AVERAGE	UNITS OR PRODUCTS
13 Climate Action (mandatory)	Emissions Removals	140,800	VERs
SDG1: No Poverty	Number of local communities benefitting from the project´s investments	5	communities

	Nr. of persons on Payroll (full-time & part-time employees)	> 150	Persons on payroll
SDG8: Decent Work and Economic Growth	Nr. of working hours per week (m/w), including overtime	40	Working hours/week
	Nr. of training or workshops provided to the employees	1	capacity building workshop
SDG12: Responsible Consumption and Production	Share (%) of timber volume verified and certified by FSC, and percentage of cocoa volume certified by UTZ in selected areas of the project	100	%
SDG 15: Life on Land	Areas (ha) of degraded land and soils restored in comparison with the baseline scenario	8,478	Ha
	Share (%) of conservation areas of the project area	30	%

SECTION A. DESCRIPTION OF PROJECT

A.1 Purpose and general description of project

>> Represented by FORLIANCE GmbH, CO2OL Tropical Mix Project is part of the implementation and forest management of a carbon reforestation project with the aim of contributing to the mitigation of climate change and social risks in developing countries.

The project consists of several properties spread over four regions of Panama: Veraguas, Darién, Chiriquí, Bocas del Toro and Panamá. Degraded land, last used for extensive cattle ranching, is reforested with mostly native tree species and gradually converted into mixed forests. The project provides for sustainable timber production and cocoa cultivation; it protects biodiversity and restores a healthy forest ecosystem.

Sustainable forest management and cocoa production offer employment opportunities, therefore, improve the economic and social situation of rural communities and families. Moreover, the project helps to promote mutual learning and knowledge transfer.
CO2OL Tropical Mix has been one of the first in line to be successfully certified under the renowned Gold Standard for land use and forestry projects; the cocoa production areas have been the first agroforestry systems to be certified under the Gold Standard. The CO2OL Tropical Mix Project together with local forest plantations companies promotes rural and productive development through reforestation activities with mixed, mainly native tree species, sustainable forestry plantation management and the provision of environmental services. Specific silvicultural and forest management tasks are defined between the participants. The application of a poly-cyclic harvesting system aims to ensure a relatively high average carbon storing capacity in the plantations.

The implementation as well as the maintenance activities necessary to ensure tree development within plantations are carried out by individual companies as follows: Eco Cebaco S.A. (EC), Forest Finance S.A. (FF) and Sustainable Timbers S.A. (ST). Both EcoCebaco and Sustainable Timbers are in practice represented by Panama Reforestation Services (PRS), who manage the areas on-site (see Figure 1). Since 2019, PRS also manages Quetzal Blue S.A. (QB), an additional company originating from Sustainable Timbers and owning some of ST's former project areas with the intention

to continue the carbon certification as before[4]. Therefore, some of the supporting documentation will show this company's name. Furthermore, ForestFinance has sold one finca previously included in the project to 12tree. Due to the temporary unavailability of forest inventories and other detailed project information, Sustainable Timbers and both new owners (Quetzal Blue and 12tree) do not participate in the voluntary Performance Review carried out in 2023.

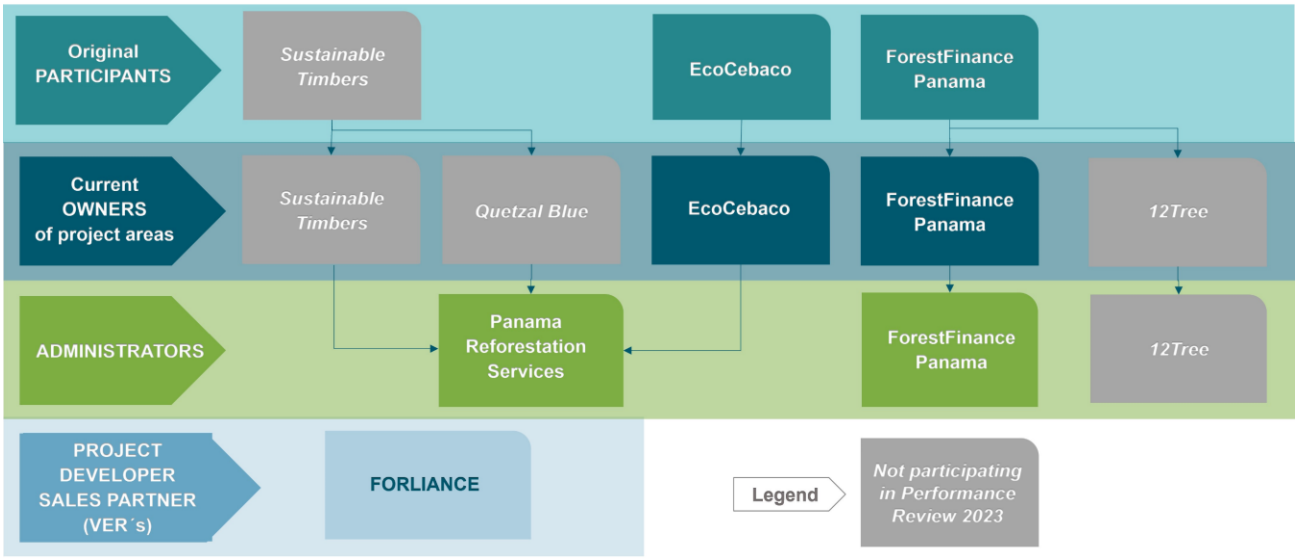

Figure 1: Overview of project management structure

The objective of the project is producing high-quality hardwoods in the long-term at the same time as sequestering a high amount of carbon while stabilizing and restoring fragile and degraded areas in an economically, socially, and ecologically viable way.

In contrast to common reforestation schemes, the project concept makes use also of native tree species in a mix with a round of non-native species, mostly Teak (*Tectona grandis*) of approx. 50-60%, to create sustainable and species-rich forests with the use of high-quality hardwoods and the creation of an additional income from carbon credits. These carbon offset credits can be traded on international carbon markets and are certified according to high-quality carbon standards. Overall, the project-specific

[4] Document showing willingsness to continue under the GS4GG scheme: "QB_letter_2023_19_06.pdf"

objectives are the establishment of profitable production- and conservation systems, enabling the enterprises to work in a beneficial way through the creation of investment opportunities, which are economical, ecologically and socially sound. Creating year-round work opportunities in the areas of activity that allow the development of a stable work environment for women and men, helps the development of these regions. This is especially reflected by the large share of workers stemming from several of the nine indigenous groups in Panama, where unemployment rates are especially high. Furthermore, the project excels in regards of the share of women especially in the higher management positions (see folder TMIX22_FOFI_Employees).

A.1.1. Eligibility of the project under Gold Standard

>> i.&ii. Predefinition of eligibility:

Since the project has transitioned to GS from a previous version, the Transition requirements (3.1.5.) apply: "Transition of a project to GS4GG during the ongoing crediting period will not affect its eligibility under the standard, applicability of applied methodology and additionality already demonstrated."

iii. General Eligibility criteria of LAND USE & FORESTS ACTIVITY REQUIREMENTS Version 2.0, 2.1.1:

(a) *Eligible project types are Afforestation & Reforestation Projects (A/R) and Agriculture Projects (AGR).*

The project is reforesting degraded grasslands with native and exotic tree species and is therefore an A/R project.

(b) *No Deforestation: The eligible area shall not meet the definition of forest 10 years before project start date and at project start date.*

A.1.2. Before the project activity started, the baseline of the project area was a mix of grassland and pioneer shrubs. All these areas were evaluated and classified as applicable planting areas for reforestation and agroforestry activities. Other small patches of forest left were classified and nowadays

managed as conservation areas[5]. The eligible area was already validated using historical satellite imagery that proves that no deforestation has occurred in the project area. In addition, the implementation of forest plantation in Panama requires an environmental impact study that needs to be meet the requirements of "DECRETO LEY No.1" that prohibits the deforestation (see also A.1.1.. vii) The remote sensing analysis and the supporting documentation confirmed that all the planted area is eligible.

(c) *In the case when the eligible area has been deforested during the last 10 years prior to project start date, the eligibility of the project shall be determined by Gold Standard as part of the Preliminary Review. The Project Developer shall provide evidence that the deforestation activity has not taken place with an intention to implement project activities that generate Gold Standard Certified SDG Impact Statements and/or Products, such as GSVERs*.

No deforestation has taken place in the last 10 years before the project start date.

(d) Projects can be implemented in any country. If projects are located in a country or state that has an operational mandatory national or pan-national cap-and-trade scheme to reduce greenhouse-gas (GHG) emissions, and hereby accounts for its own land-based activities under its national or subnational accounting, then projects seeking GSVERs shall conform to the GHG Emissions Reduction and Sequestration Product Requirements - Annex A Double Counting Requirements.

Regarding voluntary carbon projects, Panama allows the development of voluntary carbon offset projects. These projects enable organizations or individuals to voluntarily reduce their carbon footprint by investing in emission reduction or removal activities. While there isn't specific legislation or regulation solely dedicated to voluntary carbon projects, the general legal framework for

[5] See TMIX16-APP1-Analisis historial uso de tierras

environmental management and climate change is the National Climate Change Law (Law No. 37 of 2019), This law establishes the legal framework for addressing climate change in Panama. It includes provisions related to the reduction of greenhouse gas emissions, adaptation to climate change impacts, and the promotion of sustainable development. Thus, The National Climate Change Law provides the context and allowance for voluntary carbon initiatives in Panama, while further regulation is developed

iv. The project is not registered with any other voluntary or compliance scheme.

v. Panama has no enforced emission reduction cap.

vi. There is no overlap with any other voluntary or compliance carbon project.

vii. The project is in compliance with Panama's legal, environmental, ecological and social regulations.

Main regulation	Description	Compliance
	Environmental Law	
Law No. 24 of 1995 (Environmental Framework Law)	This law establishes the legal framework for environmental management and protection in Panama, including provisions related to environmental impact assessments, environmental permits, and sanctions for environmental violations.	Project is in compliance
Law No. 37 of 2019 (Climate Change Law)	This law establishes the legal framework for addressing climate change in Panama. It includes provisions related to adaptation, mitigation, and monitoring of greenhouse gas emissions.	Project is in compliance
	Forestry Law	

Main regulation	Description	Compliance
Law No. 1 from 1994 (Forestry Law)	The purpose of this Act is the protection, conservation, improvement, enhancement, education, research, management and rational use of the forest resources of the Republic.	Project is in compliance
Law No. 41 of 1998 (Forestry Law)	This law regulates forest resources and promotes their sustainable use, conservation, and restoration. It establishes procedures for forest management plans, reforestation, and protection of forest ecosystems.	Project is in compliance
Executive Decree No. 86 of 2002 (Forest Management Regulations)	This decree provides detailed guidelines for the preparation and implementation of forest management plans. It outlines the requirements for sustainable forest management practices, including the establishment of forest inventories, timber harvesting techniques, and the protection of biodiversity and water resources.	Project is in compliance
Executive Decree No. 50 of 2012 (Forest Inventory and Monitoring System):	This decree establishes the Forest Inventory and Monitoring System in Panama. It defines the procedures and guidelines for conducting forest inventories, monitoring forest resources, and collecting data on forest cover, biodiversity, and ecosystem services.	Project is in compliance and the Forestry Management Plans address all national requirements
Executive Decree No. 367 of 2015 (Forest Fire Prevention and Control):	This decree establishes guidelines for preventing and controlling forest fires in Panama. It outlines measures for fire prevention, early detection, response, and the establishment of fire management plans	Project is in compliance and the Forestry Management Plans address all national requirements

Main regulation	Description	Compliance
	Ocupational Health & Safety	
Occupational Health and Safety Law, which is part of the Labor Code (Law No. 1 of 1972).	This law establishes requirements for employers to provide a safe and healthy work environment for employees. It covers areas such as risk assessments, accident prevention, training, protective equipment, and reporting of workplace accidents and incidents.	Project is in compliance
	Labor regulation	
Panamanian Labor Code is contained in Law No. 2 of 2017	The Panama Labor Code is a comprehensive compilation of the labor regulations governing employer-employee relations in the country.	Project is in compliance

A.1.3. Legal ownership of products generated by the project and legal rights to alter use of resources required to service the project

>> The project participants have full and uncontested legal ownership of the carbon credits generated by this project.

The project participants have full legal land tenure of the project sites and thereby all rights attached to it.

Supporting documents:

- Credit-rights_example_VER_Sales_Framework_EcoCebaco
- Land_tenure_Procedimiento compra de fincas

A.2 Location of project

>> The project areas are spread over the Panamanian Departments Chiriquí, Veraguas, Panamá and Darién (see Figure 2). More detailed information can be derived from the supporting maps and shapefiles in the folder "Project Area".

