



# TÁNGARA REDD+ PROJECT

This project is proposed by Tángara Forest Zomac S.A.S  
company.




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## Project Information

	<b>TÁNGARA REDD+ PROJECT</b>
<b>PROJECT INFORMATION</b>	
<b>Project name</b>	TÁNGARA REDD+ PROJECT
<b>Version</b>	04
<b>Project Proponents</b>	Tángara Forest Zomac S.A.S. company
<b>Prepared by</b>	BIOFIX CONSULTORIA S.A.S BIC
<b>Project location</b>	Colombia Valle del Cauca Buenaventura
<b>Validation and Verification Body</b>	ICONTEC
<b>Project Lifetime</b>	January 1, 2010 to December 31, 2039. Lifetime of 30 years
<b>Methodology</b>	<p>The methodology used to estimate emissions reductions from deforestation is the Colombian Technical Standard NTC 6802 of 2016 "<i>Mitigation actions in the land use, land use change and forestry sector (USCUSS) at the rural level, incorporating social and biodiversity considerations</i>".</p> <p>ProClima Methodology "<i>Methodological Document AFOLU Sector. Quantification of GHG emission reductions from REDD+ projects Version 2.2.</i>"</p>

<b>Greenhouse Gas Accounting</b>	January 1, 2010 to December 31, 2039
<b>Monitoring period for this deforestation and forest degradation report</b>	January 1, 2019 to December 31, 2020

## 1 Project description

### 1.1 Project Summary

The Tángara REDD+ Conservation Project is located in the Playa Chuchas and Lomas de Auca properties in the municipality of Buenaventura, Department of Valle del Cauca. It has an area of 14.200 hectares divided between the two properties, of which 3.700 hectares belong to the Playas de Chuchas property, while the remaining 10.500 hectares comprise the Lomas de Auca property. Both properties are private in nature and the owner and promoter of the project is Oscar Javier Pelaez Gonzalez<sup>1</sup>.

The project will begin on January 01, 2010 and will last for 30 years, ending on December 31, 2039. During this period, it will reduce emissions by 4.484.655 tCO<sub>2</sub>e, or 149.489 tCO<sub>2</sub>e per year. Using the updated values of the 2019 NREF from 2019.

The formulation and quantification of carbon was done according to the methodology of the Colombian Technical Standard NTC 6208 "*Mitigation actions in the land use, land use change and forestry sector (USCUSS) at the rural level, incorporating social and biodiversity considerations*". Likewise, the calculation of emission reductions due to deforestation and forest degradation in the territory was made in a combined manner, a methodological deviation allowed by the certifying platform, which in this case is ProClima, and validated by AENOR within the framework of the methodological deviations made by the REDD+ projects of BIOREDD, however, 5 years after this first validation, the methodological update of the calculations will be made to comply with the ProClima methodology "*Methodological Document AFOLU Sector. Quantification of GHG emission reductions from REDD+ projects version 2.2.*"

Additionally, in this first validation verification, the values of carbon pools of the NREF 2014 were chosen for the life zones of the Amazon biome, through the specific data that the country has.

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<sup>1</sup> Cadastre certificate, certificate of ownership, certificate of freedom and tradition for each property and payment of property tax can be found in the audit folder at the following link <https://drive.google.com/drive/folders/12-efaf5sc3TGQU3UPB71q4hf32ukbZm?usp=sharing>

The methodology applied for the determination of the leakage belt (**21.674 hectares**) is the LK-ASU of the REDD VCS VM0007 methodology in relation to Leakage from Displacement of Unplanned Deforestation. The methodology applied for the reference area is the REDD VCS VM0007 guidelines. The methodology to prove additionality was defined in accordance with the requirements of Article 43 of Resolution 1447 of 2018, which is complemented in this monitoring report.

Now the Tangara project has a first validation and verification from 2010 to 2017 of 1.445.266 tCO<sub>2</sub>e, and a second in 2018 of 177.068 tCO<sub>2</sub>e both by AENOR, which verified the total reduction of 1.622.334 tCO<sub>2</sub>e emissions, under the methodological framework of NTC 6208, certified through the ProClima certifier program.

Currently, the TANGARA REDD+ Conservation Project is submitting to ICONTEC the monitoring report of the activities during the period of 2019 and 2020 under the criteria of the NTC- 6208 methodology and the ProClima Methodology "*Methodological Document AFOLU Sector. Quantification of GHG emission reductions from REDD+ projects Version 2.2.*"

The activities carried out during 2019 and 2020, were carried out in the framework of the fulfillment of the objectives of the Tángara REDD+ Conservation Project, starting with meetings of approaches with the occupants of the land; the community councils Rio Mallorquín and Raposo, in which the problems and threats projected in the territory were identified, in order to propose solutions through the formulation of projects that are focused on the socio-environmental characterization product of the meetings held with the community councils. These projects were formulated through the environmental consulting firm EduAmbiental, based on three pillars such as food security, economy and environmental development, these projects are 1. Sustainable management of Piangua for the economic development and food sovereignty of the territory, 3. Strategy for the use of organic solid waste and roofs in the process of sustainability, preservation of traditions and food sovereignty, 4.

Finally, the name of the project "*Tángara*" refers to a genus of birds observed in the project area; this name was defined because these birds are on the IUCN Red List of Threatened Species. By reducing emissions from deforestation, the project will conserve the habitat of this genus and therefore the species.

## 1.2 Objectives

The objectives of the Tángara REDD+ Conservation Project are to

- Mitigate climate change by reducing CO2 emissions through avoiding deforestation.
- Contribute to the conservation of biodiversity by protecting the habitat of endangered species.
- Promote the sustainable development of forest communities in the project area through the implementation of productive activities compatible with the reduction of deforestation emissions, through training and technical assistance.

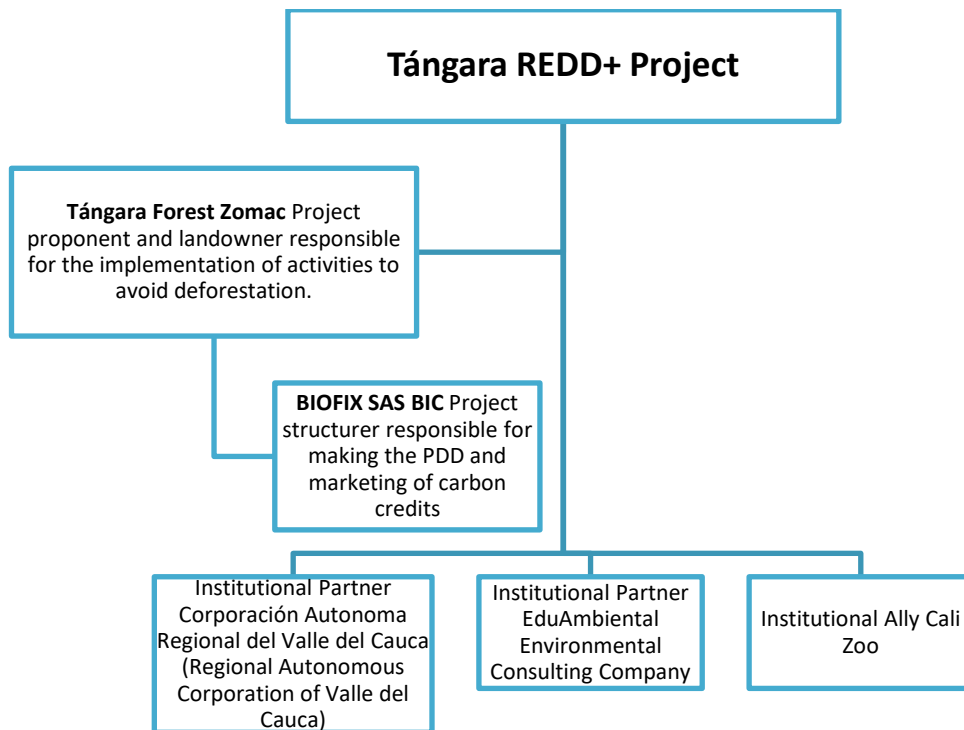
### **1.3 Project proponents and stakeholders**

The proponent of the Tángara REDD+ project is the company Tángara Forest Zomac SAS, which appoints the company BIOFIX CONSULTORIA S.A.S. to manage the design of the project document as well as the marketing of the carbon credits generated by the project <sup>2</sup>. The owner of the land has been carrying out activities to avoid deforestation since 2010, and as of 2018 will sell the property to the company Tángara Forest Zomac SAS, of which he is the majority shareholder. The company Tángara Forest Zomac will be in charge of continuing the implementation of the REDD project from 2018. The project has as institutional allies the Corporación Autónoma Regional del Valle del Cauca, where the REDD+ project is registered in the Green Business Window; the company EduAmbiental, with which it has developed a contract for the formulation and implementation of future investment projects; and the Cali Zoo, for the release of native fauna confiscated in the project area.

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<sup>2</sup> The issuance of contracts and permits for the marketing of bonds from the proponent to Biofix can be found in the following link of the audit folder [https://drive.google.com/drive/folders/17ONK3m\\_eKF-OfgLwHYoL0CKHL5A\\_P8Pg?usp=sharing](https://drive.google.com/drive/folders/17ONK3m_eKF-OfgLwHYoL0CKHL5A_P8Pg?usp=sharing)



**Figure 1.** Organizational chart of the TÁNGARA REDD+ Project


**Source:** Tángara REDD+ project

Below are the contact details of the legal representative of Tángara Forest Zomac and the owner of the private land as the project proponents and carbon rights holders, and the contact details of the legal representative of Biofix Consulting as the project developer and carbon credit trader.

**Table 1.** Contact information for legal representatives of project participants

<b>Name of institution</b>	Tángara Forest SAS-ZOMAC
<b>Contact</b>	Oscar Javier Pelaez Gonzalez
<b>Role</b>	Owner of the properties Lomas de Auca and Playas de Chuchas
<b>Telephone number</b>	312 843 0700
<b>E-mail address</b>	

<b>Name of institution</b>	Tángara Forest SAS-ZOMAC
<b>Contact</b>	Andrés Jordan H
<b>Role</b>	General Manager Tángara Forest SAS ZOMAC
<b>Telephone number</b>	314 324 3333

<b>E-mail address</b>	<a href="mailto:andres.jordan@tangaraforest.com">andres.jordan@tangaraforest.com</a>
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<b>Name of institution</b>	BIOFIX CONSULTORÍA S.A.S BIC
<b>Contact</b>	Ana Milena Plata Fajardo
<b>Role</b>	Legal Representative
<b>Identification</b>	901.166.791-6
<b>Telephone number</b>	(+57) 3212163744
<b>E-mail address</b>	<a href="mailto:aplata@biofix.com.co">aplata@biofix.com.co</a>
<b>Location</b>	Av. Cra. 45 # 108a – 50 Of. 404, Bogotá, D.C. Colombia

**Source:** Tángara REDD+ project

The environmental authorities in the project area are the Corporación Autónoma Regional del Valle del Cauca (CVC) and the Mayor's Office of Buenaventura. The action plan of the CVC includes the promotion of green business through its planning tool, the Departmental Green Business Plan for Valle del Cauca, which is an important tool for the environmental authorities and sectors of the region, providing guidelines for planning and decision-making that allow the development and promotion of the region in accordance with its potential and competitive advantages, generating economic and social growth and promoting the conservation of natural resources.

## 1.4 Project location

The project is located south of Buenaventura Bay, on the Pacific coast, in the department of Valle del Cauca, specifically in the municipality of Buenaventura, 25 kilometers from the urban center of Buenaventura and 90 kilometers from Cali, the department's capital. The municipality of Buenaventura has 12 villages and its economic structure is based mainly on artisanal fishing, tourism, family agriculture and commercialization of wood.

The total area of the properties is 14.200 hectares, divided into two contiguous properties, namely Playa Chuchas, identified by Property Registry Folio No. 372-20568, with an area of 3700 hectares, and Lomas de Auca, identified by Property Registry Folio No. 372-20569, with an area of 10500 hectares.

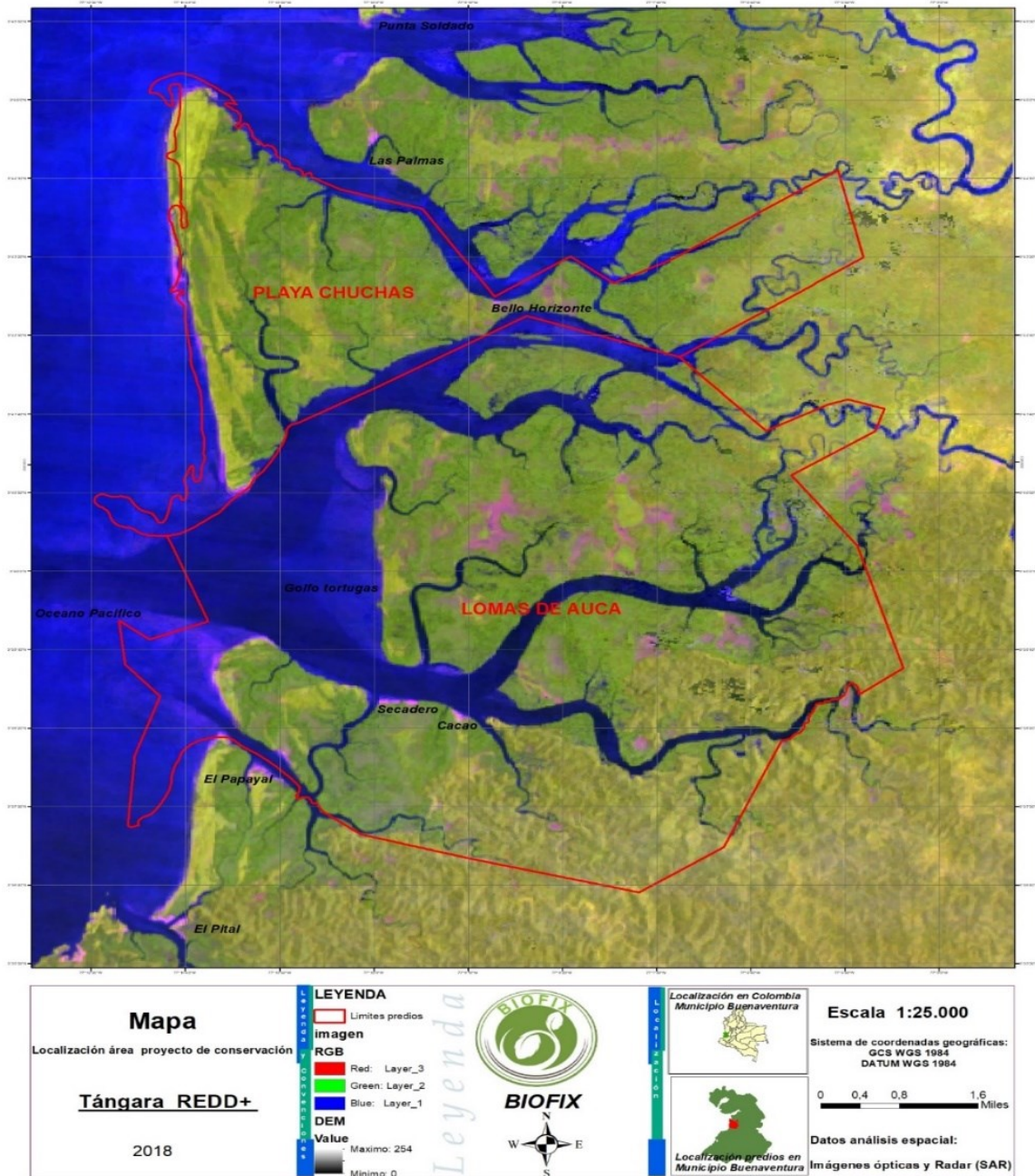
- The reference area for the deforestation rate of the project has an area of 747.272 hectares, of which 652.139 hectares were forest in 2000.
- The eligible project area is 8.558.37 hectares.
- The leakage belt of the project is 21.674 hectares.

