



CONSERVATION PROJECT PALAMEKU KUWEI REDD+



BIOFIX

BIOFIX CONSULTORIA S.A.S BIC

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Project title	Conservation project PALAMEKU KUWEI REDD+
Version	06
Localization	Colombia, Vichada, Cumaribo
Proponents	Resguardos Indígenas Ríos Muco y Guarrojo, Ríos Tomo y Beweri, Punta Bandera, San Luis del Tomo, La Esmeralda y Valdivia.
Developer	Biofix Consultoría SAS
Body of Validation and verification	ICONTEC
Methodology	Methodology NTC 6208 of 2016 “Mitigation Actions in the USCUS Sector at the Rural Level, Incorporating Social and Biodiversity Considerations” ProClima Methodology “Methodological Document for the AFOLU Sector: Quantification of Greenhouse Gas Emission Reductions from REDD+ Projects Version 2.2.”
Greenhouse Gas Accounting	January 1st, 2010, to December 31st, 2039
Monitoring period of this report for deforestation and degradation	January 1st, 2019, to December 31st, 2020

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1. SUMMARY

The PALAMEKU KUWEI REDD+ Conservation Project is located in the Guanape and Tres Matas inspection areas in the northwest of the municipality of Cumaribo, in the department of Vichada. It has a total area of 166.317 hectares, of which 32.629 hectares of forest are categorized as eligible area. This area is located within the collective properties of the Indigenous Reserves Ríos Muco and Guarrojo, Ríos Tomo and Beweri, Punta Bandera, San Luis del Tomo, La Esmeralda, and Valdivia.

The project comes into effect on January 1, 2010, with an end date of December 31, 2039, reducing 3.910.008 tCO₂e emissions over the 30 years of implementation, or 130.334 TCO₂e per year. However, in the process of updating the NREF in accordance with the fulfillment of Resolution 1447 of 2018, this value undergoes a change to 2.657.500 tCO₂e for the 30 years, which is an average of 88.583 tCO₂e per year.

The formulation and quantification of carbon was carried out under 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." Likewise, the calculation of emissions reduction due to deforestation and degradation in the territory's forests was generated 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 methodological deviations carried out by BIOREDD's REDD+ projects. However, five years after this initial validation, an update to the methodological calculations will be performed to comply with ProClima's "AFOLU Sector Methodological Document. Quantification of GHG emissions reductions from REDD+ projects Version 2.2."

Additionally, in that initial validation and verification, the carbon stock values from the 2014 NREF were selected for the life zones of the Amazon biome, using the specific data available for the country.

The methodology applied for determining the leakage belt (**175.057 hectares**) is the LK-ASU from the REDD VCS VM0007 methodology related to Leakage due to Displacement of Unplanned Deforestation. The methodology applied for the reference region follows the guidelines of REDD VCS VM0007. The methodology for proving additionality was defined in accordance with the requirements of Article 43 of Resolution 1447 of 2018, which is supplemented in this monitoring report.

Regarding the validation and first verification process of the PALAMEKU KUWEI REDD+ Conservation Project carried out during the period 2010-2018 under the framework of the NTC-6208 technical standard, the result was the verification of 1.131.562 tCO₂e, which was audited by AENOR and certified by the ProClima certification program.

The PALAMEKU KUWEI REDD+ Conservation Project now presents to the ICONTEC auditing entity the monitoring report for the activities carried out during the 2019 and 2020 period under the criteria of the NTC-6208 technical standard and the ProClima Methodology "AFOLU Sector Methodological Document. Quantification of GHG emissions reductions from REDD+ projects Version 2.2." to complement the gaps in the 6208, anticipating a reduction of 2.657.500 tCO₂e as a new baseline for the 30 years, and 68348 tCO₂e that can be commercialized for the years 2019 and 2020, through the execution of investment projects that mitigate the drivers associated with deforestation and degradation of the eligible areas.

The execution of the mentioned activities was carried out within the framework of the identified needs and lines of action established¹ by the community of the Indigenous Reserves Ríos Muco y Guarrojo, Ríos Tomo y Beweri, Punta Bandera, San Luis del Tomo, La Esmeralda, and Valdivia, who are the proponents of the project. These were directly executed and

¹ Land tenure supports, please refer to the following path: Carpeta 5.Auditoria Icontec 2019-2020 Palameku Kuwei\ 3. Documentos Legales\ 2.Doc Asambles y CLPI

linked to REDD+ activities: 1. Reduction of emissions due to deforestation, 2. Reduction of emissions due to degradation, and implicitly aimed at 4. Sustainable management of forests.

In this vein, four projects were executed aimed at the line of action for strengthening the institutional framework and governance of the reserves. This was done through activities focused on administrative and professional reinforcement of the team responsible for project formulation, equipping and protecting indigenous guards and ancestral leaders, rescuing traditional knowledge and indigenous games of the community, implementing technological tools in education, and consolidating the Comprehensive Life Plan for the Ríos Tomo y Beweri reserve.

Similarly, the action line for Health, Education, Basic Sanitation Infrastructure, Drinking Water, and Energy included the execution of eight projects. These were, for example, a solar energy project as a power source for educational facilities in the Ríos Muco y Guarrojo reserve, support for sports activities in the same reserve, guaranteeing access to higher education for benefiting students from the mentioned reserve, strengthening of land transportation for health emergencies in the Ríos Muco y Guarrojo Indigenous Reserve, technical guidance with an intercultural focus for health promotion and healthy lifestyle habits to prevent diseases in the Ríos Tomo y Beweri reserve, reinforcement of sports activities for the same reserve, and improvement of housing conditions through inputs like zinc sheets in the homes of the Ríos Tomo y Beweri reserve.

In addition to the above, considering the social impact generated by the pandemic, it was necessary to assist the community to ensure a good quality of life during the health emergency. Therefore, the purchase and distribution of groceries and biosecurity kits were carried out for 1.100 families from the San Luis del Tomo, Valdivia, La Esmeralda, and Punta Bandera reserves.

On the other hand, projects aimed at strengthening productive capacities, such as the development of silvopastoral systems in the Ríos Muco y Guarrojo reserve and a pilot project for planting 1.000 hectares of Sacha Inchi in the Ríos Tomo y Beweri reserve, were carried out under the criteria of the Green Business and Biodiversity Protection line. Lastly, the project addressing the action line for the monitoring and control program of deforestation and forest degradation was executed by the GIS Coordinator of the company BIOFIX CONSULTORIA SAS. The coordinator constructs an annual report detailing changes in land cover through the interpretation of satellite images and other required inputs, with the aim of identifying the causes and driving factors and monitoring them.

Lastly, the name given to the Project is in recognition of the associations that bring together the six indigenous reserves belonging to the Sikuani people who comprise and propose the current project.

"*Kuwei*" in the Sikuani language refers to the Supreme God of the Universe², the creator of the world and protector of everything that inhabits it. Meanwhile, "*Palameku*" comes from the root "*Palameko*," which in Guahiba mythology refers to the "*guardian of the tools*" and is associated with the appearance of humans on Earth and the birth of two fundamental principles of the Sikuani communities: the communal distribution of food and collective labor³.

In line with the above, the indigenous reserves involved in the project seek, through their territorial autonomy, to carry out conservation processes aimed at the perpetuation of their ancestral traditions. They aim to rescue and preserve their cultural identity, which is strongly linked to the protection of biodiversity and the minimization of impacts that jeopardize the environmental richness of their territory.

² Relatos del Pueblo Sikuani, pp. 31

³ Myth of the Kaliawirinae tree from which life springs forth and from which the principles (*wakena*) and the (*unuma*) emerge, indispensable for the formation of the clans, the occupation of the territory, and the planting in *conucos*. Relatos del Pueblo Sikuani, pp. 14 & 27

Features directly linked to the purpose of REDD+ projects, with the desired sustainable and environmentally sound local development, as well as with the aim to reduce emissions caused by deforestation.

2. PROJECT OBJECTIVES

- Mitigate the effects of climate change by reducing CO₂ emissions through the prevention of deforestation and forest degradation, and ensuring carbon sequestration in the vegetation and soil layers.
- Promote sustainable forest management in the project's area of influence by forest custodians, through the encouragement of productive activities compatible with the reduction of emissions generated by deforestation.
- Assist in biodiversity conservation by protecting ecological connectivity and habitat for species that are categorized as threatened, as well as those that have ecological significance due to their adaptability to climate change, such as the howler monkey (*Alouatta seniculus*).
- Contribute to gender equality education by enhancing the leadership, participation, empowerment, and entrepreneurship capacities of indigenous women within the reserves.

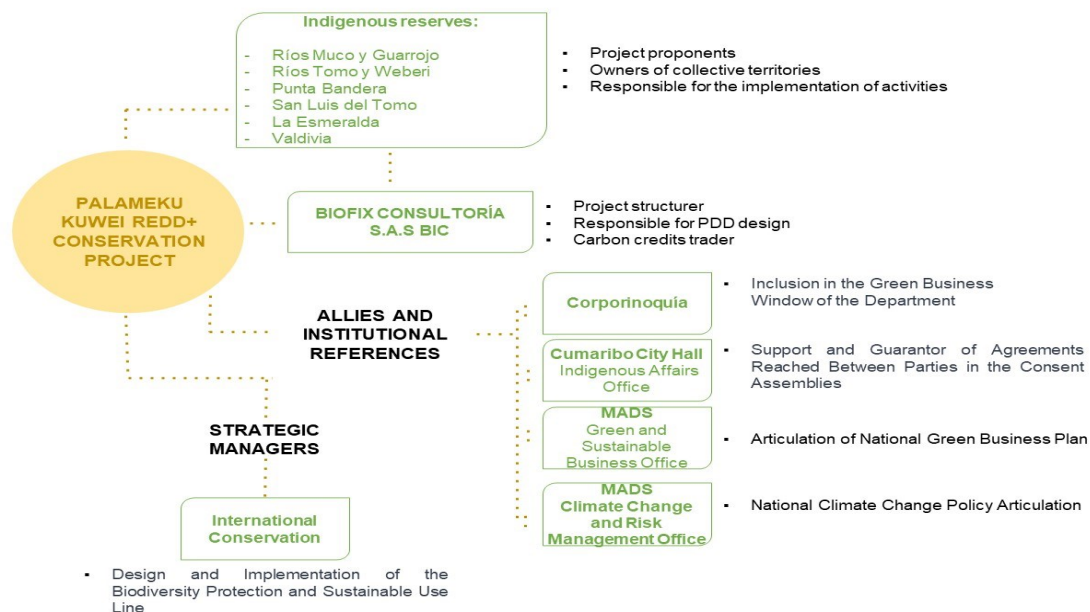
3. PROJECT PROPONENTS AND STAKEHOLDERS

The proponents of the project are the Councils of the **Indigenous Reserves Ríos Muco and Guarrojo, Ríos Tomo and Beweri, Punta Bandera, San Luis del Tomo, La Esmeralda, and Valdivia**. These councils grant **BIOFIX CONSULTORIA S.A.S BIC**, the structuring company, the management of the project document design, as well as exclusivity for the issuance and commercialization of the carbon credits generated in the territory, through the temporary association agreement signed between the parties.