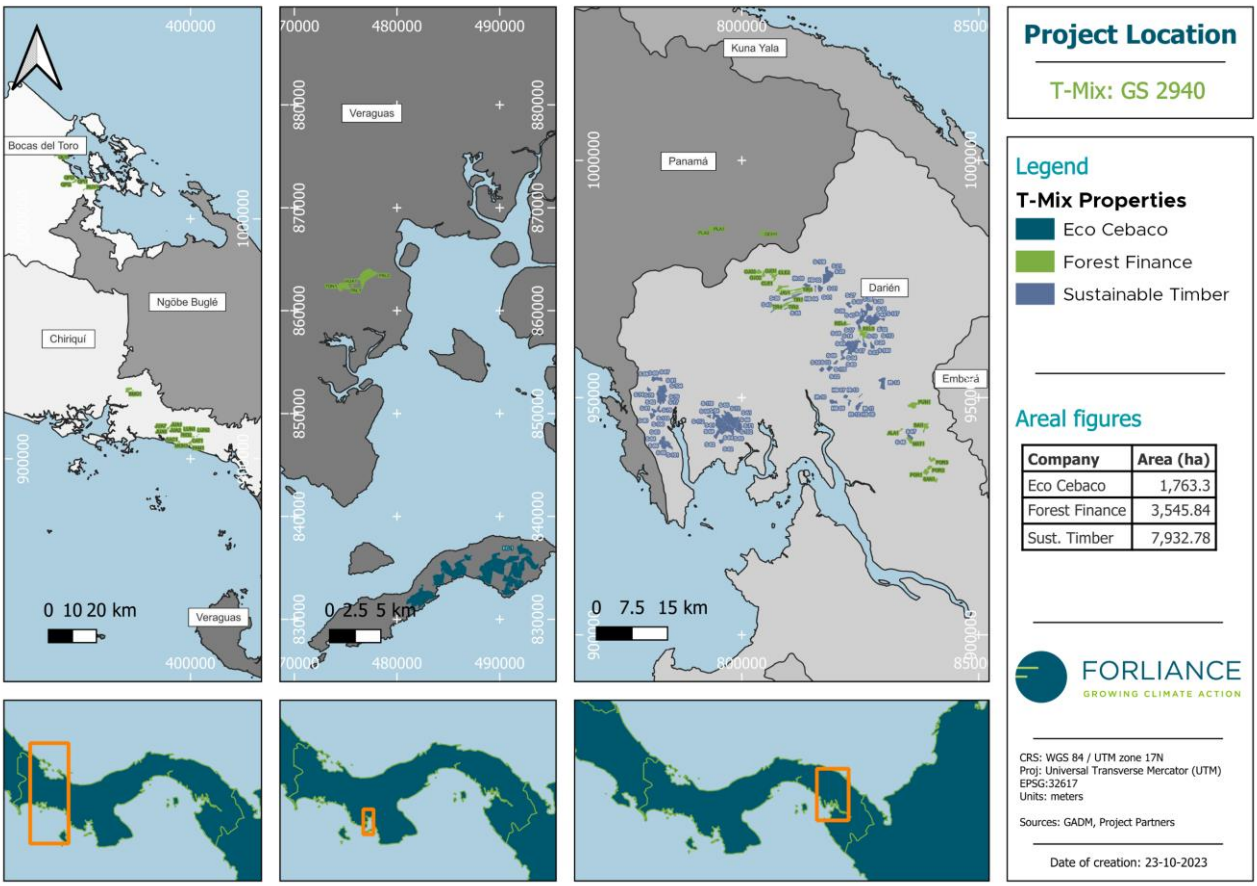

Figure 2: Project Location

Land Owner	Offices	Project Areas (Province)
Forest Finance Panama S.A.	Clayton, Ciudad Del Saber, Edificio 146 A y B Calle Gustavo Lara, Panamá, Panama	Darién, Panamá, Veraguas, Chiriquí, Bocas del Toro
Sustainable Timber	Edifico Dr. JJ Vallarino Piso 3 oficina 3a Ave. Justo Arosemena y calle 32 Arosemena, Panamá, Panama	Darién
EcoCebaco	Edifico Dr. JJ Vallarino	Isla Cébaco

Piso 3 oficina 3a
Ave. Justo Arosemena y calle 32
Arosemena,
Panamá,
Panama

A.3 Technologies and/or measures

>> i. The project installed a selective harvesting forestry system. The following species are planted:

1. Anacardium excelsum
2. Astronium graveolens
3. Acacia mangium
4. Bombacopsis quinata
5. Cordia alliodora
6. Cedrela odorata
7. Dipteryx panamensis
8. Dalbergia retusa
9. Hieronyma alchorneoides
10. Inga sp.
11. Khaya senegalensi
12. Ormosia sp.
13. Sterculia apetala
14. Swietenia macrophylla
15. Terminalia amazonia
16. Tectona grandis
17. Tabebuia guayacan
18. Tabebuia rosea
19. Theobroma Cacao
20. Vochysia guatemalensis
21. Paulownia imperial
22. Paulownia trifolia
23. Platymiscium sp.
24. Terminalia sp.

Additionally, remaining natural forest patches are put under conservation to enhance ecological connectivity and avoid further emissions from ecosystem conversion. The spatial distribution of species planted, and conserved areas can be seen in the folder "MUs-Landuse"[6].

ii. Once planted, the trees continue growing and accumulating C until reaching the age of 25, from which point onwards they are harvested when deemed profitable. Afterwards, wood is used for in the timber industry (construction, furniture, etc). Thus, CO_2 continues to be stored in long-lived products. The project is considered to follow a selective harvesting system due to the long rotation period and the fact that only few fincas will have reached harvesting age by the end of the crediting period. Thus, carbon calculations are based on a conservation model.
Checkups of the tools and machines used for site preparation and harvesting are conducted on a regular basis by the person responsible for maximizing their lifespan.

iii.
The project's main goal is to create forests and some farms are already one. Before the project activity started, the baseline of the project area was a mix of grassland and pioneer shrubs. Small patches of forest left were classified and nowadays managed as conservation areas. Other areas (previously planted or due to the project activity) located on the border of a river or other watersheds are also classified as conservation areas.

The remaining areas were reforested using an innovative design that mixes the planted species by alternating stripes. Like that, large monocultures were avoided, and a near-natural ecosystem was built up. The stripes are planted with different tree species. The width of each stripe should not exceed 70 m to avoid the effects of large monocultures. For rational management, we recommend a minimal width of 30 m to afford rational

[6] In the case of Ecocebaco, no spatial information of the exact boundaries of the Monitoring Units is available. The information on the hectarage of planted areas per species comes directly from the project participant and the spatial land use information provided as supporting documentation should be seen as a proxy.

care. The intervals and width of each stripe regulate indirectly the percentage of species on the farms.
In the following table the relation between the width and the length of the stripes is demonstrated.

Width [m]	70	80	90	100	110	120	130	140	150	160	170	173,21
Length [m]	~	375	333	300	273	250	231	214	200	188	176	173,21

Within these stripes, trees are planted in rows, at a 4x4 meter distance resulting in a total number of 1111 planted trees per hectare. The saplings must have a minimum size of at least 8 cm (Teak) and 15 cm (native species) at the time of planting, to be able to out-compete surrounding vegetation.
After planting, the additional use of fertilizer is not intended; only on very poor soils, soil melioration activities to influence the soil chemical properties are applied.
Project participants apply a selective harvesting system. Therefore, thinning is done four times during the first 25 years of a planted parcel. The main objectives of thinning are:

- increased light penetration to develop bigger crowns to accelerate diameter growth
- increased percentage of trees reaching maturity
- improved wood quality
- encouraged root development
- control of ground cover vegetation for erosion control

The trees selected for thinning shall be selected to maximize the volume and value of the trees left for later thinning or felling, when larger piece size prices will be higher. A sanitary thinning will be executed followed by a selective thinning and roughly 50% of the original trees removed in these thinning by year five. Non-commercial trees will be left on the ground for nutrient release to the soil, support fauna and flora, thus increasing total biodiversity
Weeds are generally controlled by mechanical means and only in exceptional cases the use of herbicides that comply with national-/ international laws, the regulations of the FSC as well as the selected carbon standard that will be used. Only herbaceous plants and grasses are removed but no woody vegetation will be removed even if competition with planted trees exists. All trees that remain on the site after the planting preparation are part of the natural vegetation. If herbicides are applied, it´s use is documented

precisely and the workers will receive sufficient training and proper equipment to minimize environmental and health impacts.

- Folder "Forest Management" for management practices

A.4 Scale of the project

>> Large scale. Emission reduction is above 16,000 tCO_2e/yr[7], which is the cap for small-scale forestry projects.

A.5 Funding sources of project

i. >> The project receives no public funding. All income stems from the revenues of the sale of carbon credits, timber and cocoa.

ii. Official Development Assistance (ODA): Not needed.

[7] https://globalgoals.goldstandard.org/ru-2021-smallholder-small-scale-and-microscale-definitions-and-requirements-for-land-use-and-forestry-luf-projects/

SECTION B. APPLICATION OF APPROVED GOLD STANDARD METHODOLOGY (IES) AND/OR DEMONSTRATION OF SDG CONTRIBUTIONS

B.1. Reference of approved methodology (ies)

>> Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology Version 2.0.

B.2. Applicability of methodology (ies)

>>

1. Areas shall not be on wetlands.

As verified before, the project is not located on wetlands[8].

2. Areas with organic soil shall not be drained or irrigated (except for irrigation for planting):

The plantations are located in a climate zone with average year precipitations of 2000mm. Therefore, no artificial irrigation systems are needed.

3. Soil disturbance (through ploughing, digging of pits, stump removals, infrastructure, etc.) on organic soils1shall be in less than 10% of the area that is submitted to certification (not 10% of the entire project area).

All MUs are managed in an economic, but at the same time ecologic way. Negative impacts of silvicultural operations will be minimized through the following actions:

- The accumulation of dead wood and coarse woody debris will be encouraged.
- Trees from sanitary thinning will remain in the stand to trigger nutrient recycling.
- Cutter branches from pruning operations stay on the site

[8] See folder „FAR_hydrology"

- Dead trees won´t be logged if they don´t interact with future crop trees.

Ploughing is not common in the operations. However, in case it is needed, traditional ploughing techniques can be used mainly for preparing the field before tree planting. Manual ploughing with shovels will be used. The mentioned technique will prevent soil compaction. Manual ploughing will protect different soil layers and improve soil conditions for better tree growth. After the planting period is over no more ploughing will be necessary and it will be possible to guarantee that no soil carbon emissions will occur in the long-term.

4. The most likely scenario without the project (baseline scenario) shall be defined for the project area. This scenario shall not show any significant increase of the Baseline biomass ('tree' and 'non-tree').

The land cover at the starting project is dominated by pastures and shrubs and will stay like that without intervention of the project. Most of it is abandoned rural land or land used for cattle herding as a subsistence activity. Therefore, it is not a forest at the project start.

Supporting document: TMIX16-5.1 - Template - Applicability

B.3. Project boundary

>>

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	Above Ground Biomass	CO_2	Yes	The AGB of all woody and non-woody biomass present is pastures has been accounted for.
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
	Below Ground Biomass	CO_2	Yes	The BGB of all woody and non-woody biomass present is pastures has been accounted for.
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
	Soils	CO_2	No	The project does not include disturbance of organic soils. Emissions are not expected in this compartment.

		CH_4	No	The project does not include disturbance of organic soils. Emissions are not expected in this compartment.
		N_2O	No	The project does not include disturbance of organic soils. Emissions are not expected in this compartment.
	Harvested Wood	CO_2	No	Not required
		CH_4	No	Not required
		N_2O	No	Not required
	Litter & lying dead-wood	CO_2	No	Not required
		CH_4	No	Not required
		N_2O	No	Not required
Project scenario	Above Ground Biomass	CO_2	Yes	During project cycle, trees will grow, sequester, and stock carbon on their trunk, branches and leaves.
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
	Below Ground Biomass	CO_2	Yes	While trees are growing, they will be capturing and storing carbon through their roots. Those roots will not be removed; as a result, the carbon will remain stored.
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
	Soils	CO_2	Yes	Soil carbon was included because removals from soil carbon were considered significant. The GS AR Soil Carbon tool was used.
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
	Harvested Wood	CO_2	Yes	Not required
		CH_4	No	Not required
		N_2O	No	Not required
	Litter & lying dead-wood	CO_2	Yes	Not required
		CH_4	No	Not required
		N_2O	No	Not required

B.4. Establishment and description of baseline scenario

>> The tool used for the definition of baseline was the CDM additionality tool for the demonstration of additionality. Before the project activity started, the baseline of the project area was a mix of grassland and shrubs. All these areas were evaluated and classified as applicable planting areas for reforestation activities. Other small patches of forest left were classified and since the beginning managed as conservation areas. Other areas (previously planted or due to the project activity) located on the border of a river or other watershed are also classified as conservation areas.
The applicable planting area we are only using grassland which was used in the past as pasture. We don´t remove existing forests to plant new trees. The Environmental Ministry (previously the "Autoridad Nacional del Ambiente"(ANAM), now Ministerio de Ambiente) also doesn't allow removing shrubland which is older than 5 years. For previous MUs we used the results of the pilot studies of the Panama National Inventory (2013-2015)[9] to determine the existing baseline biomass. To complement the work, we executed a survey that allowed us to classify better the MUs with a lower or higher baseline biomass. The survey determines the existence of two different scenarios:

(i) grassland pasture and

(ii) shrubland.