Property	Coordinates	
	Latitude	Length
Lomas de Auca	658017	896763
Playa Chuchas	657512	903490

Coordinate System: MAGNA, Projection: transverse\_Mercator (False\_East: 1000,000) and (False\_North: 1000,000). Datum: GRS 1980

**Source:** Tángara REDD+ project

The location of the Auca and Playa Chuchas private lands where the Tángara REDD+ conservation project is being developed is shown below.



Source: Tángara REDD+ project

## 2 Legal Aspects

### 2.1 Analysis of the TÁNGARA REDD+ Project in relation to Resolution 1447 of 2018

This project complies with the current regulation of the National Emissions Reduction Registry, Resolution 1447 of 2018, as it relates to Article 39. "*Use of methodologies for the formulation and implementation of REDD+ projects*" as follows: The REDD+ Project Owner shall use methodologies that meet the following characteristics:

1. **Follow the guidelines prescribed by the UNFCCC for REDD+:** both the methodology NTC 6208 of 2016 "*Mitigation actions in the USCUS sector at the rural level, incorporating social and biodiversity considerations*" as indicated in section "0. Introduction" and as described in the ProClima methodology "*Methodological Document AFOLU Sector. Quantification of GHG emission reductions from REDD+ projects version 2.2.*", under "5. Normative references".
2. **Have a mechanism to manage the risk of leakage of GHG emission reductions:** The risk of leakage of GHG emission reductions is managed. This is done through the Lines of Action transversal to all REDD+ projects developed by Biofix Consultancy, specifically the Line of Action "*MONITORING AND FOREST GUARDING PROGRAM*" described in sections 1.9.6 of the TANGARA REDD+ PDD. And in sections 6 of this report.
3. **Have a mechanism to manage the risk of non-permanence of GHG emission reductions and removals:** Section 5.3 of the Monitoring Report provides an additional analysis of permanence risks, in addition to following the guidelines in section "*13.1 Uncertainty Management*"... *In the ProClima program, uncertainty management is determined by the accuracy of the maps used to estimate activity values and the application of discounts*", these discounts are 15% reserve, a value provided in section "*11.8 of the ProClima program*".
4. **Have a mechanism for managing uncertainty in the baseline quantification and mitigation results:** In accordance with section "*14.4 Monitoring the permanence of*

*the REDD project*" of the ProClima methodology version 2.2, section 5.4 of the monitoring report presents the monitoring plan with mitigation measures, monitoring indicators and the reporting procedure.

With respect to the baseline, Resolution 1447 of 2018 specifies that art. 41. Paragraph 2°. In order to verify the GHG emission reductions and removals generated, *"from January 2020, the REDD+ project holder that has validated its baseline prior to the issuance of this Resolution shall adjust and validate its baseline based on the most updated NREF"*. The adjustment of the baseline consists of the methodological reconstruction of the most updated NREF applicable to the project over the geographical area of the project. According to the Directorate of Environmental Studies of the Institute of Hydrology, Meteorology and Environmental Studies - IDEAM, the official institute in charge of estimating the baseline, *"there is no baseline for the project area in 2018"*; in this sense, the adjustment for this Monitoring Report has been made with the updated values of the *"Proposed Baseline of Forest Emissions from Deforestation in Colombia for Payment for REDD+ outcomes under the UNFCCC. NREF 2019"* as shown in the emission reduction calculations<sup>3</sup>.



Finally, it is stated that the TANGARA REDD+ project is registered in the Monitoring System for Reporting and Verification of Mitigation Actions at the National Level - RENARE. As shown in the following link: <http://renare.siac.gov.co/GPY-web/#/gpy/datbas-reddreg/121/1161><sup>4</sup>, without any overlap or impediment to its implementation.





The registration process for this initiative began at the end of 2020 in the feasibility phase, once approved, in the month of April we proceeded to consolidate the documents, procedures and information required for the change of phase to formulation, which was approved as the current status of the initiative.

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<sup>3</sup> ICONTEC VERIFICATION 2019 2020 TANGARA REDD+ \ 5. CARBON CALCULATIONS

<sup>4</sup> Link in operation on May 19, 2021

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**LISTADO DE INICIATIVAS**

9	y Estudios Ambientales Instituto de Hidrología, Meteorología	PY REDD+	Proyecto de Conservación TANGARA REDD+	Formulación	 
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Source: Tángara REDD+ project

### 3 Non-Permanence Analysis TÁNGARA REDD+

As established in Resolution 1447 of 2018, an analysis of the project's non-permanent risks, which may be natural or anthropogenic, is established, for which non-permanent risk monitoring and reporting procedures are applied. This is in response to the possible risks that the project may present, of which the following stand out

- The occurrence of extreme climatic phenomena such as tidal waves, hurricanes, tsunamis, and others that cause coastal marine erosion or landslides.
- Forest fires.
- Forced resettlement in rural areas of the departments, which may lead to the occupation of areas related to the project.
- Illegal market of fauna and flora, for trade, pets, hunting, among others.

- Conversion of eligible areas of the REDD+ project into ineligible areas due to uncontrolled forest degradation and deforestation processes.
- Non-compliance with the REDD+ project due to lack of ownership of project activities.

Therefore, following the guidelines of section 14.4 Permanence Monitoring of the ProClima methodology document version 2.2, the following monitoring plan is established for the TANGARA REDD+ project:

Identified risk of permanence	Mitigation Measure	Monitoring indicators	Monitoring and reporting procedure	Evidence of indicator monitoring
Occurrence of extreme weather phenomena such as tidal waves, hurricanes, tsunamis and others that cause coastal marine erosion or mass removals.	Extreme natural phenomena are not controllable. However, coastal marine erosion is addressed by reforesting areas degraded by this degradation driver.	Number of hectares reforested in areas of coastal marine erosion	Project implementation reports under the action lines of the TANGARA REDD+ project monitoring plan.	Annex 20. Forestry Project
Forest fires	<p>If it is of anthropogenic origin, the cause of the burning will be identified and if it is different from subsistence activities, the quantification of the emissions will be carried out for their pertinent discount.</p> <p>On the other hand, if it is of natural or unknown origin, these areas will be prioritized for participatory reforestation processes.</p>	<p>Number of hectares rehabilitated or reforested.</p> <p>Tons of carbon dioxide equivalent from emissions caused by industrial or semi-industrial activities.</p>	<p>Weekly monitoring by the project developer under the deforestation and degradation monitoring action line.</p> <p>Execution reports of industrial or semi-industrial projects that generate emissions under the productive action lines of the TANGARA REDD+ project monitoring plan.</p>	Annex 17. Monitoring Report
Forced displacement in rural areas of the departments,	Events related to forced displacement cannot be mitigated by the REDD+ project. However, the	Number of hectares in agroforestry systems.	Project implementation reports under the action lines of the TANGARA REDD+	There have been no forced displacements



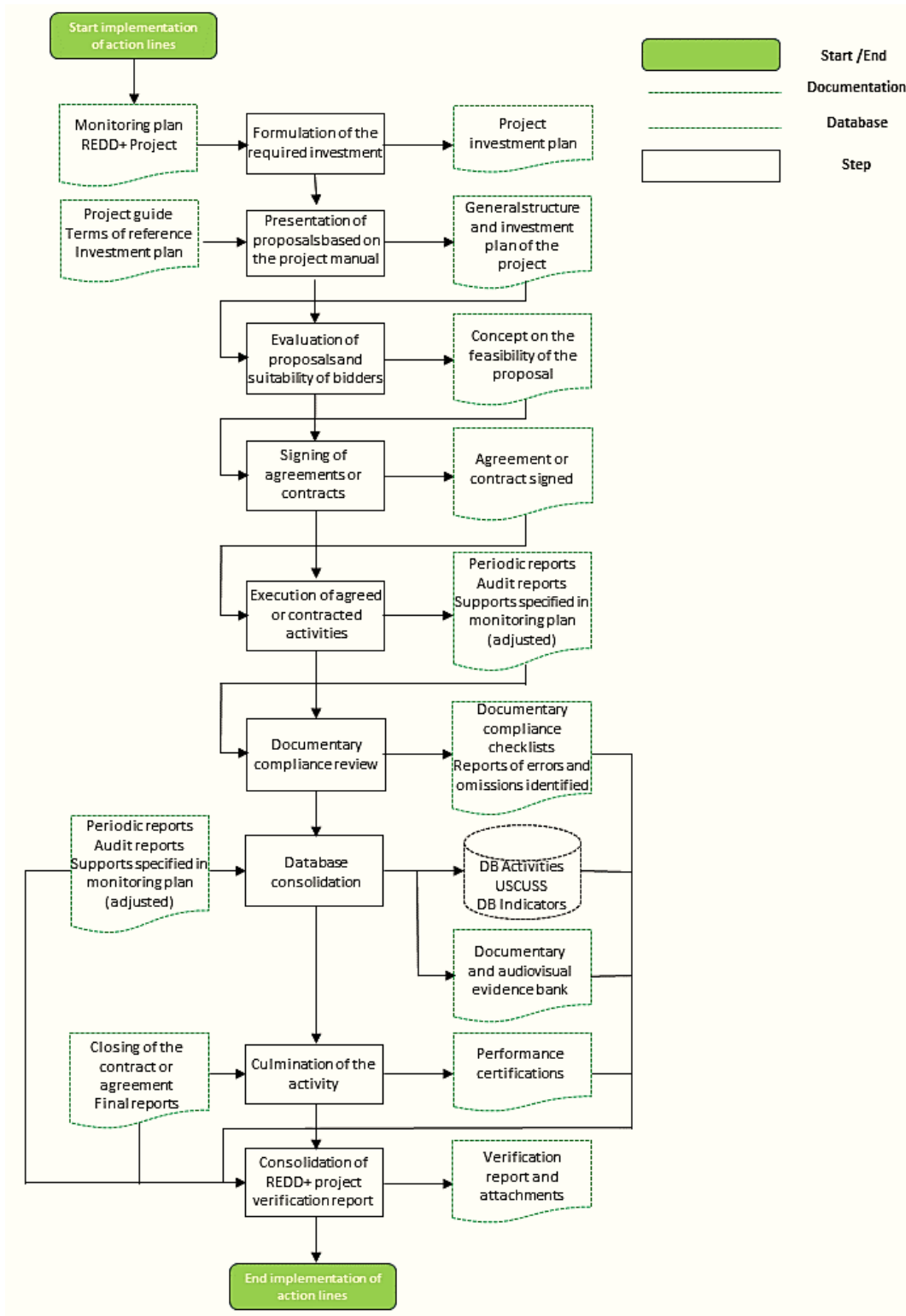
<p>which may generate the occupation of areas related to the project.</p>	<p>project, through its proponents, will advocate for the occupants of the areas to engage in activities in line with the project's objective, such as agroforestry.</p>		<p>project monitoring plan.</p>	
<p>Illegal market of fauna and flora for trade, pets, hunting, among others.</p>	<p>Include the population that wishes to harvest timber for commercialization in sustainable forest harvesting schemes within the framework of Colombian regulations.</p> <p>Include the population that wishes to harvest genetic resources or fauna in sustainable management plans within the framework of Colombian regulations.</p>	<p>Number of hectares included in sustainable forest management for inclusion in planned deforestation activities.</p> <p>Number of management plans generated for fauna, flora, or genetic resources within the framework of Colombian regulations.</p>	<p>Project implementation reports under the action lines of the TANGARA REDD+ project monitoring plan.</p>	<p>Although at the beginning of the project an alliance with the Cali Zoo was proposed to contribute to the processes of reinsertion and rehabilitation of seized wildlife, in the monitoring period 2019-2020 such work was not carried out because it depends on the process of recovery and readaptation of individuals, collected by the various entities authorized for this process. However, the alliance and the agreement remains in force, with a view that, in the following period, the territory can meet the requirements for the release process.</p> <p>On the other hand, projects have been formulated to mitigate the identified risk: Annexes 16, 18, 19, 19, 20 and 21.</p>
<p>Conversion of eligible REDD+ project areas into ineligible areas due to uncontrolled forest degradation and deforestation processes.</p>	<p>Identification, delimitation and marking of eligible areas of the TANGARA REDD+ project in areas at risk of deforestation and degradation due to productive processes or other.</p> <p>Sensitization of stakeholders that put at risk potential eligible areas of the TANGARA REDD+ project.</p>	<p>Number of hectares identified and delimited.</p> <p>Number of signs implemented.</p> <p>Number of training sessions held for stakeholders (mainly occupants).</p>	<p>Project implementation reports under the action lines of the TANGARA REDD+ project monitoring plan.</p>	<p>Annex 20. Forestry Project</p>

Dissatisfaction with the REDD+ project due to lack of ownership of project activities.	Acompañamiento en las reuniones y capacitaciones anuales previstas con el proponente del proyecto.	Number of trainings conducted  Number of meetings and/or trainings conducted by the project proponent and the project developer.	Project execution reports within the framework of the lines of action of the TANGARA REDD+ project monitoring plan.  Minutes of participation in meetings and trainings.	Annexes 7, 8, 9, 9, 12, 15
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**Source:** Tángara REDD+ project

In conclusion, there are risks of natural origin that cannot be controlled or foreseen, while those of anthropogenic origin must be mitigated and controlled through local planning and the internal resolution of socio-environmental conflicts, always with the technical support of Biofix Consulting as project developer.

The following internal procedure has been adopted to ensure the monitoring of the project activities and their follow-up:



Source: Tángara REDD+ project

## 4 Safeguards compliance analysis

This monitoring report presents the procedure adapted by Biofix Consulting for the follow-up and monitoring of the Socio-Environmental Safeguards, as shown in the following table:

Requirements	Evaluation procedure	Responsible	Frequency
A) Identification of compliance with legal and environmental requirements (including safeguards).	A technical-legal evaluation will be carried out to assess with variables and indicators the ongoing compliance with legal requirements, and especially the socio-environmental safeguards and the regulatory framework that guarantees them.	Technical and legal area Biofix Consultoría SAS	Semiannual
B) Adjust the reference level according to the latest IDEAM report on the reference level for the department of Valle del Cauca in accordance with the provisions of Resolution 1447 of 2018 or the rule that modifies, adds or replaces it.	Each time the IDEAM updates the reference level for the Pacific region, it will be reviewed and adjusted within the monitoring reports and its annexes of emission reduction calculations.	Technical Area Biofix Consulting SAS	Annual
C) Review compliance with the new Land Management Plans for the municipality of Buenaventura.	There will be a periodic review of the coupling and compliance of the project's actions with those contemplated in the Land Management Schemes for the municipality of Buenaventura.  In the same way with respect to the Departmental Plans whose validity is 2019 - 2022.	Technical and legal area Biofix Consultoría SAS	Annual
D) To review eventual substantive modifications that arise from the occupants of the territory (additions or subtractions of territories). (additions or subtractions of territories), and proponents of the project.	Documentary review of the administrative acts of existence and legal representation of the occupants of the project properties and their proponents.	Legal Area Biofix Consulting SAS  Coordinator Tangara Forest Zomac	Annual
E) Holding of meetings between the project pro-	Reception of concerns, proposals and possible modifi-	Social coordination of projects, communications and	Annually and when requested

ponents and the communities' occupants on the status of the project, implementation of participation mechanisms within the governance bodies of the community councils.	cations according to the requests of the Afro communities through their traditional authorities, with respect to the minutes and endorsed commitments, holding workshops and participatory, informative and extraordinary meetings for this purpose.	technical area Biofix Consultoria SAS	by the project proponents.
F) Review of regulatory and policy instruments on the conservation of natural forests and biological biodiversity.	Review of the aforementioned instruments to review the compatibility of measures, forest and biodiversity conservation, ecosystem services and multiple benefits.	Technical and legal area Biofix Consultoría SAS	Annually and when new instruments are issued.