The project has had institutional allies such as the Autonomous Regional Corporation of the Orinoquía – CORPORINOQUIA (where the REDD+ project is registered in the green business window), the Office of Indigenous Affairs of the Municipal Mayor's Office of Cumaribo, and the Offices of Green and Sustainable Business; and Climate Change and Risk Management from the Ministry of Environment and Sustainable Development.

Additionally, it is worth mentioning the participation of Conservation International, who has been involved as a strategic manager in the formulation, consolidation, execution, and technical evaluation of the project in environmental matters related to the protection, recovery, and defense of biological diversity in the territory. (Figure 1).

Figure 1. Organizational Chart of the Conservation Project



Source. PALAMEKU KUWEI REDD+ project

The following presents the contact information of the legal representatives of the indigenous community reserves as project proponents and owners of the carbon rights, as well as the contact details of the legal representative of Biofix Consultoría SAS BIC as the project developer and marketer of the carbon credits.

Table 1. Contact Information of Legal Representatives of Project Participants

Contact	Jaime Nelson Bernal Chipiaje
Name of institution	Asociación de Cabildos y Autoridades Indígenas de la Región del Tomo de Palameku - ASOPALAMEKU
Position	Legal Representative
Location	Cumaribo, Vichada
Telephone number	322 4785407
E-mail address	sikuanibernal@hotmail.com

Contact	Abraham Gaitán Reina
Name of institution	Ríos Tomo y Beweri indigenous reserve
Position	Tribal Governor
Location	Comunidad Monterrey Resguardo Indígena Ríos Tomo Beweri
Telephone number	3228869344
E-mail address	sikuanibernal@hotmail.com abrahamgaitanreina@gmail.com

Contact	Dagoberto Gaitán
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Name of institution	San Luis del Tomo indigenous reserve
Position	Tribal Governor
Location	Comunidad Campo Hermoso RI San Luis del Tomo
Telephone number	320 8520983
E-mail address	palamekukuwei@gmail.com

Contact	Álvaro Navarro
Name of institution	La Esmeralda indigenous reserve
Position	Tribal Governor
Location	Resguardo Indígena La Esmeralda
Telephone number	3124598237
E-mail address	palamekukuwei@gmail.com alvaronavarro571@gmail.com

Contact	Jhon Ospina Navarro
Name of institution	Valdivia indigenous reserve
Position	Tribal Governor
Location	Resguardo Indígena Valdivia
Telephone number	321 9670522
E-mail address	palamekukuwei@gmail.com

Contact	Pascual Navarro Sánchez
Name of institution	Punta Bandera indigenous reserve
Position	Tribal Governor
Location	Resguardo Indígena Punta Bandera
Telephone number	3224278128
E-mail address	sikuanibernal@hotmail.com

Contact	Ana Milena Plata Fajardo
Company	Biofix consultoría S.A.S BIC
Position	CEO
Location	Avenida Carrera 45 # 108ª – 50 Oficina 404, Bogotá, D.C. Colombia
Telephone number	3016253317
E-mail address	aplata@biofix.com.co

4. PROJECT LOCATION

The area covered by the PALAMEKU KUWEI REDD+ Conservation Project is 32.629 hectares and is located in the collective properties of the Indigenous Reserves⁴ of Ríos Muco and Guarrojo, Ríos Tomo and Beweri, Punta Bandera, San Luis del Tomo, La Esmeralda, and Valdivia. These reserves are located in the Guanape Inspection for the first and Tres Matas Inspection for the rest, situated in the northwestern corner of the municipality of Cumaribo, in the department of Vichada (Table 1).

he eligible area for the project corresponds to the land cover types that meet the forest definition adapted for Colombia by IDEAM: "It is the set of plant communities dominated by trees with a minimum height of 5 meters, a canopy density greater than 30%, and a minimum extension of one hectare. This includes open/dense forests, fragmented forests, gallery or riparian forests, and mangroves, as long as they meet the three criteria described above. It excludes non-natural tree cover

⁴ Land tenure supports, please refer to the following path: Folder5.Auditoria Icontec 2019-2020 Palameku Kuwei\ 3. Documentos Legales\ 1.Tenencia de la Tierra.

such as forest plantations (coniferous and broad-leaved), stands of trees planted primarily for agricultural production (plantations of fruit trees or other permanent crops), trees planted in agroforestry systems, and areas of secondary vegetation (Cabrera et al., IDEAM, 2011a)."

The project is being carried out in the Municipality of Cumaribo, which has a jurisdiction covering an area of 65.193 km² (equivalent to 61.5% of the territorial surface of the department), making it the largest municipality in the country. Geographically, it consists of 0,1% urban land and the remainder is rural land divided between indigenous reserves, the El Tuparro National Natural Park, and rural zones. The municipality has 16 inspection areas (Puerto Príncipe, Guerima, El Viento, San José de Ocune, Santa Rita, Tres Matas, Palmarito, El Tuparro, Chaparral, Amanaven, La Catorce, Chupave, La Rompida, Guanape, Puerto Nariño, and the Urban Center) made up of 60 villages and 27 indigenous reserves.

Cumaribo is located in the southern zone of the department of Vichada, bordered to the north by the municipalities of Santa Rosalía, La Primavera, and Puerto Carreño, with the Tomo River defining this boundary. To the south, it is bordered by the department of Guaviare, demarcated by the river of the same name. To the east, it borders the Republic of Venezuela, outlined by the Orinoco River, and to the west, it borders the department of Meta. In relation to Puerto Carreño, the capital of Vichada, Cumaribo is 370 km away by road, and its urban center is located at an elevation of 160 meters above sea level. (Municipal Government of Cumaribo, 2016).

Tabla 1. Indigenous Reserves Participating in the PALAMEKU KUWEI REDD+ PROJECT

Indigenous reserve	Constitutional Standard Issued by INCORA ⁵	Association to Which They Belong	Tribe	Number of people	Number of families	Area (ha)
Ríos Tomo y Weberi	Resolution Num. 39 of July 21, 1983	Palameku	Sikuani	406	32	47.320
Punta Bandera	Resolution Num. 04 of February 27, 2002	Palameku	Sikuani	175	21	3.150
San Luis del Tomo	Resolution Num. 46 of July 21, 1983	Palameku	Sikuani	1286	55	25.100
La Esmeralda	Resolution Num. 104 of December 15, 1987	Palameku	Sikuani	161	12	2.762
Valdivia	Resolution Num. 41 of August 15, 1984	Palameku	Sikuani	145	22	3.985
Ríos Muco y Guarrojo	Resolution Num. 16 of February 27, 1989	Kuweí	Sikuani	1531	157	84.000
TOTAL				3704	299	166.317

Source. Indigenous GIS Colombian System- SIIC. (2019)

To visualize the geographical location of the Palameku Kuwei project (Figure 2), it is pertinent to point out the extent and location coordinates for each indigenous reserve, as evidenced in Table 2. Within the territory where the project is carried out, there are 6 constituted and recognized indigenous reserves by the Ministry of the Interior and the Directorate of Indigenous Affairs, ROM, and Minorities. Each of the Reserves is established as a territorial entity comprising a certain

⁵ Supports for the award resolutions, please refer to the following path: Folder 5.Auditoria Icontec 2019-2020 Palameku Kuwei\ 3. Documentos Legales\ 1.Tenencia de la Tierra

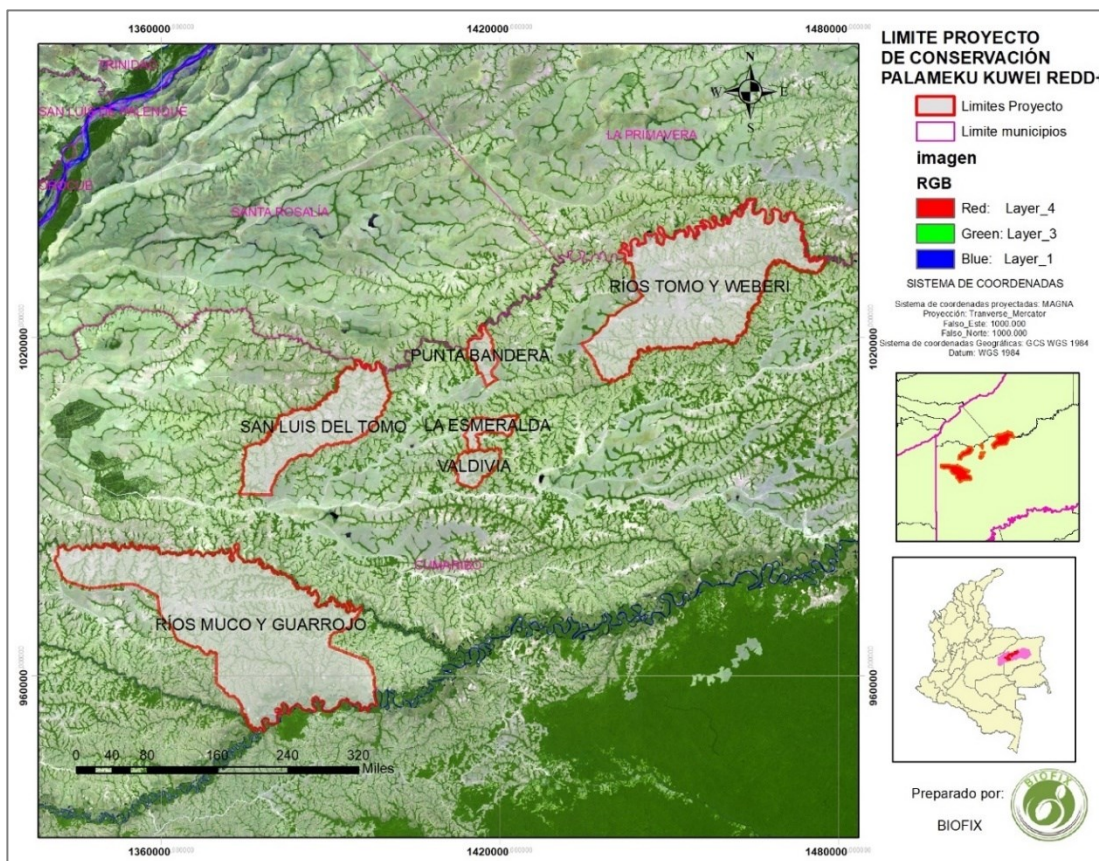
number of indigenous communities that decide to group together for the purpose of being legally recognized along with their territories.