The values and sources for the calculations are presented the Carbon Model calculator The project use the highest baseline from scenarios, that corresponds to shrubland, with a value of 20,17 tCO2 (5,5 tC)

Abovegroung biomass= 5.437 t ha-1

Necromass= 6.308 t ha-1

[9] Source: INVENTARIO NACIONAL FORESTAL Y DE CARBONO DE PANAMÁ - Resultados de la Fase Piloto 2013-2015. https://www.un-redd.org/sites/default/files/2021-10/INFC%20-%20Resultados-FasePiloto.pdf

Supporting Documents[10]:

- Carbon Model Calculator. Tabs 1 and 1.1 Data& Sources
- Pilot Panama National Forest Pilot forestry results Source: INVENTARIO NACIONAL FORESTAL Y DE CARBONO DE PANAMÁ https://www.un-redd.org/sites/default/files/2021-10/INFC%20-%20Resultados-FasePiloto.pdf
- TMIX16-5.5 - Template – Baseline
- TMIX16-APP1-Analisis historial uso de tierras
- TMIX16-APP1.2-IC-Uso de tierras Isla Cebaco
- TMIX16-APP1.1-ST-Uso de tierras Sustainable Timbers

B.5. Demonstration of additionality

Panama has great potential for forestry and agriculture production. Banana and rice are two land-use scenarios that also present important barriers to implementation. Different agriculture commodities with robust incentives and benefits are evident and distributed in the Darién province, where the new area is located. Forestry activities are not part of the mainstream, and one of the main reasons is related to lower profitability and some activities are categorized as marginal. The carbon market is an important monetary supplement that can guarantee the financial stability of the project. The opportunity cost analysis demonstrates how forestry systems are less profitable activities compared with other activities such as maize, rice and banana plantations. However, the study also reveals that a forestry system is the second-best opportunity of investment if the sale of carbon credits is taken into consideration. The IRR analysis tested the variation of an initial investment in a climate reforestation project with an IRR of 5.5% against two benchmarks:

(i) government bond with 6.25% and
(ii) a bank investment with 6%. A sensitive analysis shows how the price of the carbon market has a positive influence on the IRR of the proposed project and therefore it is possible to prove the additionality of the project.

The new reforestation area has a greater cost-benefit potential when the sale of carbon credits is taken into account; therefore, it is the most suitable additional option compared to the others. In consequence, the new areas system has the best

[10] Folder route: 08_Performance Review 2022/PR2022_TMIX_Supporting_Documents/Carbon Model

opportunity cost compared to the other activities only when the carbon credits are considered.

Supporting Documents:

- TMIX19-ADD1-Additionality analysis

Methodology applied: United Nations Framework Convention on Climate Change; UNFCC, 2005. Tool for the demonstration and assessment of the additionality in a A/R CDM.
https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-02-v1.pdf

B.5.1 Prior Consideration
>> Only relevant for retroactive projects.

B.5.2 Ongoing Financial Need
>> Only has to be included at Design Certification Renewal.

B.6. Sustainable Development Goals (SDG) outcomes

The following table lists the SDG outcomes set with the Transition annex 2019. Some indicators of the targets 12 and 15 are considered as safeguarding principles or are not actively monitored. They are therefore excluded from the list of SDG indicators from this design document version onwards.

SUSTAINABLE DEVELOPMENT GOALS TARGETED	MOST RELEVANT SDG TARGET	SDG IMPACT **INDICATOR (PROPOSED OR SDG INDICATOR)**
13 Climate Action (mandatory)	N/A	Emissions Removals

1 No poverty	1.4: By 2030, ensure that all men and women, in particular, the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	Number of local communities benefitting from the project´s investments
8 Economic Growth	8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	- Nr. of persons on Payroll (full-time & part-time employees) - Nr. of working hours per week (m/w), including overtime - Number of training or workshops provided to the employees
12 Sustainable Consumption and Production	12.2: By 2030, achieve the sustainable management and efficient use of natural resources ~~Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment~~	12.2: Share (%) of timber volume verified and certified by FSC, and percentage of cocoa volume certified by UTZ in selected areas of the project ~~12.4~~ ~~- Air pollution avoidance shown as the number of trees planted from the project~~ ~~- Hazardous and non-hazardous sources are identified and classified as stated by FSC and Gold Standard Guidelines~~

15 Biodiversity, Forests, Desertification	~~15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally~~ Target 15.3: By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world. Target 15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	~~15.2:~~ ~~- Extension of forest (or reforested) areas~~ ~~- Availability of a long-term management plan~~ 15.3 - Areas (ha) of degraded land and soils restored in comparison with the baseline scenario 15.5: - Share (%) of conservation areas of the project area ~~- Number of observations or presence of endemic or threatened species in the project location based on the IUCN Red List~~

B.6.1 Explanation of methodological choices/approaches for estimating the SDG Impact.

>> Existing Projects that transition to GS4GG may retain their existing sustainable development monitoring plan, including indicators chosen. To do so the Project shall provide a brief and simple explanation that links the parameter already monitored to the closest, most relevant SDG Target. Therefore, and based on the Sustainability Monitoring Plan and supported by the Sustainable Development Assessment, our methodological choice/approach for estimating the SDG outcomes was to establish a linkage with the closest chosen parameters and use supporting documentation as proof of compliance.

SDG1: No Poverty - End poverty in all its forms everywhere

Target: 1.4: By 2030, ensure that all men and women, in particular, the poor and the vulnerable, have equal rights to economic resources, as well as access to basic

services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

Indicator: Number of local communities benefiting from the project´s investments

Monitoring frequency: Once (Certification period).

Approach: The local stakeholder consultation information was used as a proxy of how the project has improved local conditions, income and revenue among the local community members, and how many stakeholders are positively impacted.

Project records and reports about socio-economic impacts and benefits are used to support and confirm the information obtained through the local stakeholder consultation.

SDG 8: Decent Work and Economic Growth - Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Target: 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

Indicator: Nr. of persons on Payroll (full-time & part-time employees)

Monitoring frequency: Annually

Approach: Project participants provide a list of employees and bank excerpts showing salary payments.

Indicator: Nr. of working hours per week (m/w), including overtime

Monitoring frequency: Annually

Approach: Copies of sample contracts are provided

Indicator: Nr. of training or workshops provided to the employees

Monitoring frequency: Annually

Approach: Numbers of training/workshops provided are monitored using training records, staff register, contractor statements and employment details.

SDG 12: Responsible Consumption and Production – Ensure sustainable consumption and production patterns

Target: 12.2: By 2030, achieve the sustainable management and efficient use of natural resources

Indicator: Share (%) of timber volume verified and certified by FSC, and percentage of cocoa volume certified by UTZ in selected areas of the project

Monitoring Frequency: Annually

Approach: Review of annual volume of FSC-certified wood produced as well as UTZ certified cocoa. Inventories sheets, invoices, and supporting materials of how these materials are handled, placed and applied will be also taken into account.

SDG 13: Climate Action – Take urgent action to combat climate change and its impacts

Target: Not applicable

Indicator: Emission removals

Monitoring Frequency: Annually

Approach:

Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology (Version 2.0)

a. Permanent field plots were established using a random systematic grid over the project area.
b. Field plots are delineated by site quality strata, species and planting year.
c. Plot (tree/shrub) measurements converted to dry weight biomass through allometric formulas.
d. Plot data amalgamated by MU.
e. Above-ground dry weight converted to CO2-e as follows:
    - Dry weight to Carbon = multiply by 50%
    - Carbon to CO2-e = multiply by 3.6667 (=:44/12)
f. Above-ground biomass converted to above- and below-ground CO2-e = multiply by 1.42 (i.e. use 42% and the below-ground factor for the project area).
g. Multiply CO2-e/ha by area (ha) for each MU.
h. Calculations incorporate reductions due to Baseline and Other Emissions or special reductions due to area variations.
i. Net result is the current CO2-e Fixation over the project area.

SDG15: Life on Land - Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss

Target: 15.3: By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.
Indicator: Areas (ha) of degraded land and soils restored in comparison with the baseline scenario
Monitoring Frequency: Annually
Approach: Reforested areas, degraded land and soils restored as reported by the project participants.

Target: 15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species
Indicator: Share (%) of conservation areas of the project area
Monitoring Frequency: Annually
Approach: Protected natural ecosystems as reported by project participants via spatial data and/or management plans.

B.6.2 Data and parameters fixed ex ante

Copy the table for each piece of data and parameter; use headings to group parameter tables by SDG

SDG 13

Data/parameter	Emission reductions in tCO2-equivalents fixed ex-ante: – Baseline
Unit	Tonnes of CO2-equivalents/hectare
Description	The Baseline is the estimated carbon stock that would occur in the baseline scenario. The baseline scenario describes the activities that would occur in the absence of the proposed project.
Source of data	Scientific literature was used to determinate the existing baseline biomass. To complement the work, we executed a survey that allowed us to classify better the MUs with a lower or higher baseline biomass. The survey found out the existence of two different scenarios: (i) grassland pasture and (ii) shrubland. The values for both scenarios were extracted from the Inventario Nacional Forestal y de Carbono de Panamá. Resultados de la Fase Piloto 2013-2015. Page 28, Table 12. Pasto value.
Value(s) applied	Baseline: 20.17 tCO2/ha
Choice of data or Measurement methods and procedures	Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0.
Purpose of data	Calculation of baseline scenario
Additional comment	As stated in the Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, the baseline is not subjected to monitoring.

Data/parameter	Emission reductions in tCO2-equivalents fixed ex-ante: – Belowground tree biomass
Unit	tonnes of CO2-equivalents/hectare
Description	The belowground tree biomass is not sampled during inventory activities
Source of data	Belowground biomass was calculated from the aboveground tree biomass using a root-to-Shoot ratio, using Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0. Source data is based on several scientific studies from the trees species used in the project (Baseline)
Value(s) applied	Please refer to the carbon model for more details.
Choice of data or Measurement methods and procedures	Sample plot above-ground (dry) biomass is determined through the measurement of stem diameter and crown dimensions applied to researched-established allometrics. These calculations are then extended into broad areas (MU's). Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0.
Purpose of data	Calculation of project scenario
Additional comment	-

Data/parameter	Emission reductions in tCO2-equivalents fixed ex-ante: – Biomass Expansion Factor (BEF)
Unit	Dimensionless quantity
Description	The values were obtained using different scientific sources (see section sources from the carbon model). The values come from other forestry models and are based on trees planted in tropical regions across Latin America with similar characteristics and features as the project.
Source of data	BEF was calculated using Gold Standard Afforestation/Reforestation (A/R) GHG Emissions

	Reduction & Sequestration Methodology, Version 17 . Source data is based on several scientific studies from the trees species used in the project (Baseline) as well as different forestry models across Latin America. See carbon model for more details.
Value(s) applied	Biomass Expansion Factor (BEF): 1.5
Choice of data or Measurement methods and procedures	Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0.
Purpose of data	Calculation of project scenario
Additional comment	-

Data/parameter	Emission reductions in tCO2-equivalents fixed ex-ante: – Soil Carbon
Unit	tonnes of CO2-equivalents/hectare
Description	Projects complying with all A/R Requirements sufficient to certify their project activities with the Gold Standard may use the A/R Soil Carbon Tool in order to earn soil carbon credits with no additional monitoring required. This tool estimates the change in soil organic carbon stocks due to the planting of forests and applies to soils on planting areas only. Once a project has undergone a successful Initial Certification, VERs generated using this tool may be issued for previous vintages following a successful performance certification.
Source of data	A/R Soil Carbon Tool. Please refer to the carbon model for more information.
Value(s) applied	Soil Carbon: 0.81 tCO2/ha/year
Choice of data or Measurement methods and procedures	A/R Soil Carbon Tool (Soil Carbon) and carbon model.
Purpose of data	Calculation of project scenario
Additional comment	-