**Source:** Tángara REDD+ project

#### 4.1 Analysis of monitoring of social and environmental safeguards

Compliance with social and environmental safeguards is mostly related to the project proponent, TANGARA REDD+ has a particularity in that it is being developed on private lands with occupations of Afro communities, referred to in this process as "*occupants*". Although it is necessary to include them in the participation process, but not in the decision-making, it is imperative to highlight the difference and the functions that apply as occupants and proponents.

The occupants of the land are the main actors and drivers of deforestation in the territory, so their participation in the project is essential in order to be able to benefit from the investment projects to be developed during the life of the project.

It is important to mention that the protocol for monitoring REDD+ safeguards in Colombia is under construction, as well as the protocol with the National System of Safeguards (SNS), and therefore this proposal will be improved in future deliveries as the country progresses in the consolidation of the REDD+ strategy, the National System of Safeguards, the processes of participation and involvement of stakeholders, and the implementation of measures and actions to reduce deforestation and degradation.

Cancun Safeguards	Cancun National Safeguards Interpretation	Follow-up Action	Responsible
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<p>The complementarity or compatibility of the measures with the objectives of national forestry programs and international conventions and agreements on the subject.</p>	<p>Correspondence with international agreements signed by Colombia on forests, biodiversity and climate change.</p>	<p>A technical-legal evaluation is made with the inclusion of the procedure adopted by Biofix Consulting for the follow-up and monitoring of Socio-environmental Safeguards, in section 5.4 of the monitoring report.</p>	<p>Technical and legal area Biofix Consultoría SAS</p>
<p>Transparency and effectiveness of national forest governance structures, taking into account national legislation and sovereignty.</p>	<p>Transparency and access to information</p>	<p>For the materialization of this purpose, Annex 26, referred to in Chapter 6 of the TANGARA REDD PDD 20181228, established the information quality management process. This includes procedures and mechanisms to ensure that information related to the project is transparent and accessible.</p>	<p>Legal Management, Financial Management, Social Coordination of projects, communications area and technical area Biofix Consultoría SAS</p>
	<p>Accountability</p>	<p>The accountability processes are convened by the project proponent jointly with BIOFIX, however.</p> <p>Biofix project manager and ally of the proponent for this purpose, provides technical, social and legal support in the meetings convened by the proponents, and thus ensure the participation and transparency of information in the framework of socio-environmental safeguards, as well as to answer queries and requests raised by the occupants, institutions and the general public.</p>	
	<p>Recognition of Forest Governance Structures</p>	<p>Project actions must be designed in accordance with existing forest governance structures and among the stakeholders involved in the process. Documents such as minutes of meetings, socialization, information, contracts with third parties, among other documents, show the respect and recognition that the proponents give to the internal dynamics of the occupying communities.</p>	
	<p>Capacity building</p>	<p>In general terms, the project guarantees and promotes the strengthening of the technical, administrative, legal and financial capacities of the actors involved, so that the parties can make documented, analyzed and informed decisions.</p>	

		<p>Likewise, it is always guaranteed that the benefits of the investment projects are in favor of the inhabitant communities, for this reason, in the Institutional and Governance Strengthening line of action, initiatives and actions are consolidated to support the strengthening of the capacities of the occupying communities.</p>	
<p>The full and effective participation of stakeholders, proponents and, in accordance with legal and statutory guidelines, occupants, in particular indigenous peoples and local communities, in the actions referred to in paragraphs 70 and 72 of this decision.</p> <p>in particular indigenous peoples and local communities, in the actions referred to in paragraphs 70 and 72 of the present decision</p>	<p>Participation</p>	<p>The project is aware of the annual updates of the documents that grant and are related to the land tenure of private parties and the dynamics with the occupants.</p> <p>In this way, the project guarantees the non-violation of rights by the stakeholders, holding meetings with the communities and making them part of the benefit of the productive projects developed in the areas.</p> <p>See folder: 3.LEGAL DOCUMENTS Subfolder Land Tenure</p>	<p>Legal Area Biofix Consulting SAS</p> <p>Social Coordination of projects, communications area and technical area Biofix Consultoria SAS</p>
<p>The compatibility of the measures with the conservation of natural forests and biological diversity, ensuring that the measures identified in paragraph 70 of this decision are not used for the conversion of natural forests, but instead serve to incentivize the protection and conservation of these forests and their ecosystem services and to enhance other social and environmental benefits;</p>	<p>Conservation of forests and their biodiversity</p> <p>Promotion of environmental goods and services</p>	<p>The project reviews regulatory and policy instruments on natural forest conservation and biological biodiversity, in accordance with the chapter "7. <i>Management of Legal Requirements in the TÁNGARA REDD+ Project design document</i>".</p> <p>In addition, the lines of action established by the community indicate a strengthening of the territory's own productive systems that would increase the promotion of environmental goods and services.</p>	<p>Technical and legal area Biofix Consultoría SAS</p>
<p>Actions to address the risks of reversion.</p>	<p>Environmental and Territorial Planning</p> <p>Sectorial Planning</p>	<p>The project performs periodic review of the compliance of the project actions with the territorial planning instruments.</p> <p>The reversion risk analysis is complemented with section 5.3 of this document.</p>	<p>Technical and legal area Biofix Consultoría SAS</p>

Actions to reduce emissions displacement.	Displacement of emissions	<p>Adjust the reference level according to the latest IDEAM report on the reference level for the department of Vichada in accordance with the provisions of Resolution 1447 of 2018 or the standard that modifies, adds or replaces it.</p> <p>The leakage analysis is complemented with section 7 and 8 of this document.</p>	Technical Area Biofix Consulting SAS
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**Source:** Tángara REDD+ project

## 5 Updating action lines and monitoring plan

### 5.1 Lines of Action

It is pertinent to clarify that the activities formulated at the beginning of the project were reformulated and adapted to the results of the characterization meetings and identification of problems with the communities<sup>5</sup>, resulting in environmental <sup>6</sup> projects with a clearer and more focused approach and roadmap. Thus, the context of the community and their needs within the territory, generate the change of some activities without altering the relationship with the productive system, conservation, biodiversity protection, ecotourism and improvement of living conditions.

#### 5.1.1 Institutional and Governance Strengthening

The private lands where the Tángara REDD+ project is being developed are occupied by communities from the Rio Mayorquín and Raposo community councils. For this reason, we want to incorporate institutional strengthening and governance strategies into the dynamics and roles of the occupying communities. In this way, equity, participation, pluralism, transparency, accountability and the rule of law will be promoted so that the project will be effective, efficient and sustainable in the future.

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<sup>5</sup> Meetings held during 2019 as shown in section 9. Monitoring Report of this document.

<sup>6</sup> Projects formulated with the company EduAmbiental



Strengthening the governance of the communities of Río Mayorquín and Raposo and the role of their traditional authorities will guarantee better decision-making in the long term and in the direction of conservation under a sustainable approach.

On the other hand, there has been an approach and linkage with the productive project of the Coast Guard of Buenaventura, which consists in designing an environmental park in the community of Punta Soldado<sup>7</sup>, built from the recycling of plastic bottles collected in the bays of the beaches, this project potentiates the welfare of the community, providing recreational infrastructure, providing various sources of income in the production and marketing stage of recyclable material, mitigating the negative impact of garbage in the seas and nearby mangroves.

To achieve the above, the following stages and related activities must be carried out:

#### **Stage I (2021) - II Semester**

- Formal link with the recycling project, formulation of the final document consisting of the roadmap of activities to be carried out.
- Socialization activities of the Recycling Project in the community of Punta Soldado.
- Conducting training and recycling workshops for the community of Punta Soldado to raise awareness and learn about the separation at source of their waste, the processes related to the collection, production and marketing of plastic.

#### **Phase II (2022)**

- Purchase and sale of materials and equipment, installation, construction and commissioning of the complete recycling plant.
- Development of a sales strategy with potential private and public customers for the marketing process of the recycled material.
- Construction of the Environmental Park

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<sup>7</sup> The intention is to implement this type of project in the other communities, however, it is subject to the dynamics of the councils and future obstacles.

**Phase II (2023 - 2027 - 2033 - 2039) <sup>8</sup>**

- Provide tools to community councils
- Training and capacity building for community leaders and authorities (governance, territory, community management and human rights) with a gender focus.

**Phase II (2024)**

- Design, develop and/or improve ethno-development plans.
- Construction and provision of a communal and administrative headquarters for each sector in each council.

**5.1.2 Program for participatory reforestation of degraded ecosystems**

One of the main problems of deforestation and forest degradation is the timber activity as the engine of the economy of the communities of the Colombian Pacific, which generates a serious impact on the forest resources of the tropical rainforest of the territory. Moreover, the excessive use of mangroves, mainly as a timber resource, has caused great losses in hectares of the Pacific coast and its biodiversity, so much so that the estimated rate of mangrove loss worldwide is 1 to 2%, a figure similar to the disappearance of coral reefs or tropical forests (Duke et al 2007).

In addition, mangroves have the capacity to store carbon, a characteristic of carbon sinks, which play a specific role in the fight against climate change. The degradation of these ecosystems leads to the loss of this ecosystem service, thus increasing the impact of climate change. For this reason, it is intended to develop projects related to the management and conservation of native mangrove forests and promising species, through strategies to empower the community, raise awareness about the importance of these ecosystems and the effects of climate change as a result of overexploitation of resources, as well as engage in good practices that allow the management and conservation of ecosystems.

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<sup>8</sup> Once the recycling project has been implemented with the Punta Soldado community, activities focused on strengthening governance will be carried out during the life of the project.

On the other hand, due to the pressure exerted on the forest cover by the inhabitants of the territory, it is necessary to carry out planned reforestation activities, adapted to the different scenarios of expected climate change, with suitable species adapted to the climatological and edaphic conditions of the region.

In this way, the assisted process of increasing the forest masses will guarantee a future increase in carbon sinks, progressively reduce the vulnerability of forests to the effects of climate change and, therefore, the fauna and flora populations associated with these ecosystems, allow the restoration of the fundamental ecological processes, minimizing the impact on the water cycle, while reducing the threats to the availability and quality of the resource, soil erosion and the intensification of other environmental impacts that affect the quality of life of local communities.

#### **Phase I (Cycle I 2023 to 2025, Cycle II 2030 to 2032)**

- Socialization of the project<sup>9</sup> in the communities and socialization workshops.
- Botanical tour: Meeting with loggers in the area to identify promising species and coordinate with the community on the species to be reforested/managed.
- Mangrove management plan: For the recovery of these ecosystems it is necessary to establish guidelines to achieve sustainable management in terms of conservation and recovery of these ecosystems, for this reason zoning of areas will be carried out.
- Formation of a logging association in the community.
- Establishment of a monitoring plot: In the area to be reforested, a zone will be established to monitor the mangrove species and their behavior in order to carry out follow-up work.

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<sup>9</sup> The project in question is SEMBRANDO TERRITORIO COMO ESTRATEGIA DE SOSTENIBILIDAD COMUNITARIA - CONSERVACION DEL MANGLE, formulated with the company EduAmbienta. Annex 20 of the following link <https://drive.google.com/drive/folders/1Tx48YWc87nq9wFz6EAoN8InbyFOC13R9?usp=sharing>

**Phase II: (Cycle I - 2024, Cycle II - 2034) <sup>10</sup>**

- Prioritization and definition of intervention areas and species to be reforested.
- Installation and operation of nurseries: which will allow the massive production of plants, controlling the effects of predators and diseases that could damage the seedlings in their most vulnerable stage.
- Participatory reforestation program: The reforestation process will continue with the endangered species that were considered in the nursery system and previously identified by the developers of the restoration proposal.

**Phase II: (Cycle I - 2024, Cycle II - 2034)**

- Monitoring of reforested areas: Once the prioritized areas have been reforested, monitoring systems will be in place and periodic information from remote sensors (optical, radar and drones) with high spatial resolution and field data collected by forest custodians will be used to evaluate the results of reforestation of at-risk timber species on an annual basis.

**5.1.3 Deforestation and forest degradation monitoring and control program**

The main objectives of the Deforestation and Forest Degradation Monitoring and Control Program are: a) to monitor land cover changes in the project area through image processing; b) to obtain detailed information on the extent of these changes; c) to identify causes and drivers; and d) to promote knowledge transfer through training of community members involved in forest management.

Little is known about changes within the different ecosystems in the country, as existing studies are mainly descriptive and limited in their ability to predict future dynamics of change (Etter et al. 2006). It is therefore important to develop models with a solid theoretical basis that can be easily implemented in the field by communities and that can better predict patterns of change.

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<sup>10</sup> The monitoring stage applies to the reforestation activities and mangrove management project described in Stage I.

In the context of REDD projects, models tend to focus on knowing the amount or future location of changes in forest cover. For this reason, BIOFIX, through the joint work of expert trainers and community foresters, aims to implement methodologies to determine the existence of deforested or degraded areas after project verification, including:

**Phase I (2022)**

- **Monitoring of deforested areas:** based on the development of deforestation monitoring protocols adapted to the conditions of the project area and its surroundings. Includes protocols for remote sensor processing and field data collection, route definition, identification of actions or evidence of potential deforestation, frequent detailed monitoring of the project area and its surroundings for possible early warning identification using satellite imagery.
- **Image acquisition and processing:** Ongoing review of general early warning information published by IDEAM.

**Stage II (2023)**

- **Identification of causes and agents of forest cover change:** from the collection of images and videos of potential areas with deforestation processes, as indicated by the early warnings generated and in the areas defined as vulnerable, using drones and field data collection according to established protocols.
- **Conduct a study on forest degradation:** Processing and analysis of information obtained from satellite imagery and drones.
- **Training of forest guards:** by training forest guards in the proper handling and use of drones in forest areas, including courses, socialization of protocols, field data collection and constant monitoring of the activities carried out.

In this regard, Decree-Law 870 of 2017 establishes that a voluntary agreement aims to formalize commitments between stakeholders in environmental services and the beneficiaries of the incentive for the development of conservation and restoration activities in strategic areas and ecosystems. Therefore, the ownership of avoided emissions in REDD+ projects depends on those who have the capacity or opportunity to carry out a change in land use,

not carrying out the activity and preserving the forest cover in the face of a trend or objective possibility.

#### 5.1.4 Production, Procurement and Marketing of Agricultural Units and non-timber products

This line of action has two aspects: the production, supply and marketing of agricultural units and the inclusion of non-timber products in the value chains of the economic activities of the inhabitants.

