



“Enfrentamos el cambio climático”

## General Description of Greenhouse Gas Emissions Offset Projects under the Payment for Environmental Services Program - Reforestation Activity

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## 1. PRESENTATION

The Development and Marketing Directorate (DDC) of Fonafifo, in accordance with Resolution 536-2007 of MINAE published in La Gaceta No. 13 on January 18, 2008, has the objective of planning, directing, coordinating, executing, controlling and supervising the matters related to the activities generated for the development and commercialization of environmental services, one of which is the mitigation of greenhouse gases, and according to article 46 of the Forestry Law 7575 of 1996, it corresponds to Fonafifo the capture of resources financing for the payment of environmental services in forests and forest plantations.

Consequently, the DDC has developed three UCC projects, supported by the Forestry Law and its Regulations (Scope 32-MINAE of the year 2012), Decree No. 37926-MINAE Regulation of Operation and Regulation of the Domestic Carbon Market (Article 80) and the provisions of the Country Carbon Neutrality 2.0 Program.

In accordance with the INTE B5: 2021 standard, Organizations can access different compensation mechanisms. In the case of compensation at the national level, until the Costa Rican Compensation Mechanism is operational, compensation processes through Costa Rican Compensation Units (UCC) must be carried out through the National Forest Financing Fund (Fonafifo).

To ensure the characteristics required by country regulations, Fonafifo Compensation Projects are based on the methodological tools established by the United Nations Framework Convention on Climate Change (UNFCCC), including:

**AR-AMS0007** “Simplified baseline and monitoring methodology for small-scale afforestation and reforestation CDM projects implemented on non-wetland lands”.

**AR-TOOL 14** “Methodological tool for estimating carbon stored and changes in carbon stored in trees and shrubs in A / R CDM project activities”.

This document summarizes, for GHG inventory verifiers, environmental managers, advisers of organizations and other interested parties, the characteristics of the Projects where carbon credits are generated for commercialization in the form of UCC-Fonafifo, a trademark number 272170 registered at the Public Registry of Costa Rica and can be purchased , through SICOP, classification code 64111705 and product identification code 92154782.

The money raised for the commercialization of UCC-Fonafifo is invested in the Payment for Environmental Services, through the National Program, whose statistics are available at the address [www.fonafifo.go.cr](http://www.fonafifo.go.cr) (search for PSA statistics).

In case of requiring more technical details, contact the Proposals Department, Development and Marketing Directorate. Ing. Ricardo Bedoya, telephone (506) 2545-3535, email [ricardo.bedoya@fonafifo.go.cr](mailto:ricardo.bedoya@fonafifo.go.cr)

## 2. OFFSET PROJECT BOUNDARIES

According to FONAFIFO, current GHG emissions offset projects are defined as:

An **aggregation of forest plantations** established in different farms under the PES scheme, selected for carbon stock quantification, located within a specific geographic area, with clearly **mapped boundaries**, under stratification, with existence of **additionality** and contemplating a **baseline scenario, emissions and leakage** for the calculation of a **net project benefit**.

The UCC-Fonafifo (carbon credits) once issued are applicable to any compensation period required by the client, the inventory year applies for the Organization, not for the Compensation Project while it is in force.

### 2.1. DEFINITION OF PROJECT PHYSICAL BOUNDARIES

The offset project surface area is made up of PES contracts established between 2008 and 2012. Currently, FONAFIFO has three projects with a total planted surface area of 5897.6 ha (Table 1). Pursuant to the corresponding Decree, these contracts are valid for a period of 15 years.

**Table 1:** Planted Surface Area in Hectares and number of PES contracts for Each GHG Emissions Offset Project.

Project Name	Number of PES Contracts – Reforestation Modality	Total Planted Area (ha)
Guanacaste	29	1372,8
Northern Region	39	2092,3
Caribbean	19	659,4

### 2.2. CARBON SINKS CONSIDERED

In the case of FONAFIFO projects, carbon sinks considered originate from living biomass growth (aerial and subterranean) in well-established forest plantations made up of exotic and native species. Though carbon from dead wood, leaves and soil organic carbon is not taken into account, the carbon content in these reservoirs is also expected to increase. The latter due to the fact that planted trees are situated on land previously devoted to agriculture or cattle raising and carbon levels in many of these sinks are low.

### 2.3. GREENHOUSE GAS TYPES CONTEMPLATED

Carbon dioxide (CO<sub>2</sub>) is the principal gas contemplated by the project. Nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>) will only be considered in order to quantify project emissions from the combustion of fossil fuels. However, N<sub>2</sub>O y CH<sub>4</sub> gas quantification is done by means of CO<sub>2</sub>

equivalents using the current Global Warming Potential (GWP) available on the National Meteorological Institute’s website.

### 3. PROJECT ADDITIONALITY FOR THE DCM

The National Standard for Carbon Neutrality sets forth the following definition of ‘additionality’: “Any activity that reduces and/or removes GHG emissions or captures CO<sub>2</sub> in quantities that exceed those that would occur in the absence of this activity”.

Technical studies were conducted to determine site conditions before the establishment of plantations using PES program resources. In the case of grassland sites or sites under cultivation, the establishment of forest plantation tends to enhance carbon storage in the ecosystem. Not only is there an improvement in live biomass storage (both aerial and subterranean), but there is also an increase in soil organic carbon (SOC) content, that is, the amount of carbon stored in the first 30 cm of soil (dead leaves and branches).