Data/parameter	Emission reductions in tCO2-equivalents fixed ex-ante: – Biomass burn
Unit	tonnes of CO2-equivalents/hectare
Description	No slash and burn techniques for soil preparation are part of the Sustainable Management Plan. Exceptions are only made in case of dangerous situations for the workers.
Source of data	10% of the baseline was deducted based on the Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0 and A/R Soil Carbon Tool. See carbon model
Value(s) applied	Biomass burn: 2.01 [tCO2 eq/ha]
Choice of data or Measurement methods and procedures	Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0. A/R Soil Carbon Tool
Purpose of data	Calculation of project scenario
Additional comment	-

Data/parameter	Emission reductions in tCO2-equivalents fixed ex-ante: – Leakage
Unit	tonnes of CO2-equivalents/hectare
Description	Leakage are emissions that occur due to a shift of activities from the inside of the project area to the outside of a project area. These shifts of activities can cause four different categories by: (a) Collection of wood (for firewood, charcoal, etc.) (b) Timber harvesting (c) Agriculture (crop cultivation, shrimp cultivation, etc.) (d) Livestock Only tree biomass affected by these activities shift shall be considered as mentioned in the Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0. No leakage considered

Source of data	See references TMIX16-APP1, TMIX16-APP2 and Leakage document template 401.13-AR-T-Leakage_TMIX_2940.docx
Value(s) applied	Leakage: 0 tCO2/ha
Choice of data or Measurement methods and procedures	Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0
Purpose of data	Calculation of leakage
Additional comment	Leakage is not subject to monitoring

Data/parameter	Emission reductions in tCO2-equivalents fixed ex-ante: – Wood density
Unit	g / cm3
Description	The wood density is the ratio between the mass of dry wood divided by its volume. The values were selected and considered as the most appropriate for the different Modelling Units that compose the project from scientific sources.
Source of data	The values were obtained using different scientific sources (see section sources from the carbon model). The values come from different forestry models and based in trees planted in tropical regions across Latin America with similar characteristics and features as the project. See carbon model.
Value(s) applied	

Specie	Wood density (g/cm³)
Anacardium excelsum	0.480
Astronium graveolens	0.860
Acacia mangium	0.530
Bombacopsis quinata	0.470
Cordia alliodora	0.500
Cedrela odorata	0.440
Dipteryx panamensis	0.790
Dalbergia retusa	1.020

	Hieronyma alchorneoides	0.723
	Inga sp.	0.580
	Khaya senegalensi	0.710
	Mix of species	0.590
	Ormosia sp.	0.610
	Sterculia apetala	0.370
	Swietenia macrophylla	0.600
	Terminalia amazonia	0.780
	Tectona grandis	0.688
	Tabebuia guayacan	1.020
	Tabebuia rosea	0.540
	Theobroma Cacao	0.420
	Vochysia guatemalensis	0.390
	Paulownia imperial	0.260
	Paulownia trifolia	0.260
	Platymiscium sp.	0.810
	Terminalia sp.	0.780
Choice of data or Measurement methods and procedures	See carbon model for reference data. Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0	
Purpose of data	Calculation of project scenario	
Additional comment	-	

B.6.3 Ex ante estimation of SDG Impact

>>

SDG 1, 8, 12 and 15

Since the expected outcomes for these SDGs are not based on calculations-numerical, no equations were applied. Instead, the ex-ante estimations were done based on the planned project activities and effects already observed in the past monitoring periods. Based on this approach, the following ex-ante estimations were fixed in the Transition Annex from 2019:

- SDG 1: 5 local communities or 1,000 people benefited directly and indirectly

- SDG 8: More than 150 people employed, working on average 40 hours per week, and at least 1 training per year conducted (training 150 employees)
- SDG 12: Around 8.32 m3 /year/ha volume of sustainable timber with timber sales up to 1025 m3 , and 34 tones cocoa verified and certified by GS, FSC and UTZ
- SDG 15: 8,478 ha of degraded lands restored and planted through A/R and Sustainable Forest Management activities. Around 5,000 ha of conservation areas

The baseline is assumed to be 0 for all four SDGs.

SDG 13

Based on the carbon calculations, ex-ante carbon projections are made for the full certification period. The growth model utilizes the Mean Annual Increment (MAI) of the corrected total volume (VT corrected) to estimate yearly changes in tCO2e at the species and MU level. Baseline emissions and leakage are subtracted from the carbon balance in the MU establishment year, while Soil Emission Reductions (Soil ER) are included for the first 20 years after establishment. The input data for these calculations is sourced from the "5. Carbon Calculations 2022" sheet. The ex-ante carbon growth projections are performed in sheet "6. Growth model".

The MAI VT corrected is calculated based on the VT corrected at the time of monitoring and the plantation age:

MAI VT corrected = VT corrected / plantation age

The following example originates from ForestFinance, MU 1, species *H. alchorneoides* (reported in "6. Growth model"):

MAI VT corrected: 171.46 / 27 = 6.35 m^3/ha/year

The MAI VT corrected is then used to calculate the MAI in carbon stored in living tree biomass using the same equation and factors outlined in step 3:

*tCO2e/ha/year = MAI VT corrected * Wood density * BEF * R-t-s * Carbon fraction * (44/12)*

The following example originates from ForestFinance, MU 1, species *H. alchorneoides* (reported in "6. Growth model"):

*tCO2e/ha/year: 6.35 * 0.7228 * 1.5 * 1.42 * 0.5 * (44/12) = 17.92 tCO2/ha/year*

In the year of MU establishment, the total tCO2e is calculated based on the area-specific tCO2e/ha/year, MU area, baseline emissions, leakage, and Soil ER:

*Total tCO2e in year 1 = (tCO2e/ha/year - Baseline emissions - Leakage - Other emissions + Soil emission reductions) * MU area*

The following example originates from ForestFinance, MU 1, species *H. alchorneoides* (reported in "6. Growth model"):

*Total tCO2e in year 1: (17.92 – 20.17 – 0 – 3.3 + 0.81) * 1.25 = (-5.9) tCO2*

In the years after MU establishment, the total tCO2e for each year (t) is calculated by adding the yearly increase in tCO2e to the total tCO2e of the previous year (t-1). For the first 20 years, Soil ER is further added:

*Total tCO2e in year t = Total tCO2e in year t-1 + (tCO2e/ha/year + Annual soil emission reductions) * MU area*

Where:

Annual soil emission reductions = 0 if t > 20 years

The following example originates from ForestFinance, MU 1, species *H. alchorneoides* (reported in "6. Growth model"):

*Total tCO2e in year 2: (-5.9) + (17.92 + 0.81) * 1.25 = 17.5 tCO2*

*Total tCO2e in year 21: 439 + (17.92 + 0) * 1.25 = 461.4 tCO2*

B.6.4 Summary of ex ante estimates of each SDG Impact

SDG 13

Detailed information can be found in the carbon models 2019 and 2023. Up until Year 24 the data corresponds to verified ex-post calculations from the GS Issuance Control Tool. The estimations from year 25 to 28 represent verified ex-post estimations, also from this tool. These numbers were used instead of the current monitoring data due to the exclusion of the areas from Sustainable Timbers, Quetzal Blue and Boca del Monte for the present monitoring period. An ex-ante estimation based on the current carbon model would highly underestimate the benefits achieved by the project.

YEAR	Baseline estimate (tCO2/ha)	PROJECT ESTIMATE	NET BENEFIT (cumulative)
Year 1 (1995)	20.17	See carbon model 2019/ Issuance Contol Tool for MU level data (project estimate and baseline are not accumulated to project level in the calculations)	-60
Year 2	20.17		481
Year 2	20.17		943
Year 4	20.17		1,903
Year 5	20.17		3,474
6	20.17		5,567
7	20.17		7,716
8	20.17		11,046
9	20.17		14,640
10	20.17		18,646
11 (2005)	20.17		27,472
12	20.17		44,000
13	20.17		76,000
14	20.17		158,209
15	20.17		293,770
16	20.17		491,185
17	20.17		726,563
18	20.17		979,842
19	20.17		1,245,136
20	20.17		1,516,318

21 (2015)	20.17	1,792,811
22	20.17	2,074,634
23	20.17	2,357,020
24 (2018, end of previous monitoring period)	20.17	2,639,385
25	20.17	2,846,038
26	20.17	3,121,636
27	20.17	3,397,233
28	20.17	3,672,830
29 (2022, current verification)	20.17	3,948,427
30 (2024)	20.17	4,224,025
Total		4,224,025
Total number of crediting years	30	
Annual average over the crediting period	20.17 tCO_2e/ha/year	140,800

SDG 1

For the additional SDGs, a yearly split cannot be reconstructed due to the age of the project. Therefore, only the yearly average is given.

Year	Baseline estimate	Project estimate	Net benefit
Annual average	0	5 local communities benefitting directly and indirectly	5 local communities benefitting directly and indirectly

SDG 8

Year	Baseline estimate	Project estimate	Net benefit

Annual average	0	- More than 150 people on payroll - working on average 40 hours per week, and - at least 1 training per year conducted (training 150 employees)	- More than 150 people on payroll - working on average 40 hours per week, and - at least 1 training per year conducted (training 150 employees)

SDG 12

Year	Baseline estimate	Project estimate	Net benefit
Annual average	0	100 % certified products (Around 8.32 m^3 /year/ha volume of sustainable timber with timber sales up to 1025 m^3, and 34 t cocoa verified and certified by GS, FSC and UTZ)	100 % certified products (Around 8.32 m^3 /year/ha volume of sustainable timber with timber sales up to 1025 m^3 , and 34 t cocoa verified and certified by GS, FSC and UTZ)

SDG 15

Year	Baseline estimate	Project estimate	Net benefit
Annual average	0	- 8,478 ha of degraded lands restored and planted through A/R and Sustainable Forest Management activities. - 30 % (around 5,000 ha) of conservation areas	- 8,478 ha of degraded lands restored and planted through A/R and Sustainable Forest Management activities. - 30 % (around 5,000 ha) of conservation areas

B.7. Monitoring plan

B.7.1 Data and parameters to be monitored

The following Monitoring items are as presented in Project Developer's 2014 Certification Audit (i.e. Sustainability Monitoring Plan template)[11]. The SDG monitoring tables were modified to meet the more structured approach of the present PDD template.

SDG 1

Data/parameter	Number of local communities benefiting from the project´s investments
Unit	Number
Description	Local communities positively impacted by the project activities; i.e. by increase employment opportunities, investments in to infrastructue and education, etc.
Source of data	Initial stakeholder consultation
Value(s) applied	5 communities
Measurement methods and procedures	Initial stakeholder consultation
Monitoring frequency	Crediting period
QA/QC procedures	Stakeholder consultation guidelines
Purpose of data	Calculation of project scenario
Additional comment	-

SDG 8

Data / Parameter	Nr. of persons on Payroll (full-time & part-time employees)
Unit	Number
Description	Monitor employment generated by project, divided according to company, type of contract and gender of employee
Source of data	List of employees provided by participants and payroll
Value(s) applied	Status Quo 2022 (FOFI & EC: 101
Measurement methods and procedures	See source of data. No further procedures.