The productive agricultural activities in the communities of Río Mallorquín and Raposo will be used for family consumption and in large extensions of the collective territories. Regarding the former, the intention is to introduce small vegetable gardens on the roofs<sup>11</sup> of the most common crops used in the councils' kitchens, such as bananas, aromatic bananas and coconuts, in order to guarantee food security in the households and transform agricultural production to small and medium scale, from community management. In addition to the above, it is necessary to establish a waste management plan and formulate recycling strategies within the population, since there are no special areas for the disposal of waste generated by the community.

Now, the introduction of agricultural activities in large extensions of the collective territories is to be carried out primarily with the cultivation of açai, adapted to the technical, economic and social conditions that prevail in the Colombian Pacific region, in order to promote the possibility of safeguarding food security and sovereignty, and thus Guarantee a better living condition, offering possible alternatives of productive systems for self-sufficiency and commercialization of agricultural products that are not or have not been managed in a natural or

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<sup>11</sup> This activity is complemented by the project "STRATEGIES FOR THE USE OF ORGANIC WASTE AND PLANTING IN PROCESSES OF SUSTAINABILITY, CONSERVATION OF TRADITIONS AND FOOD SOVEREIGNTY". ROUTE: Annex 19 of the following link <https://drive.google.com/drive/folders/1Tx48YWc87nq9wFz6EAoN8InbyFOC13R9?usp=sharing>

conventional way in the region, and that can be evaluated from the initiative of the community for its establishment, innovation in derivatives and incursion in sustainable markets.

Black communities in the rural areas of Buenaventura engage in traditional socio-productive activities such as hunting, fishing, shell collecting, ancestral mining, and cutting and carving, the latter being achieved through the diversity of fine and wood species found in the territory. However, the extraction of forest products has focused on self-sufficiency, as communities depend on wood for the construction of houses, utensils, boats, and handicrafts, among others (PCN, 2017). In addition, the traditional products consumed have little supply and trade in other regions.

For this reason, it is necessary for communities to expand their knowledge of forest products in their territory and identify potential uses to generate a sustainable use of biodiversity and how to value, transform and promote the recovery of resources, thus guaranteeing their renewal and permanence in the long term. In this way, it is relevant to establish production and marketing strategies for different products through social entrepreneurship <sup>12</sup>.

In this way, the pressure generated by the engine associated with the conversion of forest land into agricultural land will be directly minimized, while at the same time having an indirect positive impact on the reduction of forest fire engines associated with the degradation and extraction of timber for illegal commercial sale, which community members have to resort to in order to seek alternative economic income due to the lack of employment opportunities. Reducing emissions due to deforestation, 2. Reducing emissions due to degradation and implicitly would aim at the sustainable management of forests.

The stages to be implemented are:

### **Stage I (2023) - First Semester**

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<sup>12</sup> This activity is complemented by the project "SI HAY PALO PA CUCHARA - ESTRATEGIAS DE USO DE LOS RECURSOS NO MADERABLES PARA EL DESARROLLO ECONOMICO COMUNITARIO" Annex 21 from the following link <https://drive.google.com/drive/folders/1Tx48YWc87nq9wFz6EAoN8InbyFOC13R9?usp=sharing>

- Definition of areas to intervene: Use of technological, technical and territorial criteria to define priority suitable areas, without incurring in deforestation or forest degradation.
- Solid waste management strategy for the communities

### **Stage II (2023) - Second Semester**

- Planting and crop rotation: In the initial phase, expansions of the area will be available for planting and maintenance of the crop by local labor, without causing deforestation of the conserved areas. The monitoring of the crops will be annual and will provide a final report on their viability and operation. It includes land preparation and adaptation, fertilization, seed selection, planting, irrigation, maintenance, harvest, rest and rotation.
- Training and certification in good agricultural and environmental practices: Training for the community in associative, administrative and productive processes and in the improvement of practices so that agricultural production and the extraction of derivatives meet quality and safety requirements and are competitive in the markets. Periodic to ensure the incorporation of new initiatives and the updating of community members who implement the project.
- Registration in the Green Business Window: In order to receive technical support, evaluation of progress and commitments from the Environmental Authority, the project will be registered through the entity's window.

### **Phase III (2024)**

Product transformation and marketing: This activity includes both the acquisition of inputs and equipment necessary for the transformation activities, the adequacy of spaces to be used, as well as the definition of market chains for marketing, training of participating villagers, and start-up.

#### **5.1.5 Wildlife Release**



The release of the animals is a process that has been carried out in collaboration with the Fundación Zoológica de Cali. The zoo received all the animals confiscated by the environmental authorities of the southwest region for illegal wildlife trade, and once each specimen received was evaluated and identified, the animals were released on the grounds of the TANGARA project.

This process has been going on since January 2010 and in these days guatines, armadillos, cusumbos, snakes and several species of birds have been deposited and released. Likewise, the Cali Zoo certifies through Appendix 5 that the properties comply with all the requirements of protection, conservation and supervision exercised by the owner, guaranteeing the welfare, stability and reproduction of the released species.

That the species to be released have followed an evaluation protocol that determines that the species to be released have recently been captured for illegal wildlife trade and that they belong to the area where the release is taking place. The wildlife release process has been supported by the Zoo to strengthen forest governance in the area by educating landowners about the importance of wildlife and the consequences of selling wildlife outside its habitat.

However, the reintroduction program depends on the recovery and reintroduction process of the individuals. Since this process depends on the availability of individuals for reintroduction at the Cali Zoo, and that the habitat offered by the project site meets the required conditions, this activity depends on the conditions described above. For this reason, this activity depends on the conditions described above, which is why it is not appropriate to establish fixed years in the stages; however, during the life of the project, this activity will be carried out when the situation meets the conditions. It is important to keep in mind that the activity of extraction and commercialization of native species, with the monitoring and control programs carried out by the authorities, means that there are fewer and fewer individuals to be reintroduced.

### **Stages (I)**

- Selection of species captured as a result of illegal wildlife trade.
- Identification of areas for wildlife release

### **Stage (II)**

- Release of endemic species

### 5.1.6 Sustainable Use of Piangua

Piangüas (*Anadara tuberculosa* and *Anadara similis*) are two bivalve mollusks of the Arcidae family found in the project area. The methods used to catch and market this species are artisanal. In the project area, the piangüa resource is associated with the traditional consumption of the Afro-descendant tenants of the Pacific coast, who have used it ancestrally as part of the food base. In recent years, however, it has become a source of economic income, becoming the most important commercial mollusk species on the Colombian Pacific coast.

The piangua harvested in this municipality is sold to local intermediaries, the measure of sale is called can, one can of piangua is equivalent to an average of 360 individuals, some surplus of the collection that is not consumed locally is sent to the markets of Buenaventura, the species is marketed with shells as this allows a better conservation of the product. It can be said that in these communities 80% of the population lives from this activity, not only providing them with money, but also serving as a form of credit and in many villages there is a barter system for goods or services that are covered with piangüas (IIAP, 2009).

Although it is a species with commercial potential, its unrestricted and uncontrolled harvesting puts it at risk of extinction and deforestation in the project area. The piangüa is listed in the Red Book of Invertebrates of Colombia as a threatened species in the Vulnerable category. Likewise, the national government has shown its concern for the situation of the Piangua fishery by including it in the 2019 Plan, Visión Colombia II Centenario, of the National Planning Directorate, as one of the four marine species to be conserved, recovered and protected by establishing levels suitable for its sustainable commercial use.

The formulation of this line of action is based on the formulation of the project SUSTAINABLE MANAGEMENT OF THE PIANGUA FOR ECONOMIC DEVELOPMENT AND FOOD SOVEREIGNTY OF THE TERRITORY<sup>13</sup>, which focuses on the collective construction of

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<sup>13</sup> Appendix 18

initiatives based on pedagogical strategies that allow the recovery of the ecosystem and species in a sustainable way.

The stages to be carried out are

### **Stage I**

- Identification of the expectations and specific needs of the beneficiary community of the project: For this, it is essential to make previous approaches with the communities through workshops (the spiral of the territory, the here and now and the vision of the territories) as a roadmap to frame each of the strategies and that these in turn are appropriated by the community.
- Roadmap for a sustainable management plan: Based on the Development Plan of the Community Council of the Mayorquín River Basin, a Roadmap for the Sustainable Management Plan of the Piangua Extraction Zones will be drawn up, defining objectives for conservation, exploitation and commercialization.
- Creation of "Permanent Collective Learning Spaces for the Sustainable Recovery of the Community Pantry": Through these spaces, strategies for the recovery of ecosystems and related products can be generated to achieve food sovereignty in the territory.

### **Stage II**

- Training in good mangrove harvesting and conservation practices.
- Conservation cycle: With technical support, it is expected to train and adapt spaces for the captive breeding of piangüa to later release them in the mangroves, thus making it possible to restore the resource in stages, which can be reflected in the reproduction and increase the supply of the mollusk. With the help of talking maps, the piangüeras will be able to zone the shellfish harvesting areas in order to rotate the harvesting sites in the territory, thus avoiding the erosion of the ecosystem.

- Monitoring and follow-up: through strategies developed by the community to monitor the extraction of the minimum recommended size, rest (closed season), new routes, conservation of piangua banks that allow it to continue growing and reproducing.

### **Stage III**

- Transformation and marketing of the products: This activity includes the acquisition of inputs and equipment necessary for the transformation activities, the adaptation of the spaces to be used, as well as the definition of the market chains for marketing, the training of the inhabitants involved and the launch of the project.

#### **5.1.7 Medicinal Plants and Access to Genetic Resources**

In Colombian regulations, genetic resources include all material of a biological nature that contains genetic information (functional units of heredity) of real or potential value or utility (Decision 391 of 1996, Law 165 of 1994) of real or potential value or utility (Decision 391 of 1996, Law 165 of 1994). Genetic resources are a dimension of biodiversity that is stratified from genes to individuals, species, populations, ecosystems and landscapes.

Genetic resources translate into goods and services for human beings, which can be exploited from their expressed form (genes) in food, raw materials, natural medicines, among others; to the application of biotechnology to produce goods and services of high added value, satisfying both basic needs and market novelties.

The research on access to genetic resources will be carried out through the guidelines of the National Program for Sustainable Biotrade 2011-2021 and the Application Manual for the Contract of Access to Genetic Resources and their Derived Products in Colombia<sup>14</sup>.

According to García and Polania (2007), there is a lack of research on commercial genetic resources in Colombian mangroves, and this strategy creates incentives for mangrove conservation. Likewise, a large number of medicinal plant species have been found in Colombia's mangroves (35,000 to 70,000 species), the region offers sufficient water resources, a

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<sup>14</sup>[http://www.udea.edu.co/wps/wcm/connect/udea/a0fe91e2-71dd-46b6-92d3-](http://www.udea.edu.co/wps/wcm/connect/udea/a0fe91e2-71dd-46b6-92d3-68aaf91f882b/Anexo_2_Manual_de_solicitud_del_contrato_ARG.pdf?MOD=AJPERES)

[68aaf91f882b/Anexo\\_2\\_Manual\\_de\\_solicitud\\_del\\_contrato\\_ARG.pdf?MOD=AJPERES](http://www.udea.edu.co/wps/wcm/connect/udea/a0fe91e2-71dd-46b6-92d3-68aaf91f882b/Anexo_2_Manual_de_solicitud_del_contrato_ARG.pdf?MOD=AJPERES)

great diversity of soils and climates, and a good geographical location for the production of medicinal plants. Therefore, the Tángara REDD project will promote research on access to genetic resources and the extraction of medicinal plants with high market value through the following stages:

**Phase I (2025)**

- Research agreement on systematics, ecology, evolution and molecular biogeography, as established in Decree 1076 of 2015, with the Corporación Autónoma Regional and the Universidad de Buenaventura.

**Phase II (2026)**

- Recruitment of experts in bio-trade of genetic resources and medicinal plants to manage the establishment of conditions, requirements and obligations for access to genetic resources for industrial and commercial purposes.

**Stage III (2028)**

- Request for a contract for access to genetic resources and products derived therefrom in accordance with the provisions of Article 2 of Resolution 1348 of 2014.

## 6 MONITORING REPORT

In accordance with the new lines of action formulated, the updated monitoring plan for the Tángara REDD+ Conservation project is presented below.

Línea de Acción	Objetivo	Subactividades	Indicadores Soportes	Periodicidad de medición	Actores Relacionados
Institutional and governance strengthening	Design strategies aimed at strengthening institutions and governance in the dynamics and roles of the occupying communities.	Linking and socialization of recycling project	Indicators	Anually	Direct Actors Tángara Forest SAS-ZOMAC Proponents  Communities Occupying the land  Coast Guard Unit of Buena-ventura
		Purchase and sale of materials and equipment, installation, construction and commissioning of the complete Recycling Plant.	Number of equipment purchased Tons of plastic material collected Tons of recycled material People trained Workshops held		
		Establish a sales strategy with potential private and public clients for the commercialization process of recycled material.	Number of associations and enterprises strengthened and made more visible Number of women trained in leadership and governance processes		

		<p>Construction of the environmental park for the benefit of the community's well-being</p> <p>Provision of tools for community councils</p> <p>Training and capacity building for community leaders and authorities (governance, territory, community government and human rights), with a gender focus.</p> <p>Design, preparation and/or improvement of Ethno-Development Plans.</p>	<p>Supports</p> <p>Environmental park built</p> <p>Revenues generated from the commercialization of the material</p> <p>List of clients</p> <p>Ethnodevelopment plan</p> <p>Attendance list</p>		<p>Potential stakeholders to participate</p> <p>Mayor's Office of Buenaventura</p>
<p>Program for participatory reforestation of degraded ecosystems</p>	<p>Develop environmental education strategies with the community for the management, conservation and mitigation</p>	<p>Socialization of the project</p> <p>Socialization workshops and adjustments to the project if necessary.</p> <p>Botanical tour: identification of promising species</p>	<p>Indicators</p> <p>Points identified for reforestation intervention</p> <p>Percentage of points to be intervened reforested</p> <p>Number of individuals planted per species</p>		<p>Direct Actors</p> <p>Tángara Forest SAS-ZOMAC</p> <p>Proponents</p>

	<p>gation of the pressure being exerted on mangrove ecosystems.</p>	<p>and consultation with the community on the species to be reforested/managed. Mangrove management plan: Establish sustainable management guidelines for the preservation and recovery of these ecosystems, for this reason the zoning of areas will be carried out.</p> <p>Formation of a logging association in the community.</p> <p>Establish a monitoring plot: A zone is established in the area to be reforested to monitor the mangrove species and their behavior in order to carry out follow-up work.</p>	<p>Total number of hectares reforested</p> <p>Number of alerts generated during monitoring per year</p> <p>Number and types of species to be reforested</p> <p>Supports</p> <p>Mangrove Management Plan</p> <p>Zoning maps of the areas</p> <p>Monitoring maps of coverages</p> <p>Report of results</p>	<p>Anually</p>	<p>Communities occupying the land</p> <p>EduAmbiental</p> <p>Community Timber Association</p> <p>Potential Stakeholders to participate</p> <p>Higher Education Institutions</p>
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	<p>Carry out reforestation and recovery of native vegetation in water courses and soils degraded by conflicts of use with the participation of the occupying communities.</p>	<p>Prioritization and definition of areas to be intervened and species to be reforested.</p> <p>Installation and operation of nurseries: these will allow for the mass production of plants while controlling the effects of predators and diseases that could damage the seedlings in their most vulnerable stage.</p> <p>Participatory reforestation program: The reforestation process will continue with those timber species at risk that were contemplated within the nursery system and that were previously identified by the developers of the restoration proposal.</p>			
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		<p>Monitoring of reforested areas: Monitoring will be carried out using periodic information from remote sensors (optical, radar and drones) with high spatial resolution and field information collected by forest custodians, with the mission of annually evaluating the results of reforestation of timber species at risk.</p>			
<p>Deforestation monitoring and control program</p>	<p>Monitor changes due to deforestation in the area of influence through the processing of satellite images and/or images taken for the project.</p>	<p>Monitoring of deforestation areas: According to IDEAM deforestation early warnings.</p> <p>Image acquisition and processing: Use of drones to take images, subsequent georeferencing and analysis of spatial information.</p>	<p>Indicators: Total hectares affected by deforestation. Agents and actors, new or recurrent generators identified New and recurrent causes identified Number of alerts reported per year</p> <p>Parameters for monitoring:</p>	<p>Quarterly</p>	<p>BIOFIX will be in charge of carrying out the monitoring program through joint work between expert trainers and community rangers.</p>