Table 3. Geographical Coordinates of the Project Area

Indigenous reserve	Area (ha)	Latitude	Longitude
Ríos Muco y Guarrojo	84.000	4.30877017	-70.71046064
Ríos Tomo y Weberi	47.320	4.84582083	-69.97899212
Punta Bandera	3.150	4.73772142	-70.3210905
San Luis del Tomo	25.100	4.62501511	-70.58540789
La Esmeralda	2.762	4.62610272	-70.28832295
Valdivia	3.985	4.56075864	-70.33371902

Coordinate system: GCS_WGS_1984. Datum: D_WGS_1984
Source. PALAMEKU KUWEI REDD+ project

Figure 1. Project area map



Fuente. Proyecto PALAMEKU KUWEI REDD+

5. COMPLIANCE WITH LEGAL REQUIREMENTS

5.1. Analysis of the PALAMEKU KUWEI REDD+ Project in terms of Resolution 1447 of 2018.

This project complies with the current regulations of the National Emissions Reduction Registry, Resolution 1447 of 2018, in relation to Article 39. "Use of Methodologies for the Formulation and Implementation of REDD+ Projects," namely: The holder of the REDD+ project must use methodologies that meet the following characteristics:

- 1. Follow the guidelines set forth by the UNFCCC related to REDD+:** Both the technical standard NTC 6208 of 2016 "Mitigation actions in the USCUSS sector at the rural level, incorporating social and biodiversity considerations" as indicated in the "0. Introduction" section and as described in the ProClima Methodology "AFOLU Sector Methodological Document. Quantification of GHG emission reductions from REDD+ projects Version 2.2," under "5. Normative References."⁶
- 2. Have a mechanism for managing the risk of leakage of GHG emission reductions:** The management of the risk of leakage of GHG emission reductions is carried out through cross-cutting action lines applicable to all REDD+ projects developed by BIOFIX Consultoría SAS BIC. Specifically, this includes the action line "Program for monitoring and controlling deforestation and forest degradation" and the action line "Participatory Reforestation of Degraded Ecosystems," described in sections 1.9.2 of the PALAMEKU KUWEI REDD+ PDD (Project Design Document).
- 3. Have a mechanism for managing the risk of non-permanence of emission reductions and GHG removals:** Section 5.3 of the Monitoring Report conducts an additional analysis of the risks of non-permanence. Furthermore, following the guidelines from section "13.1 Management of Uncertainty... within 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 set at 15% in reserve, as arranged by section "11.8 of the ProClima Program."
- 4. Have a mechanism for managing uncertainty in the quantification of the baseline and mitigation results:** In line with section "14.4 Monitoring of REDD project permanence" of the ProClima Methodology Version 2.2, section 5.4 of the monitoring report presents the monitoring plan, including mitigation measures, monitoring indicators, and the reporting procedure.

In turn, the project meets the additionality criteria of Article 43 of Resolution 1447 of 2018 in regards to:

1. The project is not a result of activities related to environmental licensing compensation, concessions, or applications for timber harvesting or removal of national forest reserves.
2. The project is not a result of preservation and restoration activities in strategic areas and ecosystems for which payments for environmental services related to the reduction and capture of GHG are accessed, in accordance with what is established in Chapter 8 of Title 9 of Part 2 of Book 2 of Decree 1076 of 2015.

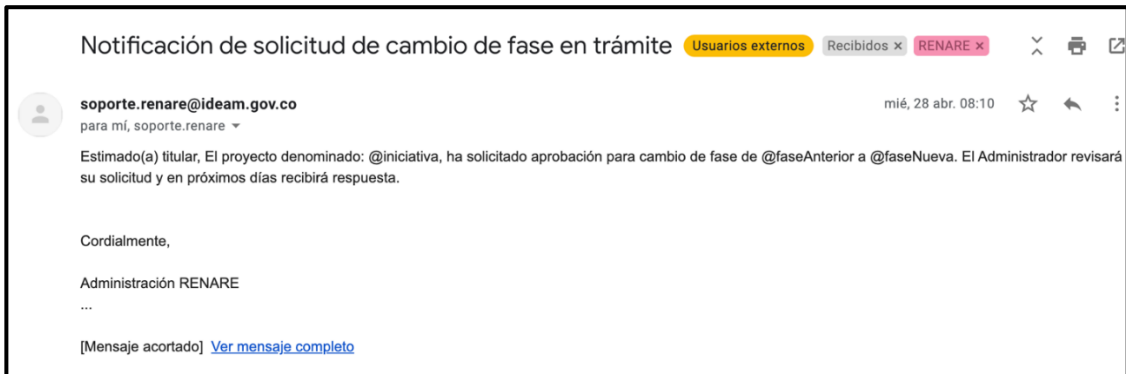
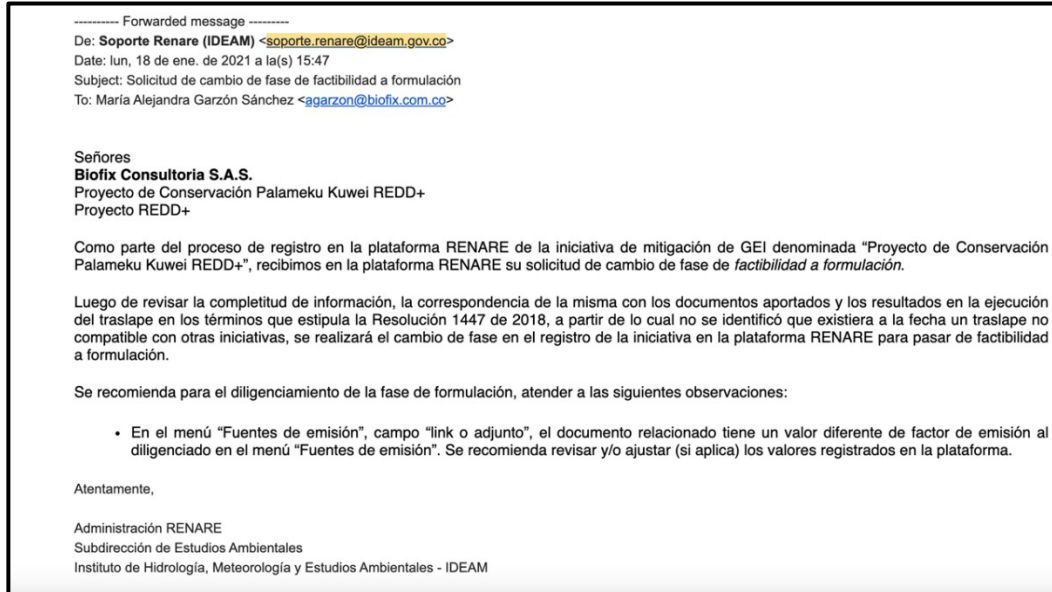
Regarding the Baseline, Resolution 1447 of 2018 specifies that Article 41, Paragraph 2 states: "In order to carry out the verification of emission reductions and GHG removals generated 'from January 2020 onwards, the holder of the REDD+ Project that has validated its baseline prior to the issuance of this Resolution, must adjust and validate its baseline based on the most updated NREF (National Reference Emissions Level).'" The adjustment of the baseline involves the methodological reconstruction of the most updated NREF applicable to the project, over the geographical area of the same. 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 Reference Level, "There is no reference level for the project area as of 2018"; in this sense, an adjustment was made for this monitoring report with the updated values by the "proposal for a reference level of forest emissions from deforestation in Colombia for payment for REDD+ results under the UNFCCC. NREF 2019," as shown in the removal calculations⁷.

⁶ Available in the path: 5. VERIFICACION ICONTEC 2019-2020 PALAMEKU KUWEI REDD+

⁷ Document "Verificación 2. Cálculo de Remociones PK 240521" located in the path: 5. VERIFICACION ICONTEC 2019-2020 PALAMEKU KUWEI REDD+5. CALCULOS DE CARBONO

Finally, it is declared that the PALAMEKU KUWEI REDD+ Project is registered in the National Monitoring, Reporting and Verification System for mitigation actions – RENARE. As shown in the following link: <http://renare.siac.gov.co/GPY-web/#/gpy/datbasreddreg/121/2281> , without any overlap or impediment to its implementation.

Figure 3. Registration Support for the Initiative



LISTADO DE INICIATIVAS					
No.	Entidad	Tipo	Nombre	Fase	Acciones
4	y Estudios Ambientales Instituto de Hidrología, Meteorología	PY REDD+	Proyecto de Conservación PALAMEKU KUWEI REDD+	-- Formulación - Solicitud de Aprobación	

Source. PALAMEKU KUWEI REDD+ project

5.2. Analysis of Non-Permanence for PALAMEKU KUWEI REDD+

As established by Resolution 1447 of 2018, a non-permanence risk analysis for the project is set forth, which can be of a natural or anthropogenic type. For this, monitoring and reporting procedures for permanence risks are applied. This is in response to the possible risks that may arise in the project, of which the following are highlighted in the territory of the Indigenous Reserves proposing the Palameku Kuwei REDD+ project:

- Occurrence of extreme weather events such as earthquakes, floods, or mass movements.
- Forest Fires
- Forced displacement in rural areas of the departments.
- Illegal trade in wildlife and flora, for commerce, pets, hunting, among others.
- Governance deficits due to changes in local government structures.
- Conversion of eligible project REDD+ areas into non-eligible areas due to uncontrolled degradation and deforestation processes.
- Community dissatisfaction in general with the implementation process of the REDD+ project due to a lack of ownership of project activities.