[11] "gs2940_GS2940 - Sustainability Monitoring Plan 2019"

Monitoring frequency	Annual basis
QA/QC procedures	Employment contracts checked
Purpose of data	Calculation of project scenario
Additional comment	-

Data / Parameter	Nr. of working hours per week (m/w), including overtime
Unit	Number
Description	Monitor employment generated by project
Source of data	Sample contracts
Value(s) applied	Status Quo 2022: 48 hours
Measurement methods and procedures	See source of data. No further procedures.
Monitoring frequency	Annual basis
QA/QC procedures	Employment contracts checked
Purpose of data	Calculation of project scenario
Additional comment	-

Data / Parameter	Nr. of training or workshops provided to the employees
Unit	Number
Description	Assess opportunities for professional development of workers
Source of data	List of workshops provided by participants
Value(s) applied	Status Quo 2022: Averagely 3 per year by FOFI, 0 by EC
Measurement methods and procedures	See source of data. No further procedures.
Monitoring frequency	Annual basis
QA/QC procedures	-
Purpose of data	Calculation of project scenario
Additional comment	-

SDG 12

Data / Parameter	Share of timber volume verified and certified by FSC, and percentage of cocoa volume certified by UTZ in selected areas of the project
Unit	%
Description	Show type and number of sustainability certification schemes that act as a catalyst bringing economic benefits by opening new markets and customer base diversification
Source of data	- Project Developer´s records and customer records - ANARAP Membership from Forest Finance and Sustainable Timber: https://anarap.com/miembros/ - Certification documentation
Value(s) applied	Status Quo 2022: 100%
Measurement methods and procedures	Project participants' documentation
Monitoring frequency	Annual basis.
QA/QC procedures	FSC and UTZ standard certifications principles and criteria (Guidelines)
Purpose of data	Calculation of project scenario
Additional comment	-

SDG 13

Data / Parameter	Associated chosen parameters: - Compensation of project emissions- Emission reductions in tCO2 eq - Aboveground tree biomass
Unit	Tonnes of CO2-equivalents/hectare, [tCO2eq/ha]
Description	Aboveground tree biomass is calculated using the stem volume, the Biomass Expansion Factor (BEF), carbon fraction and C to CO2 factor. Data was collected from different scientific studies for each tree species existing inside the project eligible area. The Mean Annual Increment (MAI) and Total Steam Volume (m^3) for each

	species was used to estimate the amount of tCO2eq according to the project activities.
Source of data	Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0 . Source data is based on several scientific studies from the trees species used in the project (Baseline). MRV specific data is provided from each MU and it is compared to the original scientific data basis. See the carbon model for more information.
Value(s) applied	Please refer to the carbon model for more details.
Measurement methods and procedures	Sample plot above-ground (dry) biomass is determined through the measurement of stem diameter and crown dimensions applied to researched-established allometrics. These calculations are then extended into broad areas (MU's). Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0.
Monitoring frequency	Annual basis. Crediting period
QA/QC procedures	Monitoring, Verification and Reporting (MRV) system from all Management Units (MUs) older than 3 years, Mirasilv software, GIS database from the project, Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0
Purpose of data	Calculation of project scenario
Additional comment	-

Data / Parameter	Associated chosen parameters: - Compensation of project emissions- Emission reductions in tCO2 eq - Other emissions
Unit	Tonnes of CO2-equivalents/hectare, [tCO2/ha]
Description	Emissions that result from the use of fertilizers during project activities. Fertilizer 0.005 tCO2 per kg of nitrogen (N) fertilizer shall be deducted. No differentiation is made between synthetic and organic

	fertilizer. An average is used per hectare for any fertilization taking place in the first 5 years. A conservative approach was used. This value was applied to all the MUs.
Source of data	Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0. Source data is based on several scientific studies from the trees species used in the project (Baseline).
Value(s) applied	Other emissions: 3.3 [tCO2/ha]
Measurement methods and procedures	These calculations are then extended into broad areas (MU's). Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0. A/R Soil Carbon Calculation Tool
Monitoring frequency	Annual basis. Crediting period
QA/QC procedures	FSC and UTZ standard certifications principles and criteria. For other MUs, the annual amount of fertilizer used submitted in annual reports or records.
Purpose of data	Calculation of project scenario
Additional comment	---

Data / Parameter	Associated chosen parameters: - Compensation of project emissions- Emission reductions in tCO2 eq - Productive area
Unit	Hectares, (ha)
Description	Productive area is considered as the eligible area where tree planting (or related actions) activities takes place and that meets the applicability conditions of the applied Gold Standard Methodology.
Source of data	- Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0. - Company mapping of properties.
Value(s) applied	8,478 ha

Measurement methods and procedures	- Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2.0. - Gold Standard Land-use & Forests Activity Requirements as applicable to A/R Projects in addition to the requirements stipulated in the Principles and Requirements
Monitoring frequency	Annual basis. Crediting period
QA/QC procedures	Remote sensing (mapping location accuracy, GIS files), establishment of land tenure arrangements (legal contracts), cadastral mapping and land consolidation procedures.
Purpose of data	Calculation of project scenario
Additional comment	Also relevant for SDG 15

SDG 15

Data / Parameter	Share of conservation areas of the project area
Unit	%
Description	Conservation areas (also called "protected" areas)
Source of data	Mapping
Value(s) applied	26 % of the project area
Measurement methods and procedures	GIS database and remote sensing assessment.
Monitoring frequency	Annual
QA/QC procedures	Verification of shapefiles with project participants and recent satellite imagery
Purpose of data	Calculation of project scenario
Additional comment	-

B.7.2 Sampling plan

>>

SDG 1, 8, 12 and 15

No sampling approach, but full observations.

SDG 13

Sampling and basic tree measurements

In the CO2OL Tropical MIX project sampling is usually done by measuring trees (or plots of trees) situated systematically throughout the plantation, covering the various site factors (e.g. lower slopes, mid slopes and upper slopes) and the different species planted. The easiest method is to take transects (lines) at regular intervals throughout the stand, with plots situated at a pre-determined distance along each transect. Each transect is normally done on a compass bearing. This takes away the bias factor, where there is often a tendency to measure only the best trees or areas in a stand and ignores the areas of poor growth or low stocking (TMIX22-SFM1-Sustainable Forest Management Plan). The basic tree measurements to be consider include:

Tree Diameter: Are normally measured at breast height (dbh), which should always be 1.3m above ground level (always ensure your measuring crew measure where 1.3m is on themselves as people differ in height).

Tree height: To calculate tree (and stand volumes) accurately, tree height must also be measured. Tree height at a given age is also an important indication of site quality for a species. There are two main measurements of individual tree height, namely total height which is the vertical distance from the base to the tip of the tree, and secondly, timber height, which is the height from the base to a specified minimum stem diameter (often around 7cm). Mean height refers to the mean total height of a stand and is assessed by taking the heights of trees randomly selected, irrespective of diameter, throughout the stand. The commercial height is the height measured until the crown starts. It is the length of the stem which can be used for commercial sawn wood.

Tree Volume:

- Basal Area: The basal area (BA) of an individual tree is the cross-sectional area of a tree at 1.3m. BA is calculated from:

$$BA \text{ (in } m^2) = (\pi \times dbh^2) \div 40\,000$$

Where dbh is measured in cm. and π = 3.142. The BA of a stand is the sum of the BAs of all the trees in the stand. The usual way of estimating stand BA, however, is to measure the dbh of trees in sample plots throughout the stand and then scale this up.

- Total tree volume: Tree volume is a function of total tree height and basal area. A rough estimate of tree volume can be obtained from the following formula:

$$\text{Total Tree vol. (in } m^3\text{)} = \text{Total ht. x BA x FF}$$

Where FF = Form Factor.

- Commercial Volume: Instead of the total tree height, the commercial height will be used to calculate the volume of the timber which can be used for sawn wood.

$$\text{Commercial Volume (in } m^3\text{)} = \text{Commercial ht x BA x FF}$$

Where FF = Form Factor.

- Stand Volume: The value that is of utmost interest to the forest owner (or investor) is stand volume. The maximum volume for a given species on a given site is determined not only by silviculture but also by age. To calculate stand volume, an average tree volume is calculated which is then converted into an average volume per hectare by multiplying by the mean number of trees in each sample plot. The standing volume of the stand is estimated by multiplying the average volume per hectare by the stand's area.

Forest Inventory

Forest inventories within the project area where design:

- To provide information for long-term planning.
- To provide data for immediate decisions on felling and thinning programs.
- For valuation purposes.

For the CO2OL Tropical Mix project the most common form of continuous forest inventory is used, which are Permanent Sample Plots (PSPs). These are located throughout the plantations and re-measured at regular intervals. The objective is:

- To provide information on stand growth for the efficient management of the forest.
- To estimate the potential productivity of the site.
- To quantify the effects of silvicultural treatment on growth and yield.
- To monitor changes in site productivity over successive rotations of tree crops.

Sample plots are normally circular with a radius: 12.6m (= 0.05 ha) for monitoring the project area and for their establishment a team of 4 people are usually needed, including the 'Booker' who oversees the operation. EcoCebaco and Sustainable Timbers use only circular plots, while ForestFinance has a mix of circular and rectangular sample plots. In the specific case of Quetzal Blue, from 2020 on top of the circular plots, rectangular plots that include the already existing circular plots were added. These new plots had an area of 0.1237 ha and were included to ensure enough space to contain 20 remaining trees at the end of the rotation, which means a goal of approximately 200 trees per hectare at the time of clear cutting.

Each plot should be big enough to include 15-25 trees and their exact location must be recorded with a GPS device and clearly marked on a large-scale map. All trees within the plot boundary should be marked with permanent enamel paint at 1.3m height. All trees must be carefully checked from the center post, to ensure that they are within the plot. The trees should be counted (and marked) in a sweep from the North in a clockwise direction. As soon as the trees in the PSP are large enough, numbers should be painted onto their stems, with tree number 1 being the one closest to the center (for circular parcels). Numbered, metal tags are sometimes used instead of paint (though the disadvantage of such tags is that they must be nailed onto the trees and are often stolen).

Trees should be measured in order – sweeping from the North. The Booker must stand behind the center-post and direct which order the trees are measured in. When two trees are in line, the closer one is measured first. All DBHs are measured preferably with non-rounded-down DBH tapes.

If a PSP is being re-measured, it is advisable to have the data on hand from the previous measurement. In this way, problems can be picked up immediately (e.g. if more trees than before are recorded or if a tree has appeared to have reduced in dbh). Any other

observations on tree conditions should be recorded at the time of measuring PSPs, for example, relating to tree health.

B.7.3 Other elements of monitoring plan

>>

Quality Assurance for data archiving

Due to the long-term nature of PSPs, it is essential that the data is stored both on paper and digitally. PSPs should be re-measured at least every two years. The measurement data has to be recorded on paper or digitally. The final results must be presented digitally on sheets containing all the farms and PSPs without spacing between the lines but numbered by their continuous ID. Dead or harvested trees will be presented by their Tree ID but without values for diameter and height. Copies of all data analyses and models, any GIS files, maps and copies of all measuring and monitoring reports should be stored in a dedicated and safe place.

Before further processing, the forest developer checks the delivered forestry inventories for logical errors and unrealistic numbers to avoid any under- or overestimations in the carbon model.

SECTION C. DURATION AND CREDITING PERIOD

C.1. Duration of project

C.1.1 Start date of project

>> Planting started on 01/09/1995, which is the official start date of the project.

C.1.2 Expected operational lifetime of project

>> The crediting period of the carbon project consisting of selective harvesting is 30 years. However, the different project participants have their own plans with the planted areas after the end of the crediting period. For Forest Finance and EcoCebaco, the project was the basis for the creation of a long-term rotation forestry project, with rotations of 25 to 50 years (depending on the timber market conditions) and no envisioned end-date. Sustainable Timbers intends to harvest large areas after the end of the crediting period.

C.2. Crediting period of project

C.2.1 Start date of crediting period

>> 01/09/1995

C.2.2 Total length of crediting period

>> 30 years, until 31/12/2024

SECTION D. SUMMARY OF SAFEGUARDING PRINCIPLES AND GENDER SENSITIVE ASSESSMENT

D.1 Safeguarding Principles that will be monitored

A completed Safeguarding Principles Assessment is in Appendix 1, ongoing monitoring is summarised below.

PRINCIPLES	MITIGATION MEASURES ADDED TO THE MONITORING PLAN
7.2 Energy Supply	Energy usage
9.1 Landscape Modification	Management guidelines; Impact assessments
9.6 Pesticides & Fertilizers	Management guidelines; Reports of Agrochemical use
9.7 Harvesting of Forests	Management guidelines; Forest Management Plans and Harvesting Reports

D.2. Assessment that project complies with GS4GG Gender Sensitive requirements

Question 1 - Explain how the project reflects the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy?	See safeguarding principles, principle 2: Women and men have equal access and rights in the project. Marital status is not relevant for employment. Women take over leading roles in the project. The number of field workers that are male is clearly higher than female due to the physical work, but on the other hand, more women are employed in the tree nursery and administrational entities.

Question 2 - Explain how the project aligns with existing country policies, strategies and best practices	"Panama is a country where women have been protagonists and propellers of the development of a plural and diverse nation, loving and respectful of peace and human rights." Further, the country committed to eradicate violence against women. This is in line with the project, where zero violence is tolerated. https://www.unwomen.org/en/get-involved/step-it-up/commitments/panama
Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?	No, since gender equality is not an issue in the project
Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?	No, there is and were never issues with women's participation in stakeholder consultations

SECTION E. SUMMARY OF LOCAL STAKEHOLDER CONSULTATION

The below is a summary of the 2 step GS4GG Consultation for monitoring purposes. Please refer to the separate Stakeholder Consultation Report for a complete report on the initial consultation and stakeholder feedback round.

The project has a historical tracking of more than 20 years, therefore the amount of existing stakeholders involved in this successful project is extensive and diverse. There are regional, national and international stakeholders and also NGOs, private, governmental stakeholders that had actively participate in the project implementation.