		<p>Identification of causes and generating agents of land cover changes: Based on primary information provided by the community.</p> <p>Execution of a study on forest deforestation:</p> <p>To complement the primary information of the project regarding the drivers and quantification of areas affected by deforestation, as well as the generation of the respective GIS layer.</p>	<p>Size of project area, leakage area, reference region and forest area in reference region.</p> <p>Transition areas in post deforestation scenario.</p> <p>Stratum or land use transition area for year t.</p> <p>Supports: Satellite images Images taken with drones Images and videos taken in the field Early warnings reported by IDEAM.</p>		
	Transfer monitoring knowledge to forest custodians.	<p>Training for forest custodians:</p> <p>In the use of drones for monitoring and reporting information.</p>	<p>Periodic monitoring reports Training attendance lists</p>		
Production, Procurement and Marketing	Promote the production capacity of	Definition of areas to intervene: Use of technological,	Indicators:		Direct Actors

<p>of Agricultural Units and non-timber products</p>	<p>agricultural and non-forest products, through the strengthening of the production, transformation and commercialization stages.</p>	<p>technical and territorial criteria to define priority suitable areas, without incurring in deforestation or forest degradation.</p> <p>Solid waste management strategy for the communities</p> <p>Crop installation and rotation: Land preparation and adaptation, fertilization, seed selection, planting, irrigation, maintenance, harvest, rest and rotation.</p> <p>Training and certifications in good agricultural and environmental practices: Training the community in associative, administrative and productive processes and in improving practices so that agricultural produc-</p>	<p>Suitable hectares harvested in agricultural products.</p> <p>Percentage of local labor hired in the different stages of the project</p> <p>Expected productivity per hectare</p> <p>Productivity per hectare achieved</p> <p>Number of by-products obtained</p> <p>Number of technological processes implemented</p> <p>Number of consolidated production chains</p> <p>Number of workshops on best practices carried out</p> <p>Number of people trained and certified.</p> <p>Supports:</p> <p>Execution and results report</p> <p>List of attendance at training processes</p>	<p>Anually</p>	<p>Tángara Forest SAS-ZOMAC Proponents</p> <p>Communities occupying the land</p> <p>EduAmbiental</p> <p>Small farmers</p>
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		<p>tion and non-timber products meet quality and safety requirements and are competitive in the markets.</p> <p>Registration at the Green Business Window: To receive technical support and evaluation of progress and commitments from the environmental authority, the project will be registered through the entity's window.</p> <p>Transformation and commercialization of products: Acquisition of inputs and equipment necessary for the transformation activities, the adequacy of the spaces to be used, as well as the definition of the mar-</p>	<p>Certificate of registration in the window</p>		
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		ket chains for commercialization, training of the participating villagers and start-up.			
Wildlife Release	Contribute to the reinsertion and rehabilitation of seized wildlife.	<p>Selection of species captured as a result of illegal wildlife trafficking.</p> <p>Identification of areas for wildlife release</p> <p>Process of releasing endemic species</p>	<p>Indicators</p> <p>Number of species released</p> <p>Associated species</p> <p>Contracts carried out</p> <p>Supports</p> <p>Report of results</p> <p>Report of species released</p> <p>Species captured</p>	Anually	<p>Direct Actors</p> <p>Bidders</p> <p>Tángara Forest SAS-ZOMAC</p> <p>Cali Zoo</p> <p>Environmental and police authorities in charge of illegal wildlife capture.</p>
Sustainable Use of Piangua	Develop educational initiatives that promote the recovery, conservation, reproduction, and sustainable extraction of the piangüa resource in the estuaries of the black	Identification of expectations and specific needs of the project's beneficiary community: Previous approaches with the communities through workshops (the spiral of the land, here and now and vision of the territories), as a roadmap to	<p>Indicators</p> <p>Productivity per harvest of Piangua</p> <p>Expected productivity</p> <p>Number of pineapples produced</p> <p>Number of people trained in good practices</p> <p>Workshops or training given</p>	Anually	<p>Direct Actors</p> <p>Tángara Forest SAS-ZOMAC</p> <p>Proponents</p> <p>Communities occupying the land</p>

	<p>communities, to generate food sovereignty processes that promote community economic development.</p>	<p>frame each of the strategies and that these in turn are appropriated by the community.</p> <p>Sustainable management plan roadmap: Based on the development plan of the community council of the Mayorquín river basin, a roadmap will be drawn up for the sustainable management plan for the extraction zones of the giant tortoise, establishing goals for conservation, use and commercialization.</p> <p>Creation of "Permanent collective learning spaces for the sustainable recovery of the community pantry":</p>	<p>Number of consolidated production chains</p> <p>Support</p> <p>Execution reports</p> <p>Attendance list</p> <p>Photographic record</p> <p>Management plan</p>	<p>EduAmbiental</p> <p>Potential Stakeholders to participate</p> <p>CVC</p> <p>Higher Education Institutions</p>
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		<p>Training in good pianguagua extraction practices and mangrove conservation.</p> <p>Conservation cycle: Training and adapting spaces for the captive breeding of pianguagua to later release them in the mangroves, in this way it is possible to restore the resource in stages and this can be reflected in the reproduction and increase.</p> <p>Monitoring and follow-up: Monitor the extraction of the minimum recommended size, rest (closed season), new routes, conservation of pianguagua banks, which allows them to continue growing and reproducing.</p>		
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		<p>Transformation and commercialization of products: Acquisition of the necessary equipment and equipment for processing activities, adaptation of the spaces to be used, as well as the definition of market chains for commercialization, training of participating occupants and the implementation of the project.</p>			
<p>Medicinal Plants and Access to Genetic Resources</p>	<p>Promote research on access to genetic resources and extraction of medicinal plants with high market value.</p>	<p>Carry out a research agreement with the Regional Autonomous Corporation and the University of Buenaventura.</p> <p>-Hire experts in biotrade of genetic resources and medicinal plants.</p> <p>- Request contract with the Ministry of Environment</p>	<p>Indicators</p> <p>Agreements signed</p> <p>Number of professionals hired</p> <p>Profession of persons hired</p> <p>Documents collected</p> <p>Supports</p> <p>Reports of results</p> <p>Social Security of hired personnel</p> <p>Requested contract</p>	<p>Anually</p>	<p>Direct Actors</p> <p>Proponents</p> <p>Tángara Forest SAS-ZOMAC</p> <p>Community of land occupants</p> <p>Potential Stakeholders to participate</p> <p>MADS</p>

		and Sustainable Development for access to genetic resources and their derived products in accordance with the provisions of Article 2 of Resolution 1348 of 2014.	Report of results of joint construction processes		Regional Autonomous Corporation  Buenaventura University
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**Source:** Tángara REDD+ project

## **7 Agents of deforestation and forest degradation motors**

### **7.1 Analysis of Actors and Drivers of Deforestation and Forest Degradation**

The causes of deforestation and forest degradation resulting from anthropogenic activities are human actions carried out locally in a forest, such as expanding agriculture and/or livestock farming, implementing infrastructure projects, forced displacement, illegal mining, or selective harvesting of forest species, whether for obtaining timber or other uses involving the felling of individual trees, directly impacting natural vegetation cover. Although there are also natural causes determined by the biophysical conditions of the territories (Dueñas, 2018). However, anthropogenic causes are subject to local and regional contexts due to underlying causes that can be demographic, economic, technological, cultural, and institutional, which are specific to each territory and are not always clear (Geist & Lambin, 2002).

Therefore, to identify the agents and drivers of deforestation and forest degradation in the project area, it is necessary to describe the context in which these agents and drivers converge. This involved consulting information sources related to the project area. This was done from the perspective of the environmental authority, which is responsible for managing and regulating the use of natural resources. It was also done through management and coordination figures such as municipal governments and governorships, and through contributions from specialized research institutes recognized as official sources of information for decision-making by public institutions, such as the Pacific Environmental Research Institute - IIAP.

In the analysis of deforestation and degradation, several criteria were considered for the compilation of information. One of them concerns the consideration that forest degradation is analyzed based on fragmentation analysis. Therefore, forest degradation is conceived as a stage of deforestation or complete loss of coverage when it is induced by anthropogenic causes. For this reason, quantification becomes more complex, and therefore, quantification and identification of actors may be done together in some specific cases.

Another criterion considered was the inclusion of observations recorded during field visits in the project's development to identify the influence of spatial and non-spatial variables in

deforestation and forest degradation processes, as related by Geist & Lambin (2002) and as presented below:

**Spatial variables:**

- The type of forest located in the area that has high commercial value.
- Extensive distances in the territory, making it difficult for the project proponent to control the entire area and for government and local authorities to have control.
- Poor conditions in terms of access roads and connectivity, and maritime transport as the main means of transportation.

**Non-Spatial variables:**

- Demand for illegally harvested timber.
- External factors associated with the lack of appropriate technologies, consolidated production chains, specific public policies, microcredit opportunities, and knowledge of neighboring communities for the sustainability of forestry and agricultural production, which affects the dynamics of occupants in the territory.
- Increased pressure on resources due to population growth and/or displacement in neighboring communities.
- Difficulties in diversifying and increasing income for community sustenance, making illegal practices attractive.

his analysis complements Section "4. ANALYSIS OF AGENTS AND DRIVERS OF DEFORESTATION" of the PDD TANGARA REDD+ V.1. In this section, the analysis of actors and drivers of deforestation and forest degradation is added based on the guidelines in Section "10. CAUSES AND AGENTS OF DEFORESTATION AND/OR DEGRADATION" of the Pro-Clima Methodological Document Version 2.2. The main drivers of deforestation and forest degradation in different project areas (reference area, project area, leakage area) are identified, as shown below:

Type of activity	Type of Cause	Origin	Agent	Interests and motivations	Spatial and temporal dimension	Type of impact
Deforestation	Underlying	Anthropic	Conversion of forest land to subsistence agricultural land (External Actor)	Establish productive agricultural plots for self-consumption and local commercialization.	In the reference and implementation period of the project, in the areas of: Reference Area Project Area Leakage Area	Direct
Degradation	Underlying	Anthropic	Unsustainable extraction of firewood for fire and/or subsistence (External Actor)	Selective harvesting of wood energy species or part of them for cooking activities is carried out.	In the reference and implementation period of the project, in the areas of: Reference Area Project Area Leakage Area	Indirect
Deforestation	Underlying	Anthropic	Population Migration Dynamics (External Actor)	Due to conflict events by external actors, internal actors have to relocate.	In the baseline and project implementation period, in the areas of: Project Area Reference Area Leakage Area	Indirect
Degradation and Deforestation	Direct	Natural	Natural vegetation cover fires	Climatic conditions not so common in the area	In the baseline and project implementation period, in the areas of: Project Area Leakage Area Reference Area	Direct

Degradation and Deforestation	Direct	Natural	Coastal marine erosion	Very common climatic condition in the area	In the baseline and project implementation period, in the areas of: Project Area Reference Area	Direct
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**Source:** Tángara REDD+ project

### 7.1.1 Conversion of Forest Lands into Subsistence Farming

Based on what is substantiated in item 2.1 of the PDD regarding the socio-economic characteristics of the municipality where the project is located, it is identified that around the project area and in the reference area, there are community councils such as Río Anchicayá, Brazitos and Amazonas, Taparal, Río Raposo, among others. These communities are characterized by practicing agriculture as a means of subsistence, with their main crops being mixed crops, chontaduro, borojó, citrus fruits, among others (Pérez, 2008). It should be noted that in the areas related to the project, some families are settled as occupants, who have sought to replicate their traditional practices. These families come from neighboring territories such as the aforementioned community councils.

Alongside the occupation of the territory by external actors and the development of subsistence farming, it should be emphasized that, in general, these families have limited technical capacity to establish productive alternatives that align with environmental sustainability. This leads to processes of land degradation and deforestation in the areas they decide to occupy. This deforestation driver is identified in both the reference area and the project area and the leakage area, as it is typical practice in the Pacific biome.

### 7.1.2 Unsustainable Extraction of Firewood for Cooking and/or Subsistence

The extraction of firewood from the forest is seen as a supply service for ecosystems and is carried out by communities that have historically inhabited the Pacific region. Given the location of the project, surrounded by various community councils, it is a common activity in most of the reference area and to a lesser extent in the project area by occupants, and in the leakage area. It should be noted that the firewood obtained from the forest is valued as a source for cooking food, generally extracted from the mangrove in the form of "tucos" (round pieces) and splinters (red, salted, and nato mangrove) (PNN & MAVDT, 2006).

Its consumption is determined by technical, economic, ecosystem, social, and cultural variables, but it is recognized that it poses health problems due to respiratory issues. This raises the need to establish mitigation measures, either by ceasing to use this type of cooking fuel where possible or by implementing eco-efficient stoves to minimize health risks.

It is considered a driver of forest degradation primarily because individuals are not always completely felled; on the contrary, the primary source of energy makes use of tree trunks and branches, excluding the waste from logging activities.

For the country, the most comprehensive reports regarding firewood use are the National Energy Study "ENE" and the Analysis of Energy in the rural sector, conducted in 1982. The ENE shows that the average daily consumption of firewood for cooking varies from 19.35 kg/day for open stoves, 25.87 kg/day for stoves with a flat top without a chimney, and 29.48 kg/day for stoves with a flat top and chimney. Per capita consumption was calculated at 100 kg/month and in the least efficient case, 150 kg/month (FAO, 2008).

According to figures from the National Administrative Department of Statistics - DANE, in the Quality of Life Survey (ECV) 2013, in Colombia, there are 1.6 million families that use firewood daily for cooking, of which 1.4 million are rural families and the remaining families are urban.

### 7.1.3 Population Migration Dynamics

Population migration in the Pacific region has been influenced by local illegal markets, primarily associated with the extraction of forest products and species. Another reason that has had a significant impact on local communities in the region, especially community councils, is the presence of illegal armed groups. Many of the occupants in the areas related to the project are a product of these actions.

This deforestation driver in the region is mainly driven by illegal economies, especially those related to coca leaves and coca paste. This dynamic gains strength due to conditions of marginalization and limited rural employment opportunities. Since the main economic activity is extensive livestock farming, very little labor is required. As a result, settlers clear forested areas to establish mixed crops and coca, which are typical in the early years and are later replaced by pastures. This indirectly affects the region as a corridor for the marketing of these products, involving some young people in the region, especially as transporters (Dueñas, 2018).