In the case of land that previously contained forests, the reestablishment of a forest cover enhances SOC content and storage, mostly in the top first meter (between 10 and 100cm) and promotes carbon storage in living biomass.

### 4. CALCULATION OF CARBON CREDITS FOR THE DCM

The number of carbon credits available for sale each year in the Domestic Market represents a Net Benefit (NB). This net benefit is made up of carbon removals excluding carbon removals in the baseline scenario, as well as leakage. Net removals are the amount of CO<sub>2</sub> equivalent captured over a specific period of time within the project area subtracting losses due to mortality and thinning as well as emissions. The following formula is used to calculate net benefit:

$$\text{NB} = \text{Net removals} - \text{baseline} - \text{leakage}$$

Where:

$$\text{Net removals} = (\text{Capture of project CO}_2\text{-e} - \text{losses (including emissions)})$$

Carbon credits must first be calculated *ex ante*, that is, before project starts. Afterwards, they are also calculated *ex post* once emission reductions have been achieved by the offset project (net benefit).

#### 4.1. PROJECT NET CARBON REMOVALS

##### 4.1.1 PROJECT CARBON CAPTURE

Ex-ante calculations are made using the biomass expansion factor (BEF) technique and BEF values found in the literature on volume growth (average annual increase), reported wood

density, subterranean biomass relationships: aerial biomass, carbon factors and total planted surface area for each species included in the project.

Ex-post calculations are made using data obtained from field samplings as well as data and adjusted allometric equations for each species measured. All contracts are measured at 1% of sampling intensity.

To ensure conservative estimates, as required by national and international carbon offset standards and principles, both the confidence limit and sampling error are calculated. Depending on the magnitude of the sampling error (uncertainty), discounts are applied according to confidence limits calculated (UNFCCC, 2013).

#### **4.1.2. PROJECT EMISSIONS**

Project emissions refers to the amount of greenhouse gas (GHG) emissions that result from activities that are both measurable and attributable to the project and occurring within project boundaries (Salinas and Hernández, 2008).

Based on agreements reached under the United Nations Framework Convention on Climate Change (Executive Board Meeting 20, Annex 22 “Estimation of GHG emissions due to clearing, burning and decay of existing vegetation attributable to a CDM A/R project activity”; Executive Board Meeting Report 42, paragraph 35), emissions resulting from the initial clearing of the land, maintenance clearing of herbaceous vegetation, application of fertilizers and internal transportation will be considered insignificant. Therefore, fossil fuel consumption due to monitoring and verification activities will be taken into consideration when calculating project emissions.

In the ex-ante phase, emissions are quantified by annually subtracting (in MgCO<sub>2</sub> equivalent) 1% of the stored carbon estimated to have been captured during project GHG removal.

In the ex-post phase, GHG emissions from vehicles will be recorded according to type of vehicle (brand, model, bodywork, among others), fuel used, vehicle efficiency if available, fuel consumed and distance travelled per trip.

Additionally, project activities identified as producing significant amounts of CO<sub>2</sub> will be duly recorded and quantified.

#### **4.2 BASELINE DETERMINATION**

The baseline used for calculation is an estimate based on current use (generally grasslands or agricultural crops).

#### **4.3 PROJECT LEAKAGE**

Due to the fact that the possibility of leakage from displacement of activities by the plantation projects is null or almost null, offset project leakage is deemed non-existent.

## 5 REPORTING AND VERIFICATION

Each offset project has a database that contains relevant information on the PES-reforestation contracts used in the Project, which preferably are medium and fast growing species. Among the data are: beneficiary or legal representative, administrative condition of the contract (validity, modifications, disbursements made) and technical information of the contract (species planted, date of establishment, number of blocks, among others).

Additionally, for internal use, there is a database that contains information on the measurements made to the contracts of the sample selected annually during monitoring. This base, according to the field methodology used, includes: the measured PES contract number, the measurement date, plot number, plot coordinate, tree number, species, DBH (cm), total height ( m) and level of affectation of any disease such as trunk rot, when applicable.

During the first years of validity of a PES contract (specifically during the disbursement period), a Forest Regent must monitor and advise owners with a PES contract, according to the guidelines of the official procedures manual for the entry of a farm to the PES Program and available on the website ([www.fonafifo.go.cr](http://www.fonafifo.go.cr)). This professional has public faith and presents an annual report to the regional offices of Fonafifo.

In accordance with the regulations, personnel from the regional offices and the Fonafifo Control Department must visit the projects and follow up on the reports presented by the Forestry Regent. Each regency report, as well as the visits made by the regional offices and the Control and Monitoring department, are filed within the file that is created for each PSA contract.

Once the disbursement stage is completed, the Projects Department of the Fonafifo Development and Marketing Directorate carries out monitoring and measurement visits to all contracts in a three-year cycle. Between 2018 and 2019, it had the support of the Forest Research and Services Institute (INISEFOR) of the National University (UNA), Costa Rica, in order to increase the transparency and intensity of sampling, improving the quality of the project data. Occasionally, third-party measurement service is contracted.

## 6 REFERENCES

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