No records of the original Stakeholder consultation exist, but at a renewed consultation for the transition of the project to the Gold Standard Version 0.9 in 2016 the consensus was that the project is still in the stakeholder's interest and all concerns are well addressed by safeguards and mitigation measures.

In 2019, students from the McGill University from Canada conducted an additional stakeholder consultation around the areas of Forest Finance to explore the perception of local stakeholders of the project and its impacts.

Supporting documents:

- Stakeholder consultation report 2016 "TMIX16-3.2 - Template - Local Stakeholder Consultation".pdf
- TMIX19_Resumen de comentarios de los Stakeholders 2019.pdf
- Informe Socio-economico 2020 QB FINAL.pdf
- Informe Socio-economico 2020 ST FINAL.pdf

E.1 Summary of stakeholder mitigation measures

>> No concerns were raised by stakeholders and no mitigation measures agreed to be monitored.

Any doubts regarding the social impact of the project are covered in Appendix 1.

E.2 Final continuous input / grievance mechanism

METHOD	INCLUDE ALL DETAILS OF CHOSEN METHOD (S) SO THAT THEY MAY BE UNDERSTOOD AND, WHERE RELEVANT, USED BY READERS.
Continuous Input / Grievance Expression Process Book (mandatory)	(+507) 317-1251 / yaels.camacho@forestfinance.com (for country wide/ international grievances)
GS Contact (mandatory)	help@goldstandard.org
Other	

APPENDIX 1 - SAFEGUARDING PRINCIPLES ASSESSMENT

Complete the Assessment below and copy all Mitigation Measures for each Principle into SECTION D above. Please refer to the instructions in the Guide to Completing this Form.

Assessment Questions/ Requirements	Justification of Relevance (Yes/potentially/no)	How Project will achieve Requirements through design, management or risk mitigation.	Mitigation Measures added to the Monitoring Plan (if required)
Principle 1. Human Rights			
1. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights	1. & 2. No: During the construction and operation of the project, the project proponent respected and respects all human rights. The project is not in any kind of conflict with the livelihood of local people. Project proponent had conducted stakeholder's consultation and sought their opinion. The project adheres to the host country´s commitment and ratification to The Universal Declaration of Human Rights (UDHR), the International Covenant on Economic, Social and		

2. The Project shall not discriminate with regards to participation and inclusion	Cultural Rights (accession 08.03.77), International Covenant on Civil and Political Rights (Accession 08.03.77). The project will not employ any personnel based on gender, race, religion, sexual orientation or any other basis. As the Constitution of the host country prohibits discrimination on the basis of a person's race, sex, religion, place of birth, disability, political affiliation or social status. The host country has also ratified the eight fundamental Conventions of the Not required 101.5 Transition Annex Page 23 of 56 International Labour Organization and has set up an ILO declaration[12]		
Principle 2. Gender Equality			
1. The Project shall not directly or indirectly	• **1. No:** Participation in the project is 100% voluntary. Any attempt of	2.	

[12] https://www.ilo.org/wcmsp5/groups/public/@ed_norm/@relconf/documents/meetingdocument/wcms_646373.pdf

lead to/contribute to adverse impacts on gender equality and/or the situation of women 2. Projects shall apply the principles of nondiscrimination, equal treatment, and equal pay for equal work 3. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks 4. (where required) Summary of opinions and recommendations of an Expert Stakeholder(s)	sexual harassment is forbidden and didn't happen until now. • The project is not involved in slavery, imprisonment, physical and mental drudgery, punishment or coercion of women and girls. • The Project will not restrict women´s rights or access to resources (natural or economic). • Marital status is completely irrelevant to the Project. The project recognizes women´s ownership rights regardless of marital status. Women´s views of the project are valued and considered 2. Yes 3. Yes 4. No	• The Project has equal opportunity for women and men • The project takes into account participation by both men and women. Work categories (paid, volunteer work or community contributions) are registered and listed as well as the individuals whom take part of these activities. • There is no limit on the access to Project participation and benefits from either of these conditions. Capacity building is one of many activities provided regardless of gender and promotes full participation of women and men. Other benefits based on pregnancy, maternity/paternity leave or marital status is aligned to the National Law providing regular long-term work and assistance for each situation. • There are no such conditions that limit the access of women or men to project participation and benefits. 3. The project is aligned with Panama`s strategy for elimination of all discrimination. Panama has ratified the International Convention on the Elimination of All Forms of Racial Discrimination (16.08.67) and the	

		Convention on the Elimination of All Forms of Discrimination against Women (29.10.81). At national level, the project is also aligned with the Gender Action Plan 2016-2019, National Gender and Health Plan 2015-2019 and the National Strategic Plan with State Vision Panama 2030 (PEN 2030)[13].	
Principle 3. Community Health, Safety and Working Conditions			
1. The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community	No: The project is in compliance with all relevant local and national laws. The Project does not threaten human health or the environment and does not adversely affect the health of the workers and the community.		
Principle 4.1 Sites of Cultural and Historical Heritage			
Does the Project Area include sites, structures, or objects with historical,	**No:** The project does not change, damage or remove any cultural heritage. Compliance with		

[13] Source: http://www.pa.undp.org/content/panama/es/home/library/poverty/plan-estrategico-nacional-con-vision-de-estado-2030.html

cultural, artistic, traditional or religious values or intangible forms of culture? >>	Panama´s commitment to International Covenant on Economic, Social and Cultural Rights (08.03.77) ensures no damage to critical cultural heritage. As per the list of cultural heritage sites in Panama[14] by UNESCO, it is clear that the project site is not a cultural heritage site.		
Principle 4.2 Forced Eviction and Displacement			
Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)? >>	**No:** The project is not involved and is not complicit in involuntary resettlement or relocation of peoples in any way. The Project Developer has also obtained all necessary land titles and legal documentation approval. The project is located in private land and bought from another private owner. See the Forestry Register ANAM (can be observed upon request).		

[14] Source: http://whc.unesco.org/en/statesparties/pa

Principle 4.3 Land Tenure and Other Rights			
a. Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership? b. For Projects involving land use tenure, are there any uncertainties with regards to land tenure, access rights, usage rights or land ownership? >>	No: a. The project has all the legal, customary rights on the land and does not require any change to land tenure arrangements. Please see: - TMIX19_SustainableTimber_Informe FSC 2018.pdf "La empresa es dueña de todas las UMFs, se pudieron evidenciar los títulos de tierra de las UMFs que están comprometida a largo plazo con los P&C del FSC como indicado en los planes de manejo". -TMIX19_Copia de ES-UTZ-Code-of-Conduct-Checklist-Individuals-v1 (version 1) nn.xlsx, Section I.A.2 - TMIX14-SFM8-Report_COI_FSC.pdf. Section C2.1 - TMIX16-APP1-Analisis historial uso de tierras.pdf b. This is not applicable, as the project does not require any changes to land tenure arrangements.		
Principle 4.4 - Indigenous people			

Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?	No: The project is not located on land/territory claimed by any indigenous peoples. [15]		
>>			
Principle 5. Corruption			
1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	No: The proponent confirms that there is no corruption involved in the project activity. Panama ranked 93th out of 180 countries and territories surveyed in Transparency International's 2018 Corruption Perceptions Index (Transparency International 2018)[16]. The project abides by the United Nations Convention against		

[15] See folder "Social"

[16] Source: https://www.transparency.org/cpi2018

	Corruption. Panama ratification was made the 23.09.05[17].		
Principle 6.1 Labour Rights			
• The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions • Workers shall be able to establish and join labour organisations • Working agreements with all individual workers shall be	Yes	1. The proponent assures that there will be no bonded or forced labour. A uniform policy will be and is implemented for all employees. The host country has robust laws in place prohibiting forced and compulsory labour. The project is aligned with ILO. Panama ratified the ILO Fundamental Convention - Forced Labour Convention, 1930 (No.29)[18]-. ILO principles are included in the management policies of the companies. The workers are aware of the principles. All workers have legal contracts, are affiliated to social security, no child work in any kind, safe processes and working hours are established. The Ministry of Work and Labour Development (MITRADEL)[19] is responsible for the compliance of these aspects.	

[17] Source: https://www.unodc.org/unodc/en/corruption/ratification-status.html

[18] Source: Information System of International Labour Standards, Country Profile, Panama. Available at: https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:1:0::NO:::

[19] Source: https://www.mitradel.gob.pa/

documented and implemented and include: a) Working hours (must not exceed 48 hours per week on a regular basis), AND b) Duties and tasks, AND c) Remuneration (must include provision for payment of overtime), AND d) Modalities on health insurance, AND e) Modalities on termination of the contract with provision for voluntary		2. The proponent confirms that all the fundamental rights of the employees will be respected. Panama has no Forestry Labour organization. The project approves a Labour organization; however, the workers don't see it necessary due to good communication. Article 68 of Panama`s Constitution recognizes the right to organize for employers, employees and professionals of all kinds for the purposes of their economic and social activity[20]. 3. Working agreements with all individual workers are documented and implemented. All workers have legal contracts and their respective social security identification. The Ministry of Work and Labour Development	

[20] Source: http://www.unesco.org/culture/natlaws/media/pdf/panama/pan_constpol_04_spaorof

resignation by employee, AND f) Provision for annual leave of not less than 10 days per year, not including sick and casual leave. ○ No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion) ○ The Project Developer shall ensure the use of appropriate equipment, training of		(MITRADEL) is responsible for the compliance of these aspects. See documents: – TMIX19_Copia de DetallePlanilla-40638933 feb 19(14100).xlsx – TMIX19_Pago de Caja de Seguro Social.pdf – TMIX19_contratos de trabajadores – TMIX22_EJEMPLO Contrato de Roger E. Gallardo 4. Child labour is strictly prohibited in the country as stated in the constitution and as ratified in the Convention on the Rights of the Child (12.12.90)[21]. The proponent assures that no child labour will be employed. The project proponent has a set mechanism to ensure the age of all the temporary/ permanent employees during the lifetime of the project.	

[21] Source: https://tbinternet.ohchr.org/_layouts/TreatyBodyExternal/Treaty.aspx?CountryID=133&Lang=EN

workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures		5. Workers receive annual training to guarantee quality and security during operations. See documents: -TMIX19_H. postural.pdf -TMIX19_Induccion de Seguridad.docqqq.pdf -TMIX19_Lijado y Acabado.pdf -TMIX19_Protección Respiratoria.pdf -TMIX19_Seguridad Personal.pdf	
Principle 6.2 Negative Economic Consequences			
○ Does the project cause negative economic consequences during and after project implementation?	No: Financial sustainability of the project has been discussed in the registered PDD. The calculations are for the entire lifetime of the project. The project activities consist of building up a sustainable economy based on timber and cocoa production. There are no negative economic impacts or potential risks to the local economy due to the project activity. See document:		
>>			

	- TMIX22_Informe Socio-economico 2020 ST FINAL(1)		
Principle 7.1 Emissions			
Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The project does not lead to any greenhouse gas emissions over the Baseline Scenario.	
>>			
Principle 7.2 Energy Supply			
Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	Yes: The project uses energy from a local grid and rarely fuelwood.	The project uses a very limited amount of energy and installed solar panels for activities such as production and post-harvesting cocoa within the UTZ certification framework. Fuelwood and electricity are controlled, reported and monitored. Measures are taken to improve energy efficiency, not only for cocoa activities but also for communal and living areas. The project also contributes to the local infrastructure maintenance e.g. roads to facilitate the access of governmental energy providers and its installations for local communities. See documents:	Energy use reports
>> 3.7.2 The Project shall not affect the availability and reliability of energy supply to other users.			

		– TMIX19_gastos de electricidad uso de la leña – TMIX19_Resumen de comentarios de los Skateholders 2019.pdf	
Principle 8.1 Impact on Natural Water Patterns/Flows			
Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	The project will not affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s). All water resources are conserved, protected and mapped. The project will use ground-water in a natural way (root system of the mixed plantations) but will not affect negative natural or pre-existing pattern of watercourses, ground-water and/or watersheds. Harvesting rainwater is promoted and implemented for different operations such as irrigation. Project locations areas were assessed using the Aqueduct 3.0 Country Rankings[22] datasets to examine the water stress or scarcity as	
>>			

[22] Aqueduct 3.0 Country Rankings. Available at: https://www.wri.org/resources/data-sets/aqueduct-30-country-rankings. For further details please refer to: https://github.com/rutgerhofste/aqueduct30_country_rankings_data_download/blob/master/metadata.md

		suggested by the standard. At the country level, Panama is ranked in position 136. Here, water stress scores ranked from 1 (highest water stress score) to 165 (lowest water stress score). The analysis also shows the baseline water stress that measures the ratio of total water withdrawals to available renewable surface and groundwater supplies. All of the provinces such as Veraguas, Bocas del Toro, Chiriquí and Darien are categorized as Low (<10%). As stated in the management plans, "Under no circumstances, soils that exhibit surface waterlogging will be planted". "As well, no measures will be taken to increase the planting area artificially through for example drainage or other measures where the water level is influenced or soil is moved to level the planting area". Other mitigation/adaptation actions and capacity buildings have been deployed addressing water usage and its efficiency under climate change scenarios. In addition, staff and forest service providers received profound training in case of flooding or any extreme natural events. Several risk assessments considered flooding and water shortages within their analysis and the respective countermeasures.	