### 7.1.4 Forest Cover Fires Due to Natural Causes



High biological diversity, the sustainability of water and soil resources, as well as some human activities, are affected in the Chocó Biogeographic region, especially in the reference area, by forest cover fires that typically occur during the annual dry periods in December to March and July to August. These fires are exacerbated by the El Niño phenomenon and the speed of winds coming from the Pacific Ocean. In the project area, forest fires of natural origin are not common because it is a high-humidity and high-annual-precipitation zone. However, it is still a latent risk, as forest fires of anthropogenic.

#### 7.1.5 Coastal Marine Erosion

Coastal marine erosion is a latent and constant degradation phenomenon in the project area and the reference area, both in the reference period and during the implementation period of the REDD+ project. This is due to the oceanographic dynamics that surround the western part of the project area. Continuous monitoring of the coverages is planned for this phenomenon.

## 7.2 Analysis of Changes in Behavior of Deforestation and Forest Degradation Agents

Now, based on the identified drivers and agents of deforestation and forest degradation in the reference areas, leakage area, and project area, and with a clear understanding of their motivations and interests, relevant mitigation measures are established within the framework of the Monitoring Plan.

These measures aim to provide alternative options for changing these behaviors and dynamics, always respecting the autonomy, self-recognition, and worldview of the local community. The goal is to mitigate unplanned deforestation and degradation in the project area and prevent the displacement of these activities to the leakage belt.

Line of Action	Drivers related	Justification	Monitoring method
Institutional and Governance Strengthening	Conversion of forest land to subsistence agriculture.	By strengthening the governance of the resguardos and the role played by their traditional indigenous authorities, a more accurate decision making process is guaranteed in the long term and in the direction of conservation under the sustainability approach, in this way, through planned activities, the conservation areas and areas destined for productive activities of the occupying communities are controlled and managed.	Annual management reports on the line of action in comparison with the indicators proposed and those achieved. Similarly, compliance with local planning instruments will be verified within the framework of compliance with socio-environmental safeguards.
	Conversion of forest land to commercial forest plantations.		
	Population migration dynamics	With local planning instruments such as ethno-development plans, mechanisms and protocols are established to deal with emergencies due to population migration that mitigate the impacts that may occur.	

<p>Deforestation monitoring and control program</p>	<p>Conversion of forest land into pasture for livestock grazing.</p> <p>Illegal logging for commercial purposes</p> <p>Natural fires of vegetation cover</p> <p>Coastal marine erosion</p>	<p>The monitoring and control program for deforestation and degradation includes a technical component, which is carried out by analyzing sentinel, radar, landsat or other satellite images that help fill information gaps due to cloud cover.</p> <p>When there are medium- or large-scale disturbance events, the community council will be informed through an early warning mechanism to verify whether it is possible to intervene or to direct communications to the relevant environmental authorities.</p> <p>In this way, technical monitoring is complemented by the social monitoring of the forest custodians.</p>	<p>Monthly monitoring reports on deforestation and degradation and verify the number of early warnings generated and mitigation actions taken.</p>
<p>Production, Procurement and Marketing of Agricultural Units and non-timber products</p>	<p>Conversion of forest land to subsistence agriculture.</p> <p>Illegal logging for commercial purposes</p>	<p>By planning and controlling the areas set aside for agricultural crops and non-timber products, the impact associated with these areas being degraded or transformed into timber extraction is minimized. In addition, strengthening the value chains for the production of these commercial products allows the community to have a source of income, reducing the possibility of entering into illegal timber extraction practices.</p>	<p>Implementation reports of the agricultural enterprises supported by the REDD+ project.</p>
<p>Sustainable use of piangüa</p>	<p>Coastal marine erosion</p> <p>Illegal logging for commercial purposes</p>	<p>Through environmental education initiatives that promote the recovery, conservation, reproduction, and sustainable extraction of the piangüa resource in the estuaries of the occupying black communities.</p>	<p>Annual management reports on the line of action in comparison with the indicators set and achieved.</p>

		<p>In this way, the production, commercialization and sale of piangüa is formalized and encouraged in order to offer the community other economic livelihood alternatives to illegal timber extraction.</p>	
<p>Program for participatory reforestation of degraded ecosystems</p>	<p>Conversion of forest land to commercial forest plantations</p> <p>Illegal logging for commercial purposes</p> <p>Unsustainable firewood and/or subsistence fuelwood extraction</p> <p>Natural fires of vegetation cover</p> <p>Coastal marine erosion</p>	<p>Restoration, recovery or participatory rehabilitation activities are established in priority areas that are determined in the monitoring program, which is carried out weekly and reports are submitted every six months.</p> <p>In such a way that general reforestation activities can be in abandoned agricultural areas. Enrichment activities in areas of natural forest that have been selectively harvested. Or in areas degraded or deforested by natural activities such as areas where there have been fires or extreme natural phenomena.</p> <p>With regard to areas of coastal marine erosion, activities are being carried out for the conservation and management of mangrove ecosystems in these zones, through education strategies for the occupants, promoting the appropriation and conservation of this ecosystem. Together with the initiative to formulate management plans for the mangrove forests</p>	<p>Annual management reports on the line of action in comparison with the indicators set and those achieved.</p> <p>Field verification of the effectiveness of implemented actions.</p>

Source: Tángara REDD+ project

## 8 Quantification of GHG Emissions Reduction

### 8.1 Methodology for quantifying deforestation and forest degradation

The activities designed and being implemented in the Tangara REDD+ Project aim to reduce CO<sub>2</sub> emissions resulting from deforestation and forest degradation compared to reference levels.

The project area is covered with upland forests and mangroves and, therefore, meets the forest concept defined by the Colombian government. These areas have been forests for a minimum of 10 years before the project start date, as demonstrated by historical analysis from 2000 to 2010. However, in the absence of the REDD+ project activities, deforestation and forest degradation would be exacerbated.

#### 8.1.1 Deforestation and Forest Degradation Scenario without the Project

The methodology applied for estimating deforestation emission reductions follows the Colombian Technical Standard NTC 6208 "Mitigation Actions in the Land Use, Land Use Change, and Forestry (LULUCF) Sector at the Rural Level, Incorporating Social and Biodiversity Considerations" and "VM0007 REDD+ Methodology Framework (REDD-MF), v1.5" from the Verified Carbon Standard (VCS). For the validation and first and second verifications, the certifying program ProClima certifies that the methodology used remains compatible for this second verification.

The combined deforestation and degradation rate ( $r$ ) was calculated according to the formula proposed by Puyravaud (2003), which expresses the percentage of forest area reduced per year (%/year).

$$r = \left( \frac{1}{(t_2 - t_1)} * \ln \frac{A_2}{A_1} \right) * 100$$

Where:

$A_1$  = It is the forest area at the initial moment (average between healthy forest and degraded forest) in hectares.

$A_2$  = It is the area with forest at the end of the period analyzed, average between healthy forest and degraded forest) in hectares.

$t_1$  = Initial year of the period

$t_2$  = Year end of period

### 8.1.2 Leakage Management of Deforestation and Forest Degradation

The leakage prevention measures planned in the project include tree planting, agricultural intensification, fertilization, and other measures to improve cultivated land areas. The proponents of the Tangara REDD+ conservation project control leakage through demand management activities for forest products and services. These mitigation activities include agroforestry to provide sustainable sources of wood and employment opportunities for the land occupants identified as agents of deforestation and forest degradation.

Likewise, one of the proposed activities for the coming years is to increase agricultural technology and productivity, which minimizes market leakage. Another advantage is that the implementation of multiple productive components increases profitability, employment, and overall community support.

Leakage mitigation strategies for the project include the implementation of productive activities that improve socioeconomic status, strengthening governance, and establishing forest custodians (land occupants). These productive activities enable communities to market and add value to certain basic products, providing these families with an alternative source of income that does not derive from illegal logging.

## 8.2 Carbon Reservoirs

Carbon reservoirs were updated in compliance with Resolution 1447 of 2018 by applying the values of aboveground biomass, belowground biomass, and soil organic carbon reservoirs from the 2014 National Reference Emission Factor (NREF) to the values of the 2019 NREF for the Pacific biome where the Tangara REDD+ project is located. As shown in the summary table below:

CARBON POOLS	PACIFIC BIOMA
Aerial Biomass (tC/ha)	140
Subway Biomass (tC/ha)	32
Soil organic carbon Soil or- ganic carbon Very humid dry- land forest (tC/ha)	5
Soil organic carbon mangroves (tC/ha)	471

**Source:** Tángara REDD+ project

### 8.3 Calculation Of Emission Reduction from Deforestation And Forest Degradation

The projection of deforestation and forest degradation was calculated considering an estimate of forest loss by multiplying the combined rate of deforestation and forest degradation by the current project area in the year 2010 at the project's outset, as shown in the following table.

t	Year	Area deforested and degraded annually	Remai- ning area	Potential carbon re- duction (t CO <sub>2</sub> )	15% reser- vation dis- count (t CO <sub>2</sub> )	Net carbon reduction (t CO <sub>2</sub> )
1	2010	111,8	8.558,0	196.703	29.505	167.197
2	2011	110,3	8.446,2	194.134	29.120	165.014
3	2012	108,9	8.335,9	191.599	28.740	162.859
4	2013	107,4	8.227,1	189.097	28.364	160.732
5	2014	106,0	8.119,6	186.627	27.994	158.633
6	2015	104,7	8.013,6	184.190	27.628	156.561
7	2016	103,3	7.909,0	181.784	27.268	154.517
8	2017	101,9	7.805,7	179.411	26.912	152.499

9	2018	100,6	7.703,7	177.068	26.560	150.507
10	2019	99,3	7.603,1	151.803	22.770	129.032
11	2020	98,0	7.503,8	149.820	22.473	127.347
12	2021	96,7	7.405,8	147.864	22.180	125.684
13	2022	95,5	7.309,1	145.933	21.890	124.043
14	2023	94,2	7.213,7	144.027	21.604	122.423
15	2024	93,0	7.119,5	142.146	21.322	120.824
16	2025	91,8	7.026,5	140.290	21.043	119.246
17	2026	90,6	6.934,7	138.458	20.769	117.689
18	2027	89,4	6.844,2	136.650	20.497	116.152
19	2028	88,2	6.754,8	134.865	20.230	114.635
20	2029	87,1	6.666,6	133.104	19.966	113.138
21	2030	85,9	6.579,5	131.366	19.705	111.661
22	2031	84,8	6.493,6	129.650	19.448	110.203
23	2032	83,7	6.408,8	127.957	19.194	108.763
24	2033	82,6	6.325,1	126.286	18.943	107.343
25	2034	81,5	6.242,5	124.637	18.696	105.941
26	2035	80,5	6.161,0	123.009	18.451	104.558
27	2036	79,4	6.080,5	121.403	18.210	103.192
28	2037	78,4	6.001,1	119.817	17.973	101.845
29	2038	77,3	5.922,7	118.253	17.738	100.515
30	2039	76,3	5.845,4	116.708	17.506	99.202



<b>TOTAL</b>	<b>4.484.655</b>	<b>672.698</b>	<b>3.811.957</b>
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**Source:** Tángara REDD+ project

## 9 Verification report

The activities carried out during the verification period 2019-2020 were adjusted to the new updated action lines outlined in section 6, "UPDATE OF ACTION LINES AND MONITORING PLAN," of this document.

The work plan, in compliance with the project agreement, initially consisted of holding reconciliation meetings with the communities to identify the needs and issues present in their territory. This was done to establish the project lines that could be formulated and implemented in 2020 and beyond.

Line of Action	Objective	Subactivities	Indicators / Supports	Execution period	Related Stakeholders
Institutional and Governance Strengthening	Identify the characteristics and existing conditions of the area of interest and its community councils.	Compilation of primary and secondary information with entities that have developed projects on the Pacific coast.	Information collected  Report of the Activities developed  Support: Annex 1. First Activity Report Tangara	Date of Start Date: 30-03-19  Date of End Date: 15-04-19	Carlos Dominguez, General Coordinator Tangara Fonst SAS ZOMAC  University of the Pacific  CVC  Professionals
	Define the guidelines for the elaboration of the characterization of the different	Request to Min Interior the community community councils	Updated directory of community councils community councils with collective title of the District	Start Date: 15-04-19	Tangara Forest NINFA YUDY MARTÍNEZ SÁNCHEZ. P.E.

	community councils to be intervened.	constituted in Buenaventura  Construction of a database with updated information on the communities and Community Councils existing on the Pacific coast, within the jurisdiction of the Special District of Buenaventura.	of Buenaventura  Report of the Activities developed  Support: Annex 2. Second Report of Tangara Activities Report  Annex 3. Updated Community Councils Database Tangara	End Date: 30-04-19	BÁRBARA RENTERÍA ANGULO, P.E. DAIRA MAYESI HURTADO ESMILA RENTERIA
	Conduct a sociodemographic characterization of the community interest councils.	Preparation of diagnostic documents for the community councils of interest.	Characterization Sociodemographic Council Community Council of the River Anchicayá  Characterization sociodemographic characterization of the Community Council of	Date: First quarter 2019	Carlos Dominguez, General Coordinator Tangara Fonst SAS ZOMAC  Professionals Tangara Forest NINFA YUDY MARTINEZ SÁNCHEZ. P.E.