Therefore, following the guidelines of section 14.4 "Monitoring of Permanence" in the ProClima Methodological Document Version 2.2., the following monitoring and risk mitigation plan for non-permanence is established for the PALAMEKU KUWEI REDD+ project.

Table 4. Non-permanence Risk Analysis

Identified Permanence Risk	Mitigation Measure	Indicators for monitoring	Monitoring and Reporting Procedure	Evidence of indicator monitoring
Occurrence of extreme weather events such as earthquakes, floods, or mass movements.	Extreme natural events are uncontrollable; however, areas that can be recovered after a natural event will be prioritized for reforestation of areas degraded by this degradation driver.	Number of hectares reforested in areas degraded by natural phenomena.	Execution reports of projects within the framework of the action lines (participatory reforestation) of the monitoring plan of the PALAMEKU KUWEI REDD+ project	Annex 16. 16a and 16b.
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, emissions quantification will be carried out for the relevant 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 emissions from 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 generating emissions under the productive action lines of the monitoring plan of the PALAMEKU KUWEI REDD+ project.</p>	Annex 1.
Forced displacement in rural areas of the departments.	Events of armed conflict are not mitigable by the REDD+ project. The right to life takes precedence over all other project objectives. If it is safe to do so, a security alert will be issued to the relevant government entities, provided that this does not put the community at risk in general.	<p>Number of security alerts generated by illegal armed groups.</p> <p>Number of armed groups identified in the territory.</p>	Joint report by the project proponents, with the support of the project developer, to the relevant government entities.	There has been no forced displacement within the project area.
Illegal trade in wildlife and flora, for commerce, pets, hunting, among others.	<p>Include the population that wishes to utilize timber for commercial purposes in sustainable forest management schemes in accordance with Colombian regulations.</p> <p>Include the population that wishes to utilize genetic</p>	<p>Number of hectares included in sustainable forest management for planned deforestation activity.</p> <p>Number of management plans generated for fauna, flora, or genetic resources within the</p>	Execution reports of productive projects and/or green businesses within the framework of the action plan monitoring lines of the PALAMEKU KUWEI REDD+ project.	No specific projects related to biodiversity or the illegal trade of fauna have been formulated. However, projects focused on strengthening productive capacity and silvopastoral projects have been carried out in the Santa Helena community in

	resources or fauna in sustainable management plans within the framework of Colombian regulations.	framework of Colombian regulations.		the Rios Muco and Guarrojo Reserve, along with the Pilot Project for planting 1000 Sacha Inchi plants in the Rios Tomo and Beweri Reserve. Annex: 14, 14a, 14b, 14c. 15, 15a, 15b, 15c. 16, 16a, 16b.
Governance deficits due to changes in local government structures.	Support in annual informational and training assemblies as planned by the indigenous reserves.	Number of meetings and/or training sessions conducted by the project proponents and the project developer.	Execution reports of training projects within the framework of the governance and institutions strengthening action plan line. Records of participation in informational, training, and accountability assemblies and management by the indigenous reserves proposing the project with the developer's support.	BIOFIX has always carried out the work of accompanying and socializing project components in order to ensure that the communities have full knowledge, all within the framework of autonomy within the highest decision-making body of the collective territories, such as the General Assemblies ⁸ .
Conversion of eligible project REDD+ areas into non-eligible areas due to uncontrolled degradation and deforestation processes.	Identification, delimitation, and signage of eligible areas for the PALAMEKU KUWEI REDD+ project in zones at risk of deforestation and degradation due to productive processes or other factors. Awareness-raising among stakeholders that pose a potential risk to eligible areas of the PALAMEKU KUWEI REDD+ project.	Number of hectares identified and delimited. Number of signage implemented. Number of training sessions conducted for stakeholders.	Execution reports of projects for signage and training within the framework of the governance and institutions strengthening action plan line.	Annex 16. 16a and 16b.
Community dissatisfaction in general with the implementation process of the REDD+ project	Support in annual informational and training assemblies planned by the indigenous reserves.	Number of training sessions conducted for stakeholders. Number of meetings and/or training sessions conducted by	Execution reports of training projects within the framework of the governance and institutions strengthening action plan line.	BIOFIX has always carried out the task of accompanying and socializing project components in order to ensure that the

⁸ Legal documents located in the path: <https://drive.google.com/drive/folders/1VnKKu1hL2QZgRSZYltFvtL8sxL4fvGR?usp=sharing>

due to a lack of ownership of project activities.		the project proponents and project developer.	Minutes of participation in informative, training, accountability, and management assemblies by the indigenous reserves proposing the project with the support of the developer.	communities have a complete understanding, all of which is framed within the autonomy of the highest decision-making body of collective territories, such as the General Assemblies ⁹ .
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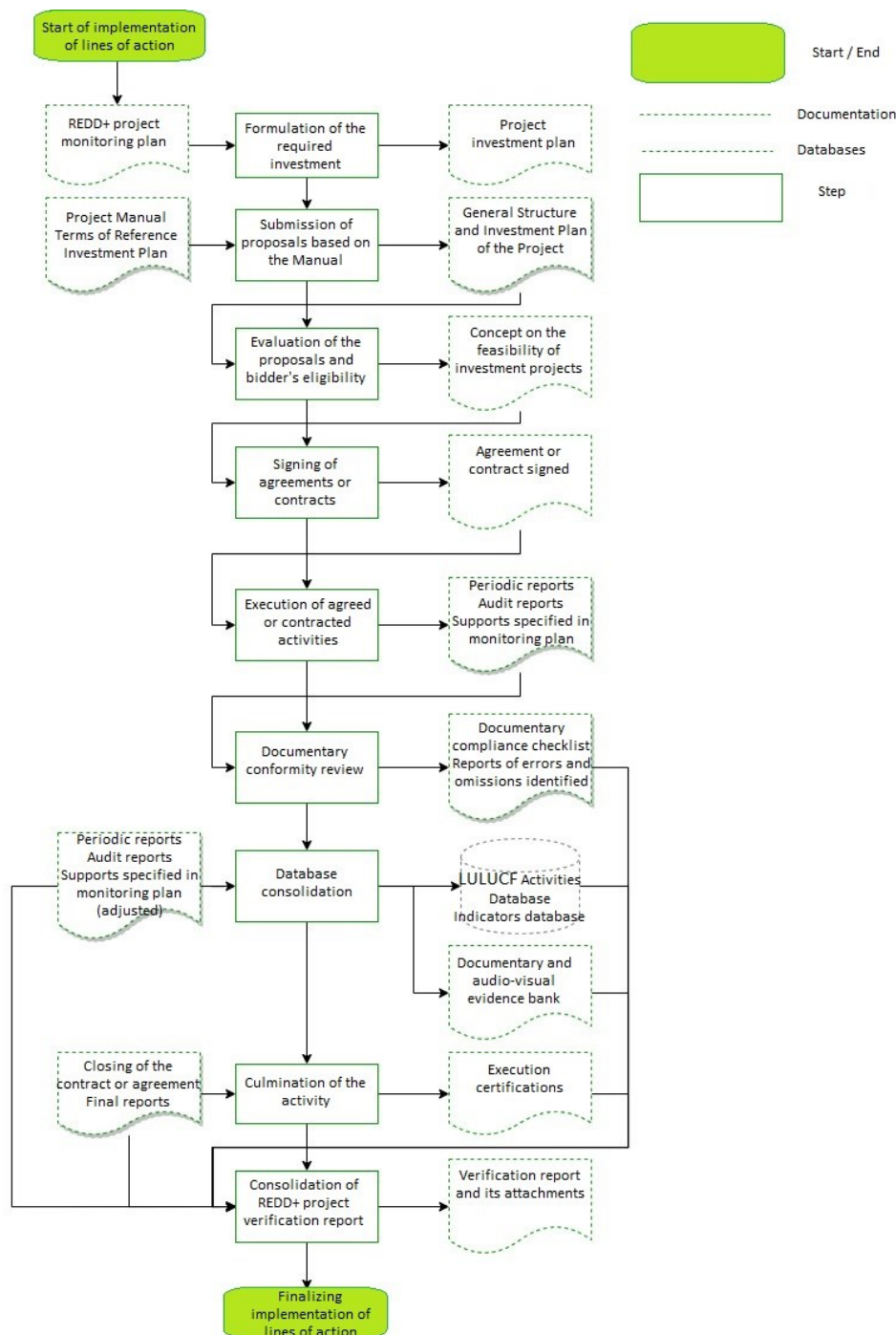
Source: PALAMEKU KUWEI REDD+ project

In conclusion, there are risks that are of natural origin and cannot be controlled or predicted, 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 Consultoría as the project developer.

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

⁹ Legal documents can be found in: <https://drive.google.com/drive/folders/1VnKKu1hL2QZgRSZYltFvtL8sxL4fvGR?usp=sharing>

Figure 4. Procedure for the Reception and Evaluation of REDD+ Activity Projects



Source: PALAMEKU KUWEI REDD+ project

5.3. Analysis of Safeguard Compliance

In addition to section 7. Procedure for Compliance with Legal requirements, in the PDD of PROJECT PALAMEKU KUWEI CONSERVATION REDD+ V.5., this monitoring report complements the procedure adopted by Biofix Consultancy for the monitoring of social and environmental safeguards, as shown in the following table.

Table 2. Management of Legal Requirements

Requirement	Assessment 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, especially socio-environmental safeguards and the regulatory framework that guarantees them.	Technical and Legal Department of Biofix Consultoría SAS BIC	Semesterly
B) Adjust the baseline in accordance with the latest IDEAM report on the baseline for the Guaviare department, in accordance with the provisions of Resolution 1447 of 2018 or the regulation that modifies, adds to, or replaces it.	Each time IDEAM updates the reference level for the Orinoquía and Amazonía region, it will be reviewed and adjusted within the monitoring reports and their annexes of removal calculations.	Technical Department of Biofix Consultoría SAS BIC	Yearly
C) Review compliance with the new Territorial Ordering Plans for the municipality of Cumaribo.	A periodic review will be conducted to assess the alignment and compliance of the project's actions with those outlined in Agreement 014 of 2008, which adopts the Basic Territorial Ordering Plan for the municipality of Cumaribo. Similarly, this will be done in relation to the municipal development plan, which is in effect from 2016 to 2019.	Technical and Legal Department of Biofix Consultoría SAS BIC	Yearly
D) Review any significant modifications that may occur in collective territories (additions or removals of territories) and/or changes in legal representation in the territory.	Documentary review of administrative acts confirming the existence and legal representation of the indigenous reserves that make up the project.	Legal Department of Biofix Consultoría SAS BIC	Yearly
E) Conducting informational assemblies in the communities regarding the project's status, the application of participation mechanisms within the governance bodies of the indigenous reserves.	Receiving inquiries, proposals, and potential modifications in accordance with the requests of the Afro communities through their traditional authorities, regarding the ratified minutes and commitments, conducting workshops and participatory, informative, and extraordinary assemblies for this purpose.	Social Project Coordination, Communications Department, and Technical Department of Biofix Consultoría SAS BIC	Annually and whenever requested by the communities.