		See documents: • TMIX19_Managementplan ForestFinance_28082012[1].pdf • TMIX19_Guía sobre uso del agua.zip\Guía sobre uso del agua • TMIX19_Uso de agua vivero riego • TMIX19_medidas de mitigacion cambio climatico.docx • TMIX19_control de capacitaciones y donaciones • TMIX19_ lista de capacitaciones 2018-actualizado.xlsx • TMIX19_ Análisis de riesgo-UTZ-2018.xlsx	
Principle 8.2 Erosion and/or Water Body Instability			
a. Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion? b. Is the Project's area of influence susceptible to excessive erosion	No	1. The project activity directly protects soil and reduces erosion by developing a diverse, multi-layered forest structure using principal site adapted native tree species, maintaining an effective soil cover that reduces erosion and supplies the soil with plenty of organic material. The vegetation management system in the lower canopy of the plantation is another	

and/or water body instability?		measure that has been adopted to allow spontaneous regeneration and increase coverage with pioneering species that help to recycle nutrients and reduce soil exposure to climatic effects that can cause erosion. Species are planted to help control erosion along natural channels or drains that require it to favour the practice of soil conservation. The most frequent species are the genera Miconia, Cassia, Xylopia, Cordia, Cecropia, Genipa among others, which are dispersed in the canopy as saplings and low latizales (with less than 10 cm in diameter at chest height, 1.30 m). As mentioned in the management plans, "Areas that are susceptible to erosion, like steep slopes with more than 60% inclination, require a special erosion plan that has to be presented to the management staff". Erosion is one of the main elements that are monitored on an annual basis. Biophysical effects off-site are also monitored such as sedimentation on water resources, presence of erosion, crop affectation (by effects on or on fertility). For instance, a non-tree creeping species was introduced to control erosion; the species is recommended by the authorities for this	
>>			

		purpose, and monitoring showed that the species does not have significant environmental impacts. In a similar manner, planting cover species such as forage peanuts (maní forrajero in Spanish) has been used to prevent erosion on steep sites devoid of vegetation. Additional efforts for silvicultural operations such as the extraction and skid-roads that have to be covered with biomass from the felled trees (branches and other parts of the crown) to reduce negative impacts on the soil such as erosion and/or compaction. Environmental Monitoring results on HCVs sites use as an indicator of erosion control and landslides. See documents: • TMIX16-MAP1-Land SAT.docx • TMIX19_SustainableTimber_Informe FSC 2018.pdf • TMIX19_Managementplan ForestFinance_28082012[1].pdf • TMIX19_Resultados del Monitoreo Ambiental_Sitio BAVC_Los Monos 2017.pdf	

		• TMIX19_RESUMEN PÚBLICO_2019 ver. final_16.04.2019.pdf • TMIX19_Research of the CO2OL Tropical Mix Project.pdf 2. Not applicable. However, the project area is not susceptible to excessive erosion or water body instability.	
Principle 9.1 Landscape Modification and Soil			
Does the Project involve the use of land and soil for production of crops or other products?	Yes	The project enhances the role of tropical forest plantations as components of multi-functional landscapes that contribute to native biodiversity conservation and restoration at different scales. The project through reforestation with FSC and UTZ certification schemes promotes biodiversity and creates new, near-natural secondary forests in the long term. The ecological benefit is far greater compared to monocultures due to the reforestation in mixed culture is implemented with predominantly native tree species. Only degraded areas such as fallow former cattle pastures, which would not naturally regenerate into a forest system, are afforested. Permanent Sample Plots is the most common form of continuous forest inventory and are located throughout the plantations and re-	Monitored in annual reports in form of FSC certification
>> 3.9.1 The Project shall identify the functions and services provided by the landscape and demonstrate no net degradation in existing landscape function and services. 3.9.2 To ensure healthy soils the following aspects shall be identified, and appropriate measures shall be put in place to protect them:			

(a) Soil types, AND (b) Biota, AND (c) Erosion 3.9.3 Measures shall be incorporated to minimise soil degradation (e.g., through crop rotation, composting, no use of heavy machinery, use of N-fixing plants, reduced tillage, no use of ecologically harmful substances). 3.9.4 Projects that involve the production, harvesting, and/or management of living natural resources by small-scale landholders and/or local communities shall adopt the appropriate and culturally sensitive sustainable resource management practices.		measured at regular intervals to monitor changes in site productivity over successive rotations of tree crops. Soil requirements for each tree species have been researched and assessed as part of the Soil Guidelines with multiple criteria worth to mention: a. Topography or relief b. Presence of natural boundaries such as rivers c. Type of vegetation or crops present and their age. d. Type of special handling receiving section (drip irrigation, fertilization, pruning time, etc. e. Soil pint on each sampling unit Other features are also contemplated that contribute to refine soil management measures depending on soil colour, texture, type of soil, presence of erosion or compaction, etc. See documents: • TMIX22_Managementplan_ForestFinance_updated version_20220413_FOFIPA.pdf • TMIX22_INFORME DE IMPACTOS EN EL PAISAJE DE LOS PROYECTOS DE FOREST FINANCE PANAMÁ.pdf • TMIX22_FSC_Report_ST_QB	

Principle 9.2 Vulnerability to Natural Disaster			
Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions? >>	No: The Project will not be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions. FSC and UTZ certificates, as well as all management plans, have a component about how to address and respond to natural disasters or the most common ones in the local area. Mitigation actions, monitoring plans and capacity building compose the whole Action Plan of each company. See: - TMIX19_1. tarjeta de emergencia - TMIX19_INFORME EVENTO ESPECIAL BOCA DEL MONTE.pdf - TMIX19_nálisis de riesgo-UTZ-2018.xlsx - TMIX19_prevencion y control incendios Meteti 2019.docx	-	
Principle 9.3 Genetic Resources			

Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?	No: The project does not have any impact on the use of genetically modified organisms or GMOs		
>>			
Principle 9.4 Release of pollutants			
Could the Project potentially result in the release of pollutants to the environment?	No: The project does not lead to the release of any pollutants to the environment. See: - TMIX19_ANALISIS DE AGUA - TMIX19_muestra de suelo y foliar - TMIX19_ gastos de electricidad uso de la leña - TMIX14-SFM8-Report_COI_FSC.pdf (Section C.8.3 & C.6.1)	-	
>>			

	- TMIX19_Resultados del Monitoreo Ambiental_Sitio BAVC_Los Monos 2017.pdf TMIX19_Capacitación impactos ambientales SW (2).pdf		
Principle 9.5 Hazardous and Non-hazardous Waste			
Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	Yes: The project does involves the use of a limited amount of agro-chemicals.	Standard procedure is followed at the site during operation and maintenance, as well as FSC, UTZ guidelines and regulations. See: – TMIX19_AGROQUÍMICOS QUE SE UTILIZAN EN EL MANEJO DE LAS PLANTACIONES FORESTALES- – TMIX19_Protocolo para la aplicación de productos Quimicos – TMIX19_SustainableTimber_Informe FSC 2018 – TMIX19_FM_PUB_ForestFinancePanama_061219_SPA.pdf – TMIX19_PM_Q.Pitti_Finca7428.docx – TMIX19_PM_R.Uyama.docx	
>>P.9.5.1 | The project developer shall avoid the generation of hazardous and nonhazardous waste materials and implement a waste management hierarchy that prioritizes the avoidance of the generation of waste. Where waste generation may not be avoided, a. The Project shall minimise waste generation and wastes shall be recover, recycle and reuse in a safe			

manner. b. Where waste may not be recovered or reused, it shall be treated, destroyed, or disposed of in an environmentally sound manner. that includes the appropriate control of emissions and residues resulting from the handling and processing of the waste material. P.9.5.2 | If the generated waste is considered hazardous, reasonable alternatives for its environmentally sound disposal shall be adopted while adhering to the limitations applicable to its transboundary movement . P.9.5.3 | Projects shall avoid or, when avoidance is not feasible, minimise and control release of hazardous materials resulting from their production, transportation,			

handling, storage, and use. Where avoidance is not possible, the health risks, including potential differentiated effects on men, women, and children, of the potential use of hazardous materials shall be addressed appropriately. Project shall consider the special vulnerabilities faced by workers as well as low-income communities, peoples with disabilities, indigenous peoples and minorities to hazardous materials. P.9.5.4 | Projects shall consider the use of less hazardous substitutes for such chemicals and materials and shall avoid the manufacture, trade, and use of chemicals and hazardous materials subject to international bans or phaseouts due to			

their high toxicity to living organisms, environmental persistence, potential for bioaccumulation, or potential for depletion of the ozone layer32, unless for acceptable purposes as defined by the conventions or protocols e.g. the Montreal Protocol, Minamata Convention, Basel Convention, Rotterdam Convention, Stockholm Convention). P.9.5.5 | The Project shall not make use of chemicals or materials subject to international bans or phase-outs. For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol.			
Principle 9.6 Pesticides & Fertilisers			

Will the Project involve the application of pesticides and/or fertilisers? >> 3.9.18 Projects involving pest management, the integrated pest management (IPM) and /or integrated vector management (IVM) approaches shall be adopted and aim to reduce reliance on chemical pesticides. 3.9.19 The health and environmental risks associated with pest management should be minimised with support, as	Yes	Pesticides are minimized, justified and used only selectively in areas with specific problems. The project follows the national legislation23 on pesticides and FSC Pesticides Policy. Also, a specific fertilization plan is set up for the agroforestry (cocoa) areas. In the forest areas, fertilizers are used during planting and during the first 5 years. Mix-species planting are expected to maintain soil fertility, increase soil carbon and nitrogen pools, producing more ecological and economic benefits24. Pesticides and fertilizers were cross-checked according to the Management Plans and supporting documentation such as FSC and UZ certification schemes against the World Health Organization Recommended Classification of Pesticides by Hazard and Guidelines to Classification: 2009[25].	Agrochemical reports

[23] Source: http://www.vertic.org/media/National%20Legislation/Panama/PA_Ley_47_1996.pdf

[24] Sources: Vigulu, V. W., et al. "Competition for nitrogen between trees in a mixed-species plantation in the Solomon Islands." Australian Forestry 80.3 (2017): 135-142. Liu, Corsa Lok Ching, Oleksandra Kuchma, and Konstantin V. Krutovsky. "Mixed-species versus monocultures in plantation forestry: Development, benefits, ecosystem services and perspectives for the future." Global ecology and conservation 15 (2018): e00419.