			<p>the Black Community of Bazán Bocana</p> <p>Report of the Activities developed</p> <p>Support Annex 4. Third Activity Report of activities</p> <p>Annex 5.Characterization Anchicaya</p> <p>Annex 6.Characterization Bazan Bocana</p>		<p>BÁRBARA RENTERÍA ANGULO, P.E.</p> <p>DAIRA MAYESI HURTADO ESMILA RENTERIA</p>
Institutional and Governance Strengthening	Promote institutional articulation between community councils and entities such as CVC, Universidad del Pacífico and the Secretary of Rural Development of Buenaventura.	Conduct five institutional articulation meetings in the district of Buenaventura between CVC, Universidad del Pacifico, Anchicaya Community Council, Mayorquin Community Council,	<p>Summary table of each meeting</p> <p>Evidence</p> <p>Photographic evidence of the meetings</p> <p>Support:</p>	<p>Date of Start Date: 25-06-19</p> <p>Date of End Date: 26-06-20</p>	<p>Program program agronomy and social projection</p> <p>Dagoberto Torres and Victor Hugo Moreno, The academic secretary of the agronomy</p>

		Palmera Community Council.	Annex 7. Institutional articulation	<p>agronomy program Elizabeth Quiñonez</p> <p>Jaime Arboleda former secretary of coexistence in the district of Buenaventura, Dr. David Viveros former coordinator of the coordinator of the community of communal action, secretary of coexistence Gabriel Riascos, Jorge Viveros , Councilwoman Beatriz Mosquera, Legal representative of the Mayorquin Council Tangara Forest SAS Zomac</p>
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		<p>Meet with the Secretary of Rural Development of Buenaventura.</p> <p>Socialize what Tangara is and the interest of the entity to participate in the projects that are being formulated.</p>	<p>Table summarizes of each meeting</p> <p>Photographic evidence of the meetings</p> <p>Supports: Annex 8. Tangara Councils Meeting</p>	<p>Date 3-07-19</p>	<p>Secretary of Rural Development of the moment Derwin Rosero Valencia</p> <p>TÁNGARA FOREST S.A.S ZOMAC</p>
Institutional and Governance Strengthening	Identify and socialize work proposals with the community councils Aguas Claras, Palmera and Mayorquin.	<p>Socialize with the Aguas Claras Community Council and community leaders about Tangara's proposed work in the community councils.</p>	<p>Table summarizes of each meeting</p> <p>Photographic evidence of the meetings</p> <p>Supports: Annex 8. Tangara Councils Meeting</p> <p>Annex 9. Community Integration Activities 2019</p>	<p>Start Date 3-07-19</p> <p>End Date 11-07-19</p>	<p>Community Council President Luz Genith Veragra</p> <p>Jesus Jhoany Portacerrero</p> <p>Jorge Eliecer Montañoy</p> <p>Jair Buenaños</p> <p>Tangara Forest SAS Zomac</p>

		Agreement and definition of guidelines for the characterization process with the Palmeras community council.			<p>Legal Representative of the Palmeras Community Council</p> <p>Palmeras Community Council Secretariat</p> <p>David Viveros Advisor Palmeras Community Council</p> <p>Tangara Forest SAS Zomac</p>
		Consultation and definition with the Mayorquin Community Council of guidelines for the characterization process.			<p>Legal representative Johana Gamboa Rentería</p> <p>José Nieves</p> <p>Tangara Forest SAS Zomac</p>

		<p>Socialize the results obtained in previous visits and prioritize training actions to improve productive activities in the Mayorquin Community Council.</p>	<p>Working memory of the meeting</p> <p>Meeting attendance list</p> <p>Photographic Evidence</p> <p>Support</p> <p>Annex 10. Memory of the Mayorquin watershed event</p> <p>Annex 10a. List of attendance at the Mayorquin watershed event</p> <p>Annex 9. Community Integration Activities 2019</p>	<p>Date: 12-09-19</p>	<p>Johana Rentería- RL Community Council</p> <p>Community Council Community</p> <p>Tangara Forest SAS Zomac</p>
		<p>To conduct a workshop to identify the current situation of the territory in the Mayorquin River basin, Pipayal district.</p>	<p>Workshop Report</p> <p>Working topics of the workshop</p> <p>Report of the Activities</p>	<p>Start Date: 1-08-19</p> <p>End Date: 15-08-19</p>	<p>Carlos Dominguez, General Coordinator Tangara Forest SAS ZOMAC</p> <p>Community Council Community Council</p>



			<p>developed</p> <p>Photographic Evidence</p> <p>Actions to be developed in the community councils of interest</p> <p>Support Annex 11. Fourth Activity report</p> <p>Annex 12. Mayorquin Working Day Report</p> <p>Annex 9. Community Integration Activities 2019</p> <p>Annex 14. Prioritization Actions to be To be carried out Tangara</p>	<p>and Palm Trees</p> <p>Community Council Mayorquin Community Council</p> <p>Professionals Tangara Forest NINFA YUDY MARTINEZ SÁNCHEZ. P.E. BÁRBARA RENTERÍA ANGULO, P.E. DAIRA MAYESI HURTADO ESMILA RENTERIA</p> <p>DAIRA</p>
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		<p>Closer ties with the councils of Aguas Claras and Palmeras</p>	<p>Report of the Activities Activities Report</p> <p>Support Annex 13. Fifth Activity Report Tangara</p> <p>Annex 9. Community Integration Activities 2019</p> <p>Annex.</p>	<p>Start Date: 15-08-19</p> <p>End Date: 30-08-20</p>	
<p>Institutional and Governance Strengthening</p>	<p>Strengthen the functioning of the administrative and operational area of the Tangara REDD+ Project by hiring personnel to</p>	<p>Hiring personnel for the development of administrative and technical processes<sup>15</sup></p>	<p>Social Security paid by contractor</p> <p>Contracted Professionals: 14 Contractors</p>	<p>Start Date: 01-01-19</p> <p>End Date: 30-09-20</p>	<p>Contractors</p> <p>Carlos Dominguez, General Coordinator Tangara Forest SAS ZOMAC</p>

<sup>15</sup> The hiring of personnel was divided into four groups throughout the period of validity, as there were changes in professionals, renewal, cancellation and modification of contracts. The annexes list the recruitment and relevant documents of the professionals by the four groups mentioned between 2019 and 2020.

<p>support and accompany the processes required for the development of projects that benefit the community.</p>		<p>Support: Annex 22. List of Contracts Tangara Personnel Annex 23. Contracting Group 1  Annex 24. Contracting Group 2  Annex 25. Contracting Group 3  Annex 26. Hiring Group 4</p>		<p>Tangara Forest SAS Zomac</p>
<p>Strengthen livelihood dynamics in the Mayorquin and Papayal community councils.</p>	<p>Deliver to the association Asoproagro a hull of a boat for minor cabotage operations. Make a monetary delivery for food, fuel for their means of transportation, community hall arrangement and development of autonomous meetings within the councils.</p>	<p>Photographic evidence of deliveries  Amounts delivered to the communities Food: \$2.120.000 Transportation + Community hall : \$1.300.000 Expenses for autonomous spaces of the community councils: \$12.000.000</p>	<p>Start Date: 01-08-20  End Date: 31-09-20</p>	<p>Representatives Mayorquin and Papayal Community Councils  Asoproagro  Tangara Forest SAS ZOMA</p>

			See pp 8-9 Annex 15		
			Support Annex 15. Activities Integration Communities 2020		
	Develop community strategies focused on the use of rural construction techniques, in harmony with the cosmovision of the territories and their uses, in order to contribute to the development of sustainable territories through intercultural dialogue.	Develop consensus-building processes with the community, implementing methodologies to identify their own visions of the territory and community needs. Co-creation with the community of initiatives that generate improvements in common areas and in the quality of life of its inhabitants. Creation of improvement prototypes and creation of improvement committees.	Project Formulation Report Rural Construction Techniques: Strategies to Contribute to the Development of Sustainable Territories  Support Annex 16. Sustainable Rural Construction Techniques Project	Start date: 01-03-20  End date: 31-12-20	Communities of the Mayorquin River Community Council  Tangara Forest SAS Zomac

<p>Program for monitoring and control of deforestation and forest degradation</p>	<p>Monitor land cover changes in the area of influence of the TANGARA FOREST REDD+ project.</p>	<p>Monitoring of deforestation areas: According to IDEAM early deforestation alerts.</p> <p>Image acquisition and processing: Use of drones to take images, subsequent georeferencing and analysis of spatial information.</p> <p>Identification of causes and generating agents of land cover changes: Based on primary information provided by the community.</p> <p>Execution of a study on forest degradation:</p>	<p>Technical Document Deforestation monitoring applied to the conditions of the TANGARA REDD+ conservation project area for the year 2020.</p> <p>Support Annex 17. GIS DDF Monitoring Report - TANGARA</p>	<p>Start Date 01-01-2020</p> <p>End Date 31-12-2020</p>	<p>BIOFIX CONSULTING SAS</p> <p>BIOFIX GIS Coordinator</p>
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		To complement the primary information of the project regarding the drivers and quantification of areas affected by degradation, as well as the generation of the respective GIS layer.			
Institutional and Governance Strengthening	Provide food and biosecurity elements to 370 families of the Mayorquin, Bracitos Amazonas and Río Apartado community councils <sup>16</sup>	<p>Purchase food for the family basket and biosafety kits for 370 families of the community councils Mayorquin, Bracitos Amazonas and Río Apartado.</p> <p>Provide an estimated amount for fuel for the transportation vehicles</p>	<p>Families x Community Councils benefited with the supply of food and biosafety kits:</p> <ul style="list-style-type: none"> <li>- Mayorquin Community Council: 240 Markets</li> <li>- Bracitos Amazonas Community Council: 80 Markets</li> <li>- Río Apartado Community Council: 50 Markets</li> </ul>	<p>Start Date April 2020</p> <p>Completion Date June 2020</p>	<p>Community Councils Mayorquin, Bracitos Amazonas and Río Apartado.</p> <p>Community Councils Representatives Mayorquin, Bracitos Amazonas and Río Apartado.</p> <p>Tangara Forest SAS Zomac</p>

<sup>16</sup> It should be noted that initially the basic sanitation line of action did not foresee attending to sanitary or climatic emergencies; however, taking into account the social impact generated by the pandemic, it was necessary to attend to the community in order to guarantee a good quality of life during the sanitary emergency.

		<p>in the community councils.</p>	<p>Amount of money provided for transportation fuel per Community Council (\$ COP)</p> <ul style="list-style-type: none"> <li>- Mayorquin Community Council: \$700.0000</li> <li>-Bracitos Amazonas Community Council: \$400.0000</li> <li>-Community Council Rio Apartado: \$700.0000</li> </ul> <p>Photographic Evidence</p> <p>(pp 4 -7 Annex 15)</p> <p>Support</p> <p>Annex 15. 2020 Community Integration Activities</p> <p>Annex 29. Minutes Received Markets COVID</p>		
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Sustainable Use of Piangua <sup>17</sup>	Develop educational initiatives that promote the recovery, conservation, reproduction, and sustainable extraction of the piangua resource in the estuaries of the black communities, to generate food sovereignty processes that promote community economic development.	Recopilación e identificación de las dinámicas y saberes propios de las comunidades del Consejo Comunitario Río Mayorquin.  Establecimiento de hoja de ruta para el plan de manejo sostenible de las zonas de extracción de piangua Fortalecimiento del comité ambiental	Project formulation report Sustainable management of piangua for the economic development and food sovereignty of the territory.  Support Annex 18. Piangua Aquaculture Project	Start date: 01-11-20	Communities of the Mayorquin River Community Council  Tangara Forest SAS Zomac
Production, Procurement and Marketing of Agricultural Units and non-timber products	Identify strategies with the community for the use of organic waste through the dialogue of knowledge, in order to obtain in-	Establish workshops to identify potential opportunities in the use of organic waste as an input for the strengthening of rooftops as an ancestral tradition.	Project formulation report on Strategies for the Use of Organic Waste and Rooftops in Sustainability, Conservation of Traditions and Food Sovereignty processes.	Start date: 01-11-20	Communities of the Mayorquin River Community Council  Tangara Forest SAS Zomac

<sup>17</sup> Dichos proyectos productivos se encuentran en la fase de formulación, la fecha establecida en la columna de la tabla hace referencia a la duración de las etapas de acercamiento y presentación de informes de cada proyecto establecido.



	puts in rooftops, vegetable gardens and crops, generating processes of sustainability, conservation of traditions and food sovereignty.	Development of an environmental education strategy through its 4 axes.	Support Annex 19. Rooftops and Waste Management Project		
Production, Procurement and Marketing of Agricultural Units and non-timber products	Generate tools with the communities to expand knowledge on the use of non-timber forest resources and develop strategies for the creation of productive units, rescuing the value of knowledge and traditions.	Elaborate ethnohistorical accounts of non-timber forest species in the territory as a mechanism of appropriation in the territory. Identification of premise species. Co-creation with the community of initiatives that generate development around non-timber forest products. Strategy approach.	Project Formulation Report on Non-timber Resource Use Strategies for Community Economic Development  Support Annex 21. Non Timber Forest Products Project	Start date: 01-11-20	Communities of the Mayorquin River Community Council  Tangara Forest SAS Zomac
Program for participatory reforestation	Develop environmental education strate-	Socialization of the community project, socialization workshops	Formulation report of the Sembrando Territorio project	Fecha de inicio: 01-11-20	Communities of the Mayorquin River Community Council

<p>of degraded ecosystems</p>	<p>gies with the community for the management, conservation and mitigation of the pressure being exerted on the mangrove ecosystems and strengthen the capacity of the local communities to act in the territory.</p>	<p>with the community and adjustments of the project according to socialization          Establish promising species and coordinate with the community on the species to be reforested/managed.          Determine the guidelines to achieve the environmental management plan for the mangroves.</p>	<p>as a Community Sustainability Strategy.          Support          Annex 20. Forestry Project</p>		<p>Tangara Forest SAS Zomac</p>
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## 9.1 Analysis of compliance with action lines

The activities and projects carried out during 2019 and 2020 did not entirely align with the activities initially outlined in the action lines of the PDD. Therefore, a justification and a new action plan for those lines initially stipulated in the Tángara REDD+ project, agreed upon and formulated by the project proponents and participants from Tángara Forest SAS-ZOMAC, are presented.

Furthermore, the project has commenced with the establishment of an investment portfolio for the implementation of green enterprises, formulated through the company EduAmbiental. This portfolio prioritizes productive activities that contribute to achieving the objective of reducing deforestation and empowering forest custodians. These activities offer economic alternatives distinct from traditional drivers of deforestation and are aligned with the needs and dynamics of the updated action lines.

Initial Line of Action	Updated action plan
<b>Wildlife Release</b>	<p>The fauna release program depends on the recovery and readaptation process of the individuals, collected by the different entities authorized for this process, such as the Cali Zoo, with whom Tangara Forest SAS-ZOMAC maintains a close relationship. The proposal and agreement is still in force so that they can use the territory of the land owned by Tangara Forest, for the days of reincorporation of species to their habitats.</p> <p>The process depends on the availability of individuals for their reincorporation by the institutional ally Zoológico de Cali. This line of action is still in force, as foreseen in the formulation of the PDD, clarifying that it will be carried out when the Cali Zoo allows it.</p>
<b>Ecotourism</b>	<p>This program depends on communities being willing to have activities in their territories, even if they are privately owned, in accordance with what is established in LAW 70. This is to ensure that there is consent from these communities and that it does not interfere with their cultural processes and governance.</p> <p>Therefore, Tangara's role is limited by this acceptance, and it also depends on the communities allowing the adaptation of their population centers for Nature Tourism activities, including Ecotourism.</p>

	<p>Tangara has been emphasizing the need for these adaptations to enable the development of this activity in accordance with the conditions defined by the regulations for such programs.</p> <p>In Colombia, these conditions are clearly regulated by the Ministry of Industry and Commerce in the Tourism sector.</p> <p>One condition we have encountered is that, given the location of our properties south of Buenaventura Bay, this activity has not existed in this area over time. Communities in these areas, unlike those located north of the bay (such as Juanchaco, Ladrilleros, La Bocana, etc.), have not been open to these types of processes. Therefore, the work will need to be very intense to achieve, first, acceptance, second, the adaptation of the required infrastructure, and the design and implementation of everything that this activity requires.</p> <p>Given these circumstances, and after conducting a detailed analysis, the conclusion has been reached to NOT continue with the implementation of this project.</p> <p>As a contribution to ecotourism, particularly "birdwatching," we will retain the inventory already conducted, which we can use when conditions change, or if a decision is made to create an illustrative publication in the future.</p>
<p><b>Sustainable Use of Piangua</b></p>	<p>This project is currently being reevaluated in its development. It was included in the agreement with EDUAMBIENTAL, who have presented us with a different scheme from what was outlined in the PDD presentation, which was initially planned to be executed between 2019 and 2022.</p> <p>Due to the COVID-19 pandemic, which has prevented fieldwork with the community, we hope to be able to resume activities in the 1st quarter of 2022, as outlined in Eduambiental's activity schedule (2022-2023). The fourth stage is postponed to the year 2024.</p>