F) Review of normative and policy instruments on the conservation of natural forests and biological diversity.	Review of the mentioned instruments to assess the compatibility of measures, forest conservation, biodiversity, ecosystem services, and multiple benefits.	Technical and Legal Department of Biofix Consultoría SAS BIC	Yearly and when new instruments are issued.
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Source: PALAMEKU KUWEI REDD+ Project

5.3.1. Social and Environmental Safeguards Monitoring Analysis

The factors influencing the effectiveness of applying REDD+ Social and Environmental Safeguards depend on various factors and actors. Some of these factors are under the direct control of the project proponent. Below are the monitoring actions for safeguards in accordance with the national interpretation and the procedure for compliance with the legal requirements of the PALAMEKU KUWEI REDD+ project, as established in Chapter 7.2.4. of the PDD.

It is important to mention that the protocol for monitoring REDD+ safeguards in Colombia is currently under construction, as well as the coordination with the National Safeguards System (SNS). Therefore, this proposal will be improved in future iterations as the country progresses in consolidating the REDD+ Strategy, the National Safeguards System, stakeholder participation and engagement processes, and the implementation of measures to reduce deforestation and degradation.

Table 6. Social and Environmental Safeguard Monitoring

Cancun Safeguards	National Interpretation of Cancun Safeguards	Following action	Responsible
The complementarity or compatibility of measures with the objectives of national forest programs and international conventions and agreements on the subject.	Correspondence with the international agreements signed by Colombia in the field of forests, biodiversity, and climate change.	A technical-legal evaluation is carried out, including the procedure adopted by Biofix Consultoría SAS BIC for the monitoring and monitoring of Socio-environmental Safeguards, in section 5.4 of the monitoring report.	Technical and Legal Department of Biofix Consultoría SAS BIC
Transparency and effectiveness of national forest governance structures, taking into account national legislation and sovereignty.	Transparency and access to information.	To materialize this purpose, the quality management process of the information was established in Annex 12 referred to in Chapter 6 of the PDD PK V5 11 Oct 2019.pdf. This document outlines the procedures and mechanisms that ensure that project-related information is transparent and accessible.	Legal Department, Financial Department, Project Social Coordination, Communications Department, and Technical Department of Biofix Consultoría SAS BIC.
	Accountability.	The accountability processes are convened by the project proponent in conjunction with BIOFIX SAS BIC. However, these processes respect the moments that the indigenous reserves consider relevant, within their protocols of self-governance. BIOFIX SAS BIC, as the project manager and ally of the indigenous reserves for this purpose, provides technical, social, and legal support in the assemblies convened by the proponents. This ensures the participation and transparency of information in the context of socio-environmental safeguards. It also addresses queries and requests raised by traditional authorities, institutions, and the general public.	
	Recognition of Forest Governance Structures.	The project actions must be designed in accordance with existing forest governance structures and among the actors involved in the process. Documents such as minutes of general assemblies, socialization meetings, informational sessions, contracts signed by the council or traditional authorities, among other documents, demonstrate respect and recognition of the communities' own structures in decision-making processes.	
	Capacity Building.	In general terms, the project ensures and promotes the strengthening of technical, administrative, legal, and financial capacities of the involved actors so that they can make documented, analyzed, and informed decisions. The Financial Management provides training in project structuring to the indigenous reserves so that they can	

		<p>progressively consolidate their production systems and acquire knowledge in various areas such as infrastructure, health, education, among others. Additionally, through Institutional Strengthening and Governance, the internal governance structures are consolidated by providing support to their various traditional authorities.</p>	
<p>Respect for the knowledge and rights of indigenous peoples and members of local communities, taking into account relevant international obligations and national circumstances and legislation, and bearing in mind that the United Nations General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples.</p>	<p>Free, Prior, and Informed Consent (FPIC)</p> <p>Traditional knowledge</p> <p>Benefit Sharing</p> <p>Territorial Rights</p>	<p>The project complied with the consultation and approval processes as established by legislation, jurisprudence, and in accordance with the customs and traditions of the communities, ensuring space for their approval and consent, as evidenced in the "legal documents" folder.</p> <p>The action lines defined by the communities themselves incorporate, recognize, and respect their traditional knowledge, practices, and systems of traditional knowledge.</p> <p>Likewise, the subfolder "2. Doc. de Asambleas/CPLI/Fiducia" contains documents related to information on benefit distribution.</p> <p>The project is designed and developed with recognition and respect for the territorial rights of the communities, as reflected in the respective Resolutions establishing the reserves issued by the competent administrative authorities. Similarly, the project's action lines include alternatives to ensure sustainable livelihoods for the communities, based on their own systems of traditional knowledge.</p> <p>See folder: DOCUMENTOS LEGALES Subfolder</p> <p>Doc. de Asambleas/CPLI/Fiducia</p>	<p>Technical and Legal Department of Biofix Consultoría SAS BIC</p>
<p>Full and effective participation of stakeholders, particularly indigenous peoples and local communities, in the measures mentioned in paragraphs 70 and 72 of this decision.</p>	<p>Participation</p>	<p>The project conducts an annual review and update of the documents that grant recognition to the council or traditional authority, as well as a review of any significant modifications that affect collective territories (additions or subtractions of territories).</p> <p>In addition, the project ensures this right through meetings and a general assembly, which constitutes the highest level of participation and decision-making within the indigenous reserves in accordance with national legislation on the matter.</p> <p>See folder:</p>	<p>Legal Department of Biofix Consultoría SAS BIC</p> <p>Social Project Coordination, Communications Department, and Technical Department of</p>

		<p>3. DOCUMENTOS LEGALES Subfolders:</p> <p>1. Tenencia de la Tierra 2. Documentos RI</p>	Biofix Consultoría SAS BIC.
<p>The compatibility of the measures with the conservation of natural forests and biological diversity, ensuring that those mentioned in paragraph 70 of this decision are not used for the conversion of natural forests but instead serve to encourage the protection and conservation of these forests and the services derived from their ecosystems and to enhance other social and environmental benefits.</p>	<p>Conservation of Forests and Biodiversity</p> <p>Promotion of Environmental Goods and Services</p>	<p>The project reviews normative and policy instruments related to the conservation of natural forests and biological diversity, as outlined in Chapter 7.4 "Summary of Compliance with the Social and Environmental Safeguards of the UNFCCC" within the PALAMEKU KUWEI REDD+ Project Concept Document.</p> <p>Additionally, the community-defined lines of action indicate a strengthening of the territory's own productive systems, which would increase the promotion of environmental goods and services.</p>	<p>Technical and Legal Department of Biofix Consultoría SAS BIC</p>
<p>Actions to address reversal risks.</p>	<p>Environmental and Territorial Planning</p> <p>Sectoral Planning</p>	<p>The project conducts periodic reviews to ensure alignment and compliance with project activities, as outlined in Chapter 1.9.3 "Compliance of Activities with Territorial Planning Instruments" in the "PDD Palameku Kuwei Version 5.pdf."</p> <p>The analysis of reversion risks is supplemented with Section 5.3 of this document.</p>	<p>Technical and Legal Department of Biofix Consultoría SAS BIC</p>
<p>Actions to reduce emission displacement.</p>	<p>Emissions displacement</p>	<p>Adjust the reference level according to the latest report from IDEAM regarding the reference level for the Vichada department in accordance with the provisions of Resolution 1447 of 2018 or any regulations that modify, add, or replace it.</p> <p>The analysis of leakage is complemented by Sections 6 and 7 of this document.</p>	<p>Technical Department of Biofix Consultoría SAS BIC</p>

Source: PALAMEKU KUWEI REDD+ Project

6. AGENTS AND DRIVERS OF DEFORESTATION AND FOREST DEGRADATION

6.1. Analysis of actors and drivers of deforestation and forest degradation

The causes of deforestation and forest degradation resulting from anthropogenic activities are those human actions carried out at the local level on a forest, such as the expansion of agricultural and/or livestock frontiers, the implementation of infrastructure projects, forced displacement, illegal mining, or selective harvesting of forest species, either for obtaining wood or other uses that involve the felling of individuals, directly impacting natural vegetation cover. Although there are also natural causes that are delimited by the biophysical conditions of the territories (Dueñas, 2018). However, anthropogenic causes are particularly subject to local and regional contexts due to underlying factors that can be demographic, economic, technological, cultural, and institutional, which are specific to each of the territories and are not always easy to elucidate (Geist & Lambin, 2002).

In order 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. For this purpose, sources of information directly related to the territory were consulted. These sources include land tenure information, such as the diagnostics carried out within the framework of the PALAMEKU KUWEI REDD+ Project and the Life Plans; perspectives on the management and regulation of natural resources, as provided by the environmental authority; coordination and management roles played by municipal governments and provincial governments; and contributions from specialized research institutes recognized as official sources of information for decision-making by public institutions, such as SINCHI.

Therefore, in the analysis of deforestation and degradation, a series of criteria were considered for compiling the information. One of them relates to the consideration that forest degradation is analyzed from the perspective of fragmentation and, therefore, in several deforestation drivers, it is considered a stage of deforestation. Or, it can occur independently of complete loss of forest cover when induced by anthropogenic causes. For this reason, quantification becomes more complex, and as a result, both quantification and actor identification can be done together in some specific cases and separately in others. This is without prejudice to the fact that the deforestation and forest degradation rate is determined in a combined manner.

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

Spatial variables:

- The type of forest located in the area with high commercial value.
- Vast distances between the indigenous reserve proponents and the communities that make them up, the forested areas, and the population centers of the municipality and department, making it difficult for government and local authorities to control.
- Poor conditions in terms of access roads and connectivity, and the use of river transportation as an alternative means of transportation.