[25] Source: The World Health Organization. The WHO recommended classification of pesticides by hazard and guidelines to classification: 2009. Available at: https://www.who.int/ipcs/publications/pesticides_hazard_2009.pdf

needed, to institutional capacity development, to help regulate and monitor the distribution and use of pesticides and enhance the application of integrated pest management. 3.9.20 When Projects include pest management or the use of pesticides, pesticides that are low in human toxicity, known to be effective against the target species and have minimal effects on non-target species and the environment shall be selected. 3.9.21 There shall be a 'Chemical Pesticides Policy' that is documented, implemented and regularly updated. This policy shall include at a minimum: (a) Provisions for safe transport, storage,		See: - TMIX22_FSC_Report_ST_QB16Fertilización _ver2 - TMIX22_P-4 Uso de agroquimico_ver 7 – TMIX22_ERAS FOFI_2022 – TMIX19_AGROQUÍMICOS QUE SE UTILIZAN EN EL MANEJO DE LAS PLANTACIONES FORESTALES- – TMIX19_protocolo fert-corregido al 27 de sep 2015 – TMIX19_FM_PUB_ForestFinancePanama_061219_SPA.pdf	

handling and application, AND (b) Provisions for emergency situations. 3.9.22 The Project Developer shall not purchase, store, manufacture, trade or use products that fall in Classes IA (extremely hazardous) and IB (highly hazardous) of the World Health Organization Recommended Classification of Pesticides by Hazard. 3.9.23 Fertilisers shall be avoided, or their use shall be minimised and justified. If the aerial application of fertiliser is used, then measures shall be put in place to prevent drift.			
Principle 9.7 Harvesting of Forests			
Will the Project involve the harvesting of forests?	Yes	The forests will be managed and harvested in a sustainable way following MAI based on frequent monitoring. See:	Forest management plans and
>>			

(a) Enhance the sustainable management of forests, including the application of independent, credible certification for commercial, industrial-scale timber harvesting, AND (b) Maintain or enhance biodiversity and ecosystem functionality in areas where improved forest management is undertaken.		- TMIX22_FSC_Report_ST_QB - TMIX22_FOFI_Informe de raleo Chiriquí-Veraguas-Darién 2022	harvesting reports
Principle 9.8 Food			
Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	The Project does not have any impact on the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives.	
>>			
Principle 9.9 Animal husbandry			
Will the Project involve animal husbandry?	No: The project does not involve animal husbandry.		
>>			

Principle 9.10 High Conservation Value Areas and Critical Habitats			
Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified? >>	No: The Project does not affect or alter largely intact or HCV ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified. Already existing forests remain. All protection areas are clearly identified and mapped. The project within its boundaries has an approximate area of 761.58 hectares of natural vegetation at the national level, distributed among the plantations with some gallery forest redoubts, small patches of secondary forest, in all of them have been conducting biodiversity studies to determine whether they have attributes of High Conservation Value (HCV). At Los Monos, San Juan, Santa Cruz 2 and Boca del Monte, all located in the province of Chiriquí, finca Mamoní 1 in the province of Panama and the project Buenos Aires in the province of Darién have attributes that merit HCV status. The Los Monos project	-	

	was classified in two categories of HCV: category 1 and 2, therefore the focus has been on establishing cooperation between the community and collaborators to join efforts to monitor these attributes and thus quantify whether the measures identified and adopted are sufficient to conserve this type of forest. Flora species such as Bogomaní (Virola spp), María (Calophyllum longifolium), Cedro amargo (Cedrela odorata), Amarillo (Terminalia amazonia), Roble (Tabebuia rosea) have been identified, with some degree of threat or critical danger that deserves to be conserved. Among the fauna observed are the iguana (Iguana iguana), white-faced monkey (Cebus capucinus), woodpecker (Melanerpes ribricapillus), boa (Boa constrictor), toucan (Ramphatos sulfuratus), torcazas (Columba fasciata) and more than 50 bird species classified as migratory, endemic and coastline. See documents:		

	- TMIX19_RESUMEN PÚBLICO_2019 ver. final_16.04.2019.pdf - TMIX19_Resultados del Monitoreo Ambiental_Sitio BAVC_Los Monos 2019(1).pdf **TMIX19_Proyecto BAVC S.C 2.pdf**		
Principle 9.11 Endangered Species			
a. Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)? b. Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	A. Yes: There are some endangered species identified as potentially being present within the Project boundary. These are mainly tree species, birds and reptiles living in the project region. All were mainly found in remaining forest patches in the area, and deforestation is the main reason why they are threatened. Protection of remaining forest patches and reforestation are the main measures named to protect the threatened species. See folders: EC_Biological_Analysis_2014FOFI_HCV_Biodiversity	A: Areas for conservation purposes are managed under a forest enrichment approach and mapped. The HCV approach is taken into account to restore and protect degraded areas of ecological, religious or historical relevance. Native and threatened tree species were selected for reforestation next to commercially more attractive species.	
>> P.9.11.1 |Under no circumstances shall the			

Project lead to the reduction or negative impact of any recognised Endangered, Vulnerable or Critically Endangered species. P.9.11.2 |Habitats of endangered species shall be specifically identified and managed to protect or enhance them. P.9.11.3 |The opinions and recommendations of an Expert Stakeholder shall be sought and demonstrated as being considered and incorporated into the project design.	b. No: The Project does not impact other areas where endangered species may be present through transboundary affects.		

APPENDIX 2 - CONTACT INFORMATION OF PROJECT DEVELOPER(S)

Organization name	FORLIANCE GmbH
Registration number with relevant authority	
Street/P.O. Box	Eifelstr. 20
Building	/
City	Bonn
State/Region	North Rhine-Westphalia
Postcode	53225
Country	Germany
Telephone	
E-mail	Info@forliance.com
Website	www.forliance.com
Contact person	German Rodriguez
Title	
Salutation	Mr.
Last name	Rodriguez
Middle name	-
First name	German
Department	Nature Based Solutions
Mobile	
Direct tel.	+507 6237-1389
Personal e-mail	german.rodriguez@forliance.com

APPENDIX 3 - LUF ADDITIONAL INFORMATION

Risk of change to the Project Area during Project Certification Period:	Low risk due to a previously analysis before acquiring and including the area to the project. An efficient sustainable management combined with the active participation of important national and international stakeholders; mainly part of the Forest Finance Group are a key element to demonstrate transparency and permanence of the project activities during a 30 years crediting period.
Risk of change to the Project activities during Project Certification Period:	Low risk due to a previously analysis before acquiring and including the area to the project. An efficient sustainable management combined with the active participation of important national and international stakeholders; mainly part of the Forest Finance Group are a key element to demonstrate transparency and permanence of the project activities during the crediting period
Land-use history and current status of Project Area:	Current situation: Before the project activity started, the baseline of the project area was a mix of grassland and pioneer shrubs. All these areas were evaluated and classified as applicable planting areas for reforestation and agroforestry activities. Other small patches of forest left were classified and nowadays managed as conservation areas. Other areas (previously planted or due to the project activity) located in the boarder of a river or other watershed are also classified as conservation areas. The project main goal is to "build forest" and

	some farms are already one. This will stay during the crediting period. Land use history: http://countrystudies.us/panama/46.htm
Socio-Economic history:	Current situation: It is quite common that the areas that were bought for the project were not managed efficiently by the previous owner due to investment and know how barriers. A part of the previous owners decide to sell the land and migrate to the cities, start a new business in the region, or invest in education, among others. Our experience during more than 15 years had revealed how reforestation and agroforestry activities, that are established in different rural areas can be an effective support to alleviate regional poverty, promote regional know how, increment capacity building and be a key element for a socio economic development , by providing directly and indirectly jobs. Socio-economic history: http://countrystudies.us/panama/41.htm http://countrystudies.us/panama/44.htm
Forest management applied (past and future)	The objective of the project is producing high quality hardwoods at the same time as sequestering a high amount of carbon, while stabilizing and restoring fragile and degraded areas in an economically, socially, and ecologically viable way. In contrast to common reforestation schemes, the project concept is a concept that makes use also of

	native tree species in a mix with round of non-native species, mostly Teak (Tectona grandis), to create sustainable and species-rich forests with the use of high quality hardwoods and the creation of an additional income from carbon credits. These carbon offset credits can be traded on international carbon markets will be certified according high quality carbon standards. Overall, the project specific objectives are the establishment of profitable production-and conservation systems, enabling the enterprise to work in a beneficial way through the creation of investment opportunities, which are economically, ecologically and socially sound. Creating year round work opportunities in our areas of activity that allow the development of a stable work environment for men and women, will support the development of these regions
Forest characteristics (including main tree species planted)	According to the management plan the project is stratified in three main activities: **Reforestation with native and exotic tree species (teak) for commercial purposes:** the following species are planted: Anacardium excelsium, Astronium graveolens, Bombacopsis quinata, Cedrela odorata, Dalbergia retusa, Dipterix panamensis, Hyeronima alchorneoides, Swetenia macrophylla, Tabebuia guayacan, Khaya senegalensis, tabebuia rosea, Terminalia Amazonia and Tectona grandis.

	Reforestation with native species for conservation purposes: some specific areas and MU are only planted with native species (see species mentioned above) to accomplish this activity **Agroforestry with cacao mixed with shadow native tree species**: Theobroma cacao and Inga spare the main species that can be find in the respective MUs
Main social impacts (risks and benefits)	The main social benefits of the project are: - Poverty alleviation: many persons in rural areas are obligated to migrate to the cities due to the lack of regional job opportunities. - Equal rights: the company has a multicultural team and a mix of people with equal rights without gender discrimination. - Capacity building: the employees and also neighbours are continuously learning about the importance of and significance of sustainable activities and the importance of climate change mitigation. Some low risks of the project are: - Poverty alleviation: the increase of income in rural areas might lead to the use of unsustainable resources, therefore the company is investing also in capacity building including topics to encourage a sustainable live style.

	- Equal rights: a multicultural team requires also the need of having a comprehensive and tolerant perception. The company encourage the team work of the employees investing in yearly external activities; like the participation of a football tournament. http://www.forestfinance.de/en/about-us/social-aspects/
Main environmental impacts (risks and benefits)	The main environmental benefits of the project are: - Building new forests: reforestation with mix tree native species is a key element to obtain an important synergy between the different natural resources existing in the area, and increase the protection of those basic elements: retaining water in the trees and soil to prevent flooding, prevent soil erosion protecting the nutrients and soil microelements, provide shelter to migratory and native animals and insects. - Forest Conservation: through this activity the project ensure forest connectivity creating small corridors that impact positively the interconnectivity of different regional natural ecosystems. - Climate change: it is a climate project focus in mitigation

	strategies with the aim of fighting global warming. Some low risks of the project are: - Climate impact: due to climate change strong winds, fires and/ or floorings can occur. Even though the project is aware of these situations and prepare to react, different animals and insects species that form part of this ecosystem can be affected. - Project implementation: during the planting year, soil has to be prepare manually and with small machinery. In this sense the previous soil habitat can be affected. However after this activity the soil is protected during the rotation period and the creation and conservation of organic soil compensates such impact. - Thinning: there is a risk of affecting existing understory vegetation. However the main impact is in small bushes that recover really fast. http://www.forestfinance.de/en/our-forests/ecological-aspects/
Financial structure	The project has more than 13, 000 private investors with a legal contract allowing them to clearly identify the part and percentage of their share inside the project. This includes a transparent process to provide land tenure tittles, specify the owners ofthe resources inside

	the project (wood, CO2 and other resources). Further the Forest Finance Group cooperates directly with different organization for the certification management and sale of carbon credits: ForestFinest Consulting. The management expertise of this cooperation is a must to administrate the funds effectively, chose wisely the technical team for operational management and guaranty the permanence of the project and therefore guaranty the predicted revenue from the project activity to all the persons that are part of a successful international cooperation http://www.forestfinance.de/en/returns/calculation-of-returns/
Infrastructure (roads/houses etc):	Folder "Roads and Infrastructure"
Water bodies:	Folder "FAR_hydrology"
Sites with special significance for indigenous people and local communities - resulting from the Stakeholder Consultation:	Not detected, see folder "Indigenous_people"
Where indigenous people and local communities are situated:	Not detected, see folder "Indigenous_people"
Where indigenous people and local communities have legal rights, customary rights or sites with special cultural, ecological, economic, religious or spiritual significance:	Not detected, see folder "Indigenous_people"

APPENDIX 4 - DESIGN CHANGES

The project does currently not apply for permanent design changes.

A4.1. Details of proposed or actual design change

>>

A4.2. Describe the impacts of design change on the following

a. Additionality

>>

b. Applicability of methodology and other methodological regulatory documents with which the project activity has been certified

>>

c. Compliance with the monitoring plan of the applied methodology

>>

d. Level of accuracy and completeness in the monitoring of the project activity compared with the requirements contained in the registered monitoring plan

>>

e. Scale of the project activity

>>

f. Stakeholder consultation

>>

g. Sustainable development criteria

>>

h. Safeguarding assessment

>>

i. Compliance with applicable legislation

>>

j. <u>Only for LUF Projects</u>: Transparent summary of all approved changes in Project Area, Eligible Area and accompanying changes in ex-ante emissions removals.

DATE OF APPROVED DESIGN CHANGE (MM/DD/YYYY)	PROJECT AREA (HA)		ELIGIBLE AREA (HA)		EX-ANTE ESTIMATE (TCO2E)	
	INCREASE OR DECREASE ?	VALUE (HA)	INCREASE OR DECREASE?	VALUE (HA)	INCREASE OR DECREASE ?	PERCENTAGE (%)

Revision History

Version	Date	Remarks
1.3	14 April 2023	Integrated the design change memo as annex of the document. Editorial changes
1.2	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Inclusion criteria table added Gender sensitive requirements added Prior consideration (1 yr rule) and Ongoing Financial Need added Safeguard Principles Assessment as annex and a new section to include applicable safeguards for clarity Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on Stakeholder Consultation information required Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.1	24 August 2017	Updated to include section A.8 on 'gender sensitive' requirements
1.0	10 July 2017	Initial adoption