	<p>We are adopting Eduambiental's schedule and proposal.</p>
<p><b>Medicinal Plants and Access to Genetic Resources</b></p>	<p>This program, which should be reconsidered in consideration of its high technical and scientific complexity, is still an idea to be undertaken. technical and scientific complexity, it is still an idea to undertake it. When reviewing the conditions of scientific support, we find that it is more complicated than we thought when it was conceived; it is still a purpose, because we are aware of the importance it has for science, conservation and for humanity, we must also be very careful in its development, because of the rigorousness with which it must be executed.</p> <p>For this reason, it will be analyzed from the year 2025, when the other projects are completed, which will allow us to have communities more aware of the importance of this program, and also to have more organized territories, and to better support the research and development teams of this kind of projects.</p> <p>Its execution is postponed from the year 2025.</p> <p>Translated with <a href="http://www.DeepL.com/Translator">www.DeepL.com/Translator</a> (free version)</p>
<p><b>Production of boron derivatives.</b></p>	<p>It was initially thought that this project was of interest to the communities, but after all the work sessions, it is concluded that it is not currently their preference. They suggest and consider that the cultivation and processing of NAIDI (also known as Açai) is a better option.</p> <p>This business plan describes, quantifies, and analyzes the Açai (also known as Naidí or Murrapo) production chain, adjusted to the technical, economic, and social conditions prevailing in the Colombian Pacific region. This business plan is part of the strategies established in the REDD+ projects. Therefore, in addition to directing efforts to penetrate and sustainably enter the market with Açai products and by-products (freeze-dried powder) in the national and international markets, it is aimed at improving the economic conditions of Afro-Colombian communities in Buenaventura and Bajo Baudó. It also aims to reduce pressure on timber resources in the forests of the Colombian Pacific region.</p> <p>Upon analyzing the USAID document, which formulates a total of 8 REDD+ projects along the Colombian Pacific corridor, identifying the</p>

	<p>development of five (5) priority value chains (Annatto, Cacao, Coconut, Açai, and Peach Palm) within the strategies to contain deforestation and forest degradation, it is concluded that the communities consider this a better option for their interests.</p> <p>The Peach Palm project is removed, and it is replaced with the convenience of incorporating the Production, Supply, and Marketing of Agricultural Units and Non-Timber Products action line. This includes the Açai agricultural project and the two projects formulated by EduAmbiental: Strategies for utilization from organic waste and rooftops in sustainability processes, conservation of traditions and food sovereignty, and Strategies for the use of non-timber resources for community economic development.</p>
<b>Monitoring and ranger program</b>	<p>Considering the obstacle brought about by the COVID-19 pandemic, which has made it impossible to interact with communities, making it difficult to carry out processes in a chronological and coordinated manner, we will only refer to the Ranger component. This is because forest monitoring has been carried out through satellite analysis support, from which backup photos can be obtained. This line will be reformulated and renamed as the Deforestation Monitoring and Control Program.</p> <p>On the other hand, a line referring to the Participatory Reforestation Program for degraded ecosystems will be added. This will be implemented and developed in accordance with the structure of the "PLANTING TERRITORY AS A STRATEGY FOR COMMUNITY SUSTAINABILITY - MANGROVE CONSERVATION" project designed by EDUAMBIENTAL, which complements reforestation activities formulated by the developer.</p> <p>According to the schedule planned to be executed in 18 months in the first phase, and considering that its first activity involves community engagement, and given the current mobility restrictions, its start will be rescheduled for the first semester of 2022. Some of the activities will be rearranged to achieve an overall time adjustment.</p>

Likewise, the Institutional Strengthening and Governance action line will be added, based on the current relationships and context with land occupants.

Projects aimed at improving quality of life, well-being, and strengthening decision-making will be integrated into this line, such as the project formulated with EduAmbiental, which includes Rural Construction Techniques, Strategies to Contribute to Sustainable Territory Development, and the recycling project and construction of the environmental park using PET material.

Participants from Tángara Forest SAS-ZOMAC have faced challenges in the development of initiatives outlined in the PDD. However, projects and programs that directly impact the well-being of communities settled on part of the properties owned by Tángara Forest SAS-ZOMAC have been carried out.

Activities benefiting other communities in the Colombian Pacific have been developed, such as participation in MISSION MEDICAL brigades with the support of the National Navy. Additionally, projects have been outlined and executed in the Punta Soldado community, which can be replicated in other communities within the influence area of the Buenaventura District where the company is based.

These projects include:

- "Beach Cleanup through the Recovery and Recycling of Plastic Materials," a project involving the National Navy Coast Guard Station, the CVC, and other social foundations.
- "Community Dining Hall Improvement."
- "Installation of a Children's Play Module in Plastic Wood," in collaboration with the National Navy Coast Guard Station.
- Support in the design and implementation of the "Nature Tourism Project."

It is also worth noting that with the support of EDUAMBIENTAL, a company specializing in environmental project development that has worked with communities similar to those in the project area, irrelevant action lines are replaced and restructured. The number of projects is expanded while preserving the two main focuses: mangrove forest conservation and the socioeconomic benefit of communities.

These projects include:

- "Rural Construction Techniques."
- "Strategies to Contribute to the Development of Sustainable Territories."
- "Strategies for Utilizing Organic Waste and Rooftops in Sustainability Processes, Conservation of Traditions, and Food Sovereignty."
- "If There's 'Palo Pa Cuchara,' Strategies for Using Non-Timber Resources for Community Economic Development."

Additionally, and by invitation from the National Navy - Coast Guard Station of Buenaventura, the formulation and implementation of the "Recycling of Plastics and Other Materials to Improve Beach Ecosystems" project is underway. If viable, this project will be accompanied by the ECOPAZIFICO foundation, which has extensive experience in this initiative, already being implemented on other beaches.

## **10 Disturbance Events Recorded During the Monitoring Period**

During the monitoring period from 2010 to 2020, no disturbance events of natural or anthropogenic origin that affected the calculated greenhouse gas emissions reductions were recorded.

It is worth mentioning that with the implementation of the activities outlined in Item 1.9.6 of the PDD TÁNGARA REDD+, as well as the periodic monitoring of the areas within the Lomas de Auca and Playas Chuchas BIOFIX properties, the aim is to control the possibility of future disturbance events or mitigate their impact. If necessary, adjustments to emissions reduction calculations will be made.



However, complementing the NTC 6208 methodology with the guidelines of the ProClima Program version 2.2, the following analyses are conducted to establish correspondence between the most likely disturbance events in the project area and the updated action lines as mechanisms for mitigation or early response.

Disturbance events refer to natural or anthropogenic processes that may prevent the projected greenhouse gas emissions reductions from being achieved. The norm states that in the event that any of the contemplated events occur, the proponent will be responsible for consolidating information about the situation, informing relevant stakeholders, and disclosing the actions that will be taken.

The methodology to be used is based on the alignment of activities and sub-activities to be carried out during the implementation period, as specified in the action lines of the monitoring plan outlined in Section 6. These activities directly contribute to the prevention of events, risk assessment, monitoring in the event of a potential occurrence, and mitigation of identified disturbances.

Action lines	Subactivity	Justification of the link to the disturbance
Institutional and governance strengthening	Promotion and strengthening of traditional culture, guaranteeing spaces for the exchange of intergenerational knowledge.	Given that one of the drivers of deforestation identified in the area is the dynamics of population migration, especially by external agents, providing the community councils with resources to build their own government instruments so that they can carry out the tasks associated with forest stewardship will help prevent the invasion of the territory by settlers and external actors that promote deforestation and degradation activities, or in some cases they will be responsible for making the necessary warnings to take appropriate action to resolve conflicts.
Program for participatory reforestation of degraded ecosystems	Prioritization and definition of areas to be intervened and species to be reforested.	Areas that have been identified as potential for reforestation due to previous deforestation or degradation dynamics (natural or anthropogenic) caused by any of the identified drivers, will be included in

	Linking sawmillers in reforestation processes	the planned restoration activities and in the community and remote monitoring processes, to mitigate and correct possible losses of carbon sinks and quantifiable emission reductions. Likewise with mangrove ecosystems.
	Monitoring of reforested areas.	
Program for monitoring and control of deforestation and forest degradation	Monitoring of deforestation areas based on geospatial information and early deforestation alerts generated by Biofix Consultoría and IDEAM.	Based on the early warning system for the prevention and evaluation of disturbances, with the help of remote sensors, technological tools and human capital, a joint work will be carried out between technical and social monitoring that will allow to evaluate not only the quantification of the disturbances but also the qualitative context of the associated causes, in order to establish an effective mechanism for the prevention, evaluation and correction of disturbances.
	Satellite image acquisition and processing	
	Identification of causes and generating agents of changes in coverage, with the help of community monitoring.	
	Training for forest custodians who used to be sawmillers.	

## 11 Estimation of Emission Reductions in the 2019-2020 Monitoring Period

The calculation of project activity emissions has been determined for the monitoring period. The verified parameters align with those specified in the monitoring plan. The project's ex-post emissions for this verification period were calculated from 2019 to 2020 by summing the emissions from observed deforestation transition during this monitoring period.

The change in land cover in hectares was divided between the verified years. The total emissions reduction for the project is 231,656 tCO<sub>2</sub>e during this monitoring period, of which 196,601 tCO<sub>2</sub>e are eligible for commercialization.

t	Year	Area of deforestation and degradation avoided per year	Potential carbon reduction (t CO <sub>2</sub> )	15% reservation discount (t CO <sub>2</sub> )	Net carbon reduction (t CO <sub>2</sub> )
10	2019	76,3	116.639	17.496	99.143
11	2020	75,0	114.656	17.198	97.458
<b>TOTAL</b>			<b>231.295</b>	<b>34.694</b>	<b>196.601</b>

## 12 Alignment with sustainable development goals

The lines of action formulated and approved by the indigenous reserves associated with the project, along with the investment projects reported in the monitoring report for 2019 and 2020, have a direct relationship with the Sustainable Development Goals (SDGs) and their targets. The SDGs and their 169 targets were included and approved in 2015 by the United Nations Member States in the agenda titled "Transforming Our World: The 2030 Agenda for Sustainable Development," with the aim of ensuring the social and economic growth of global populations while seeking harmony with ecological dynamics and the increasingly urgent environmental needs expressed by communities on a daily basis. This is addressed as follows:

On the other hand, due to the activities carried out during the verified monitoring period, no exact quantifiable data were generated for the monitoring report indicators. Therefore, annexes and supporting documents have been added to demonstrate alignment and compliance with sustainable development goals, their targets, as framed in the lines of action defined in this document.

SDG	Target SDG	Programs lines of action	Projects online monitoring report	Indicator monitoring report	Results of monitoring indicators
<b>1. END OF POVERTY</b>	1.1 1.3 1.4	Institutional and Governance Strengthening	Characterization of needs and	• Number of Beneficiary Families	Anexos 1, 2, 3, 4, 5, 6, 8, 9, 15

			<p>potential solutions in the community councils of interest.</p> <p>Sociodemographic characterization of the councils</p> <p>Collection and socialization of the work proposals made with the councils</p> <p>Aguas Claras, Palmera and Mayorquin.</p> <p>Strengthening of livelihood dynamics in the Mayorquin and Papaya community councils due</p>		<p>370 Beneficiary Families<sup>18</sup></p>
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<sup>18</sup> Anexo 15

			to the COVID-19 pandemic.		
<b>2. 2ZERO HUNGER</b>	2.3	Production, Supply and	Project Strategies for the Use of Organic Waste and Rooftops in Sustainability, Conservation of Traditions and Food Sovereignty processes.	Percentage of local labor hired in the different stages of production	Anexo 19
	2.4	Marketing of Agricultural			
<b>8. TDECENT WORK AND ECONOMIC GROWTH</b>	2.5	Units and non-timber products.	Project Strategies for the use of non-timber resources for community economic development.	Number of by-products obtained	Anexo 21
		Sustainable Use of Pingu		Number of best practices workshops conducted	
	8.2	Medicinal Plants and Access to Genetic Resources		Number of people trained and certified	
	8.3				
	8.4		Project Sustainable management of pingu for economic development and		Anexo 18.

			food sovereignty of the territory.		
<b>4. QUALITY EDUCATION</b>	4.5	Sustainable use <sup>19</sup>	Sustainable management of piangua for economic development and food sovereignty of the territory.	Productivity per harvest of Piangua Number of yaws produced Number of people trained in good practices Workshops or training given Number of consolidated production chains	Anexo 18
<b>9. INDUSTRY, INNOVATION AND INFRASTRUCTURE</b>  <b>11.CIUDADES Y COMUNIDADES SOSTENIBLES</b>	9.1 9.4  11.7	Institutional and governance strengthening	Project for the construction of a children's playground from recycling in Punta Soldado.  Rural Construction Techniques Project: Strategies to	Number of equipment purchased  Tons of plastic material collected  Tons of recycled material  People trained  Workshops held  Number of associations and enterprises strengthened	Anexo 28, 28a y 28b       Anexo 16

<sup>19</sup> One of the main pillars of this project is environmental education on the sustainable use of the piangua. For this reason, it promotes education in vulnerable communities such as the occupying councils in the project's territory.

			contribute to the Development of Sustainable Territories.	and made visible	
<b>13. CLIMATE ACTION</b>	13.1	Wildlife Release	Deforestation and forest degradation monitoring and control program	Total hectares affected by degradation and deforestation	27 ha affected by deforestation
	13.2				
<b>15. LIFE OF TERRESTRIAL ECOSYSTEMS</b>	13.3	Participatory reforestation program for degraded ecosystems.	DDF GIS Monitoring Report - TANGARA Sembrando Territorio as a Community Sustainability Strategy Project Non-Timber Resource Use Strategies for Community Economic Development Project	New or recurrent drivers and actors identified - Total hectares affected by degradation and deforestation	22 hectares affected by degradation
	15.2	Deforestation monitoring and control program.			
	15.4	Participation in the development and commercialization of carbon credits.			
	15.7				
	15.8				
	15.a				
	15.b				
	15.c				
				New and recurrent causes identified	Reduction of emissions of 4,484,655 tons of CO <sub>2</sub> e
				Number of alerts reported per year	3 deforestation alerts reported per year.
				People trained	Annex 17
				Workshops conducted	Annex 20

					Annex 21
<b>14. MARINE LIFE</b>	14.2	<p>Program for participatory reforestation of degraded ecosystems</p> <p>Sustainable Use of Pian-gua</p>	<p>Project Sustainable management of pin-gua for economic development and territorial food sovereignty.</p> <p>Project Sembrando Territorio as a Community Sustainability Strategy</p>	<p>People trained</p> <p>Workshops held</p> <p>Identified points for reforestation intervention</p> <p>Percentage of points to be intervened reforested</p> <p>Number of individuals planted per species</p>	<p>Anexo 18</p> <p>Anexo 20</p>
<b>17. ALLIANCES TO ACHIEVE THE OBJECTIVES</b>	17.4 17.7	<p>Alliances with territorial links</p> <p>-</p> <p>Agreements with national entities</p> <p>Institutional and Governance Strengthening</p>	<p>Meeting of articulation of alliances with five institutions in the district of Buenaventura between CVC, Universidad del Pacifico, community Anchicaya,</p>	<p>Attendance List</p> <p>Number of alliances made</p> <p>Number of participants</p>	<p>4 Alliances made</p> <p>Annex 7</p>



			community	
			Mayorquin,	
			Palmera	
			community	

In Colombia, projects that are aligned with and contribute to the achievement of the SDGs and the 2030 agenda are key to generating transformations at the regional, local, or national level. These transformations aim to improve the quality of life for Colombians while simultaneously strengthening the social and economic dimensions and protecting and conserving ecosystems and the environment. This integration encompasses all three dimensions: social, environmental, and economic.



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