Non-spatial variables:

- Demand for illegally harvested timber.
- Internal factors related to the lack of appropriate technologies, established production chains, specific public policies, microcredit opportunities, and indigenous reserve knowledge for the sustainability of forest and agricultural production.
- Increased pressure on resources due to population growth and/or displacement in the communities.

- Difficulties in diversifying and increasing economic income for community livelihoods, making illegal practices attractive.

With this panorama, the complement is made to section "4. ANALYSIS OF TERRITORIAL ACTORS AND DEFORESTATION DRIVERS" of the PALAMEKU KUWEI REDD+ V.5. PDD. In this section, an analysis of territorial actors and deforestation and forest degradation drivers is added based on the guidelines of section "10. CAUSES AND AGENTS OF DEFORESTATION AND/DEGRADATION" of the ProClima Methodological Document Version 2.2. The main drivers of deforestation and forest degradation present in different project areas (reference area, project area, leakage area) are identified, as shown in the following summary table.

Table 7. Summary of the analysis of causes and agents of deforestation and forest degradation in the PALAMEKU KUWEI REDD+ project.

Activity type	Cause type	Source	Driver	Interests and motivations	Spatial and temporal dimensions	Impact type
Deforestation	Direct	Anthropogenic	Conversion of forest land into subsistence agricultural land. (Internal actor)	Establish productive agricultural plots for self-consumption and local marketing	In the reference period and during the project's implementation, in the areas of: Reference Region Project Area Leakage Area	Direct
Deforestation	Underlying	Anthropogenic	Conversion of forest land into commercial forest plantations. (External actor)	Land grabbing and commercialization of timber of introduced species	In the reference period and during the project's implementation, in the areas of: Reference Region	Indirect
Deforestation	Direct and underlying	Anthropogenic	Conversion of forest land into pastures for cattle grazing and uncontrolled grazing. (Internal and external actors)	When the actor is from the community, it is done for the purpose of subsistence and local trade.	During the reference period and project implementation, in the areas of: Reference Region Project Area Leakage Area	Direct
				When they are settlers or external actors, the motivation is land grabbing and local or regional commercialization.		
Deforestation and degradation	Direct	Anthropogenic	Unsustainable extraction of timber and non-timber forest products. (Internal and external actors)	When it comes to an internal actor, selective logging is done for consumption and local commercialization.	During the reference period and project implementation, in the areas of: Reference Region Project Area Leakage Area	Direct
				When it involves external actors, these are regional actors who exploit wood for national-level commercialization.		

Degradation	Direct	Anthropogenic	Unsustainable extraction of firewood for heating and/or subsistence (Internal actor)	Selective harvesting of dendroenergetic species or parts of them is carried out for cooking activities.	During the reference period and project implementation, in the areas of: Reference Region Project Area Leakage Area	Indirect
Deforestation	Underlying	Anthropogenic	Population migration dynamics (Internal and external actors)	Due to conflicts caused by external actors, internal actors have to find new places to relocate.	During the reference period in the areas of: Reference Region	Indirect
Deforestation and degradation	Direct	Natural and Anthropogenic	Fires in forest cover due to natural and anthropogenic causes	Common climatic conditions in the area and traditional weed control practices.	During the reference period in the areas of: Reference Region Project Area	Direct
Deforestation and degradation	Underlying	Anthropogenic	Loss of cover associated with illegal activities (Internal and external actors)	When internal actors are involved, the motivation is livelihoods other than the limited economic opportunities in the area.	During the reference period and project implementation, in the areas of: Reference Region Project Area Leakage Area	Indirect
				When external actors are involved, it is due to particular motivations power interests		

Source: PALAMEKU KUWEI REDD+ Project

Next, a detailed analysis of the drivers of deforestation and forest degradation identified in the project areas is presented.

6.1.1. Conversion of forest lands into subsistence agricultural lands

Based on the information provided in section 2.1.3 regarding the type of agriculture practiced by indigenous communities, it is worth noting that the cultivation method through "conuco" or "chagra" involves clearing approximately one and a half hectares for each crop. This process includes slash-and-burn, planting, and harvesting in gallery forests or forest patches, which have a short and precarious life, causing significant damage to the local ecosystems (Alcaldía Municipal de Cumaribo, 2008). Sometimes, these intentional burns get out of control and end up affecting additional hectares.

Regarding the type of agriculture practiced by the communities, they engage in small-scale commercial crops such as cassava, maize, cloves, plantains, beans, pigeon peas, yams, sweet potatoes, sugar cane, taro, and various fruit trees such as mango, soursop, papaya, guava, cashew, chontaduro, chili peppers, moriche palm, barbasco, and others with medicinal value (Ministerio de Cultura, 2010).

This motor of deforestation is also related to the limited technical capacity to establish environmentally-friendly and sustainable alternatives. As a result, traditional but unsustainable practices, such as burning forest cover, are used, which in turn requires expanding the areas under cultivation to maintain basic self-sufficiency production.

It is important to note that only 8.3% of soils in the Orinoco region are suitable for commercial agriculture, which can increase to 26% after drainage, fertilization, and reduction of acidity processes (Riveros, 1983). This deforestation motor is identified in both the reference area and the project area, as well as in the leakage area, as these practices are typical of the transitional biome from the Orinoco to the Amazon.

6.1.2. Conversion of Forest Lands into Commercial Forest Plantations

This activity, although common in some areas of the Orinoco biome, including the project's reference region of PALAMEKU KUWEI REDD+, involves the establishment of commercial forest plantations. In these areas, it is normal to establish forest plantations for commercial purposes because they have better access roads, collection centers, and sites for processing and selling forest products.

However, in the case of the project area, there are no forest plantations within the indigenous reserve, and there is no viable commercialization route due to the transportation costs involved, both by land and river. Therefore, it is evident that the cause of this land use change, although it remains within the forestry sector, does not involve natural forests and would not be eligible within the REDD+ project. It is more relevant to the reference areas that have better access roads, should they exist in the future. This change in land use is driven by underlying socio-economic factors that do not align with the objectives of the indigenous communities involved in the project.

6.1.3. Conversion of forested lands into pastures for livestock and uncontrolled grazing

The conversion of forested lands into pastures for livestock and uncontrolled grazing is a significant driver of deforestation and degradation in the project area. According to the Cumaribo municipality's PDM for the years 2016-2019, livestock farming, especially dual-purpose cattle farming, has become one of the most promising alternatives for the integral development of the municipality. However, this activity often lacks sustainable practices and integrated programs, leading to the degradation of soils and ecosystems.

This motor of deforestation and degradation has two main agents driving it. The first agent is associated with the dynamics of population migration, while the second agent consists of the local communities in and around forested areas. The impact

of the second agent is relatively minor compared to the first and primarily affects forested areas within the project's reference and non-eligible areas.

The conversion of forested lands into pastures for livestock by the first agent is primarily driven by the declining soil productivity and the lack of capital and appropriate technologies for sustainable production. Small-scale private farmers in the non-eligible areas often resort to extensive cattle farming, which poses a significant risk to the project's eligible areas. This shift towards extensive cattle farming is closely linked to land grabbing, resulting in the Vichada department having one of the highest Gini¹⁰ coefficients globally (Dueñas, 2018).

Additionally, the introduction of foreign models and the absence of efficient technologies have contributed to the increase in extensive cattle farming and forest degradation. It is important to note that deforestation and land use changes in the region are a significant source of greenhouse gas emissions (CIAT & CORMACARENA, 2018) and have a profound impact on soil physical and hydrogeological properties due to factors such as cattle grazing, controlled burns for pasture introduction, and reduced water infiltration.

To address these challenges, the PRICCO proposes two main intervention measures for mitigation and adaptation to climate change in the department:

a) Implementation of activities to rehabilitate degraded introduced pastures

For sites with historically mismanaged and degraded introduced pastures, the plan is to renew the pastures using grasses that are tolerant and resistant to waterlogging and drought. While germplasm adapted to extreme conditions is available for the region, the isolated conditions and large land areas of indigenous territories present challenges to implementing these technologies. Therefore, this measure could be effective if leveraged through the sale of carbon credits, allowing for the technical improvement and sustainability of silvopastoral projects.

b) Promotion of rational grazing through pasture division and forage banks

This measure aims to reduce methane emissions generated as a byproduct of cattle farming by implementing improved management practices. These practices include managing the animals' diets, dividing pastures to rationalize daily forage consumption, and using high-nutritional-quality forage banks.

Implementing this measure can increase productivity, prevent soil degradation from trampling, preserve vegetation cover during dry periods, and improve pasture responses by capitalizing on periods of abundance and scarcity. This, in turn, reduces sensitivity to seasonal water availability and enhances the sector's resilience.

6.1.4. Unsustainable Extraction of Timber and Non-Timber Forest Products

According to information from Corporinoquia, pieces of wood from species such as "flor morado" and "cedro mure" were seized, which were intended for illegal commercialization in the rural area of the municipality, without the required commercial utilization permits from the regional environmental authority.

Additionally, in the area, there is evidence of some small zones with indirect processes of forest degradation due to selective logging, causing deterioration of the forest and a decrease in above-ground biomass content. These areas are generally found on the edges of water channels used as communication routes by local communities.

Regarding NTFPs (Non-Timber Forest Products), it is recognized that these products are essential for the well-being of many rural communities and contribute to the conservation of tropical forests.

¹⁰ The Gini Index for rural land is a measure of the degree of concentration of rural land in the reference spatial unit, taking into account the number of people who exercise the legal right of ownership over it (SINCHI & MADS, 2018).

While the utilization of forest products has been carried out for thousands of years, it has only been in the last forty years that NTFPs have gained worldwide attention. This increased interest is due, among other reasons, to the environmental concerns that emerged in the late 1980s, focusing on deforestation and the well-being of communities (FAO, 1991).

These products have been used to explore options for addressing poverty and conserving the environment through strategies that diversify various productive activities, aiming to improve the income of local communities, provide food security, and protect biological and cultural diversity (De la Peña & Illsley, 2001).

However, current perspectives on NTFP utilization often lead to their overuse or overexploitation, resulting in significant ecological and economic implications due to the lack of criteria for sustainable utilization and control over the actors involved in their commercialization.

Among the non-timber forest products found in the study area are the "seje" palm and the "morsche" palm, from which oils and seeds are extracted.

Regarding the "seje" palm (*Oenocarpus bataua* var. *bataua*), indigenous communities traditionally collect its fruit and ripen it in warm water to prepare refreshing beverages. In some cases, they extract the oil, which is used in traditional medicine to alleviate respiratory conditions such as cough, bronchitis, asthma, tuberculosis, and as a laxative, or in the production of cosmetics.

On the other hand, from the "morsche" palm (*Mauritia flexuosa*), the pulp is utilized for the extraction of vitamins, lipids, proteins, minerals, and more (Vásquez, et al., 2008). It contains approximately 12-24% oil, 2.3-3.7% protein, a high phosphorus content (27 mg/100 g of pulp), and the highest rate of provitamin A (4.6 mg/100 g of pulp) found in nature (Storti, 1993).

In fruits collected in the Colombian llanos, protein and fat percentages of 5.4 and 4.28, respectively, were found (Torres, 2003). Thus, this project is focused on strengthening the production and value chains of these products to ensure sustainable and responsible use.

6.1.5. Unsustainable extraction of firewood for cooking and/or subsistence

Firewood is seen as an essential ecosystem service for the indigenous communities within the project's reserves. It is valued for the flavor it imparts to cooked food, its role in providing warmth, and its significance in social interactions, as the kitchen is often the most welcoming place for receiving visitors.

The consumption of firewood is influenced by technical, economic, ecosystem-related, social, and cultural factors. However, it is recognized that its combustion can have adverse health effects, primarily due to the use of materials like particleboard with medium-density fiberboard (MDF), along with local tree species. This highlights the need for a more in-depth study of the impacts of firewood combustion on health.

Firewood is considered a primary source of energy because it is obtained directly from nature, specifically from forest resources, by using tree trunks and branches. This excludes waste from the timber industry¹¹.

According to Singer (n.d.):

¹¹ OLADE (Latin American Energy Organization) definition

"Firewood is the oldest source of heat used by humans, perhaps because it is much more accessible than other fuels and ignites easily. This accessibility is why it is still being burned in primitive households using traditional methods. The result can only be intense consumption equivalent to real waste."

In the case of Colombia, comprehensive reports on firewood use include the National Energy Study "ENE" and the Analysis of Energy in the Rural Sector, conducted in 1982. The ENE study shows that the average daily consumption of firewood for cooking varies, with 19.35 kg/day for open stoves, 25.87 kg/day for flat stoves without chimneys, and 29.48 kg/day for stoves with a flat chimney. Per capita consumption was calculated at 100 kg/month and, in the least efficient case, 150 kg/month (Ministry of Mines, 1982) (FAO, 2008).

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

6.1.6. Population migration dynamics

The migration of settlers to densely forested areas is primarily motivated by the opportunities presented by local illegal markets. It can also be influenced by the presence of armed groups operating outside the law, which may force local populations to leave their ancestral territories.

This deforestation driver is mainly fueled by illegal economies, particularly those related to coca leaf cultivation and coca paste production. These dynamic gains strength due to the marginal and limited rural employment conditions. Since the primary economic activity is extensive livestock farming, it requires very little labor. As a result, settlers clear forested areas to establish subsistence and coca crops, which are typical in the early years and are later replaced by pastures (in the reference area). In the project area, this dynamic affects it indirectly, as it serves as a corridor for the commercialization of these products and involves some young people in the region, especially as transporters.

While the land tenure of indigenous reserves within the project is clear based on the adjudication regulations issued by INCORA and INCODER, they are not exempt from vulnerability to land invasion by settlers. Therefore, under the umbrella of strengthening the governance and institutional capacity of indigenous reserves, efforts are being made to prevent this deforestation and degradation driver caused by external agents through land regularization and area demarcation.

Efforts to address this issue should focus on improving governance, land security, and the enforcement of land rights for indigenous communities. Additionally, strategies to provide alternative livelihoods and economic opportunities for settlers can help reduce their reliance on illegal activities that drive deforestation in forested areas.

6.1.7. Forest fires resulting from natural causes

High biological diversity, sustainability of water and soil resources, and some human activities in the Colombian Orinoquia region are notably affected by wildfires. This phenomenon occurs recurrently during the annual dry periods in the months of December to March and July to August. Both the area and the frequency of impact tend to increase significantly during El Niño events.

In tropical humid ecosystems, there is a loss of surface and internal moisture content during El Niño events, increasing their susceptibility and threat of vegetation biomass combustion.

Statistics on wildfires in Colombia allow for the analysis of their behavior under different scenarios, such as by regions, departments or municipalities, El Niño or normal climatic conditions, affected vegetation cover, Autonomous Regional Corporations, by year, or by month. This information can be used to prioritize areas, guide actions, or support the need for more detailed studies.

6.1.8. Loss of forest cover associated with illegal activities

Within the multitude of variables that confirm the department of Vichada as one of the richest in the country, the geological component has historically represented an opportunity for development or sustenance of the communities settled there, especially in the areas of the reference region of the PALAMEKU KUWEI REDD+ project.

However, associated with the social context, as discussed extensively earlier, it has become one of the activities with the greatest environmental impact, as in subsistence economies, it begins with forest degradation and, in some cases, leads to deforestation.

6.2. Analysis of Behavioral Changes in Agents of Deforestation and Forest Degradation.

Based on the identified motors and agents of deforestation and forest degradation, both in the reference areas, leakage area, and project area, and having a clear understanding of their motivations and interests, relevant mitigation measures are established within the framework of the Monitoring Plan. However, this is focused only on internal actors, that is, the community belonging to the indigenous reserves proposing the project.

For these behaviors and dynamics to have alternatives for change, as long as it is within the framework of respect for autonomy, self-recognition, and the worldview of the same community. This aims to mitigate unplanned deforestation and degradation in the project area and prevent the displacement of such activities to the leakage belt.

Table 8. Relationship between the lines of action and monitoring plan and behavior changes of the agents of deforestation and degradation

Action line	Associated drivers	Justification	Monitoring method
Institutional Strengthening and Governance Enhancement	Conversion of forest lands into subsistence agricultural lands.	Through the planned activities aimed at strengthening family production systems, it is proposed to incorporate the strategic line of intergenerational knowledge exchange." This refers to the integration of a specific strategic approach focused on sharing knowledge between different generations within the context of enhancing family-based production systems.	Annual management reports in the line of action compared to the proposed indicators and those achieved. Similarly, compliance with local planning instruments will be verified within the framework of meeting socio-environmental safeguards.
	Conversion of forest lands into commercial forest plantations.	Through the development of Life Plans and land regularization, it is expected to have clear and marked boundaries for the areas of the REDD+ project, as well as improved spaces for engagement with private stakeholders.	
	Population Migration Dynamics.	With local planning tools such as Life Plans, management plans, and internal statutes, mechanisms and protocols are established to address emergencies due to population migration, mitigating any impacts that may occur.	
Participatory Reforestation of Degraded Ecosystems.	Conversion of forest lands into commercial forest plantations.	Reforestation includes activities of restoration, recovery, or participative rehabilitation that are established in priority areas as determined by the monitoring program, which is carried out weekly and provides semi-annual reports. Thus, general reforestation activities can take place in abandoned agricultural or livestock areas. Activities for the enrichment of natural forest areas that have been selectively utilized are also included. Or in areas that have been degraded or deforested due to natural activities such as areas affected by fires or extreme natural events.	Annual management reports in the line of action, compared to the proposed indicators and those achieved. Field verification of the effectiveness of the implemented actions.
	Conversion of forest lands into grazing lands for livestock and uncontrolled grazing.		
	Unsustainable extraction of timber and non-timber forest products.		
	Unsustainable extraction of firewood for heat and/or subsistence.		
	Fires of the forest cover due to natural causes.		
Deforestation and Forest Degradation Monitoring and Control Program.	Conversion of forest lands into grazing lands for livestock and uncontrolled grazing.	The monitoring and control program for deforestation and degradation includes a technical component, which is carried out through the analysis of Sentinel, radar, Landsat, or other satellite images that help fill information gaps due to cloud cover.	Monthly monitoring reports on deforestation and degradation, and verification of the number of early warning alerts generated and the mitigation actions taken in response to them.
	Unsustainable extraction of timber and non-timber forest products.	When there are medium or large-scale disturbance events, early warning mechanisms will notify the indigenous reserve to check whether intervention	

	Fires of the forest cover due to natural causes.	is possible or to direct communications to the relevant environmental authorities. In this way, the technical monitoring is complemented by social monitoring carried out by forest custodians through the indigenous guard.	
Protection and Conservation of Biodiversity.	Unsustainable extraction of timber and non-timber forest products.	Through participatory studies with local sawmill operators to determine species of socio-economic interest and threat level, prioritization will be made in internal policies for harvesting prohibition.	Reports detailing the correlation between the number of protected fauna and flora species and the associated projects executed under the leadership of indigenous reserves, or in partnership with third-party research institutes and universities.
	Unsustainable extraction of firewood for heat and/or subsistence.		
Strengthening of Conucos	Conversion of forest lands into subsistence agricultural lands.	Through the use of territorial planning instruments, areas with the potential for commercial agricultural production will be delineated, even if that is not the current land use dynamic. In addition to having a census of family agricultural units (conucos and chagras), this will allow for prioritization and definition of the needs for inputs to be strengthened in each case.	Implementation reports of the agricultural ventures supported by the REDD+ project.
Production, self-supply, and marketing of bananas, corn, rice, peppers, citrus, moriche palm fruit, and seje palm fruit.	Conversion of forest lands into subsistence agricultural lands.	From the perspective of commercial crops, the possibilities of association would minimize deforestation or degradation in mosaics, which exacerbate the fragmentation of ecosystems, whereas in associative areas, the edge effect is less, and fragmentation is less likely, making border degradation a bit easier to control.	Verify the number of associative ventures created or strengthened within the framework of the REDD+ project.
	Unsustainable extraction of timber and non-timber forest products.	Associations of sawmill operators and users of non-timber forest products (NTFPs) are prioritized so that cooperative activities are more effective in the planning of sustainable forest management.	
Silvopastoral and Poultry Management.	Conversion of forest lands into grazing lands for livestock and uncontrolled grazing.	Change the productive mechanisms from extensive livestock farming to intensive livestock farming, using silvopastoral or agrosilvopastoral systems to optimize the number of livestock heads per hectare.	Verify the number of hectares freed from extensive livestock farming and enabled for rehabilitation processes. Verify the number of livestock heads per hectare in the project area.
Silvopastoral Management	Unsustainable extraction of timber and non-timber forest products.	By organizing the users of forest products into harvesting cooperatives, they can be supported in establishing sustainable forest management plans and meeting all the requirements of the Colombian regulatory framework for engaging in legal forestry. Upon reaching this point, the REDD+ project would incorporate planned deforestation and degradation as an activity.	Verify the number of sawmill operators included in conservation or sustainable forestry cooperatives, as well as the number of hectares included in sustainable forestry processes

	<p>Unsustainable extraction of firewood for heat and/or subsistence.</p>	<p>Maximizing the use of forest residues implies that additional trees do not need to be harvested to meet the demand for firewood. Similarly, the establishment of energy tree plantations would relieve pressure on the natural forest.</p>	<p>within the framework of Colombia's Pact for Legal Timber..</p>
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Source: PALAMEKU KUWEI REDD+ Project

7. QUANTIFICATION OF GHG REMOVALS

7.1. METHODOLOGY FOR QUANTIFYING DEFORESTATION AND DEGRADATION

The activities that were designed and are being implemented in the PALAMEKU KUWEI REDD+ Conservation Project aim to reduce CO₂ emissions resulting from deforestation and forest degradation, compared to baseline levels.

The project area is forested and meets the concept of a forest as defined by the Colombian government. These areas have been forests for a minimum of 10 years prior to the project's start date, as demonstrated by historical analysis for the period from 2000 to 2010. However, in the absence of the REDD+ project activities, deforestation and degradation would intensify.

7.1.1. Deforestation and Forest Degradation Scenario Without Project

The procedure applied for estimating emissions reductions from deforestation 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," as well as "VM0007 REDD+ Methodology Framework (REDD-MF), v1.5" from the Verified Carbon Standard (VCS). For the validation and initial verification process, the certifying program ProClima certifies that the methodology used remains compatible for the second verification process¹².

The combined rate of deforestation and degradation (*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 = initial forested area at the start of the analyzed period, which is the average between healthy forest and degraded forest, measured in hectares.

*A*₂ = forested area at the end of the analyzed period, which is the average between healthy forest and degraded forest, measured in hectares.

*t*₁ = initial year of the period

*t*₂ = final year of the period

7.1.2. Management of Deforestation and Forest Degradation Leakage

The measures for preventing leakage planned in the PALAMEKU KUWEI REDD+ project include tree planting in degraded areas, agricultural intensification, fertilization, and other measures to improve farmland. The project proponents control leakage through demand-side management activities for forest products and services. These mitigation activities include agroforestry to provide sustainable sources of wood and employment opportunities.

Likewise, one of the proposed activities for the coming years is to increase agricultural mechanization and productivity, minimizing market leakage. Another advantage is that with the implementation of multiple productive components, profitability, employment, and overall community support are increased.

Leakage mitigation strategies for the project involve implementing productive activities that improve the socioeconomic status, strengthening governance, and establishing forest custodians. Productive activities enable communities to market

¹² Document located in the path: \5. VERIFICACION ICONTEC 2019-2020 PALAMEKU KUWEI REDD+\8. METODOLOGIAS APLICADAS

and add value to certain commodities, providing these families with an alternative source of income not derived from illegal logging.

7.2. CARBON RESERVOIRS

The carbon reservoirs were updated in compliance with Resolution 1447 of 2018 by applying the values of above-ground biomass, below-ground biomass, and organic soil carbon from the National Forest Reference Emission Level (NREF) of 2014 to the NREF values of 2019 for the Orinoco biome, where the PALAMEKU KUWEI REDD+ project is located. This update is summarized in the following table:

Table 3. Carbon Reservoir Values according to NREF 2019

CARBON RESERVOIR	ORINOCO BIOME
Above-Ground Biomass (tC/ha)	86
Below-Ground Biomass (tC/ha)	21
Soil Organic Carbon (tC/ha)	3

Source: PALAMEKU KUWEI REDD+ Project

7.3. CALCULATION OF DEFORESTATION AND FOREST DEGRADATION REMOVALS

The projection of deforestation and forest degradation was calculated by estimating forest loss through the multiplication of the combined rate of deforestation and forest degradation by the current project area in the year 2010 at the project's inception, as shown in the following table.

Table 10. Projection of Deforestation Over the Lifetime of the PALAMEKU KUWEI REDD+ Project

t	Year	Annual Deforested and Degraded Area	Remaining area	Potential Carbon Reduction (t CO ₂)	15% Discount Reserve (t CO ₂)	Net Carbon Reduction (t CO ₂)
1	2010	857,3	32.629,0	212.355	31.853	180.502
2	2011	850,2	32.297,2	210.196	31.529	178.666
3	2012	843,1	31.968,7	208.058	31.209	176.849
4	2013	836,1	31.643,6	205.942	30.891	175.051
5	2014	829,2	31.321,8	203.848	30.577	173.270
6	2015	822,3	31.003,2	201.774	30.266	171.508
7	2016	815,4	30.687,9	199.722	29.958	169.764
8	2017	808,6	30.375,9	197.691	29.654	168.038
9	2018	801,9	30.066,9	195.681	29.352	166.329
10	2019	795,2	29.761,2	43.285	6.493	36.792
11	2020	788,6	29.458,5	42.845	6.427	36.418
12	2021	782,0	29.158,9	42.409	6.361	36.048
13	2022	775,5	28.862,4	41.978	6.297	35.681
14	2023	769,1	28.568,8	41.551	6.233	35.318
15	2024	762,7	28.278,3	41.128	6.169	34.959
16	2025	756,3	27.990,7	40.710	6.107	34.604
17	2026	750,0	27.706,1	40.296	6.044	34.252
18	2027	743,8	27.424,3	39.886	5.983	33.903
19	2028	737,6	27.145,4	39.481	5.922	33.558
20	2029	731,5	26.869,3	39.079	5.862	33.217
21	2030	725,4	26.596,1	38.682	5.802	32.879
22	2031	719,4	26.325,6	38.288	5.743	32.545

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23	2032	713,4	26.057,9	37.899	5.685	32.214
24	2033	707,4	25.792,9	37.513	5.627	31.886
25	2034	701,5	25.530,5	37.132	5.570	31.562
26	2035	695,7	25.270,9	36.754	5.513	31.241
27	2036	689,9	25.013,9	36.381	5.457	30.923
28	2037	684,2	24.759,5	36.011	5.402	30.609
29	2038	678,5	24.507,7	35.644	5.347	30.298
30	2039	672,8	24.258,5	35.282	5.292	29.990
TOTAL				2.657.00	398.625	2.258.875

Source: PALAMEKU KUWEI REDD+ Project

8. REPORT OF ACTIVITIES EXECUTED DURING 2019-2020

Below are the activities carried out during the verification years corresponding to 2019-2020 as part of the Palameku Kuwei REDD+ Conservation Project:

Table 4. Verification Report of Projects Undertaken During 2019-2020 PALAMEKU KUWEI

Redd+ action line	Activity	Objective	Subactivity	Indicators	Execution Period and Support	Related actors
Monitoring and Control Program for Deforestation and Forest Degradation	Realizar el monitoreo de los cambios de las coberturas del área de influencia del proyecto PALAMEKU KUWEI REDD+	Conduct monitoring of land cover changes within the influence area of the PALAMEKU KUWEI REDD+ project.	<p>Monitoring of deforestation areas: In accordance with early deforestation alerts from IDEAM (Institute of Hydrology, Meteorology, and Environmental Studies).</p> <p>Capture and image processing: Use of drones for image capture, subsequent georeferencing, and spatial information analysis.</p> <p>Identification of causes and agents responsible for changes in land cover: Based on primary information provided by the community.</p> <p>Execution of a forest degradation study: To complement the project's primary information regarding the drivers and quantification</p>	Technical Document on Deforestation Monitoring Applied to the Conditions of the PALAMEKU KUWEI REDD+ Conservation Project Area for the Year 2019.	<p>Start Date: January 2019</p> <p>End Date: December 2019</p> <p>Support: Annex 1, 1a, 1b, 1c, 1d</p>	<p>Biofix Consultoría SAS BIC</p> <p>GIS Coordinator Biofix SAS BIC</p>

			of areas affected by degradation, as well as the generation of the respective GIS layer.			
Institutional Strengthening and Governance	Purchase of equipment for the identification and protection of the indigenous guard, captains, and ancestral authorities of the indigenous reserves San Luis del Tomo, Valdivia, La Esmeralda, and Punta Bandera, as well as indigenous councils in the Tomo Palameku region.	Identify and provide protection to the indigenous guard, captains, and ancestral authorities of the indigenous reserves of San Luis del Tomo, Valdivia, La Esmeralda, and Punta Bandera.	Acquire the identification and protection equipment for the indigenous guard of the affiliated reserves.	<p>Supplies acquired as implements for the identification and protection of the indigenous guard, captains, and ancestral authorities of the indigenous reserves:</p> <p>Cap - 230 units Two-Tone Vest - 230 units Green Polo Shirt - 157 units Blue Pants - 157 units Pair of Shoes - 157 units Briefcase - 230 units Personal Biosafety Kit - 230 units Long-Sleeve Shirt - 230 units ID Card - 230 units</p> <p>Supply kits by Reserve:</p> <p>San Luis del Tomo: 110 Valdivia: 38 La Esmeralda: 36 Punta Bandera: 38"</p>	<p>Start Date: September 2020</p> <p>End Date: November 2020</p> <p>Support: See Annex 2</p> <p>Annex 2a.</p> <p>Annex 2b.</p> <p>In the provided support documentation, you can find photographic evidence of the uniforms and supplies acquired under the contract.</p>	<p>Governor Council of the Reserves San Luis del Tomo, Valdivia, La Esmeralda, and Punta Bandera.</p> <p>President of the Asopalameku Association.</p> <p>Diaz Servicios y Suministros SAS</p>

<p>Organize an exchange meeting for the sharing of traditional knowledge and indigenous games among the authorities of the Ríos Tomo and Beweri reserve in the Campo Alegre community.</p>	<p>Strengthen ancestral traditions, practices, and customs in the community of the Ríos Tomo and Beweri Reserve.</p>	<p>Logistic support for the transfer of the reserve to Campo Alegre.</p> <p>Provision of meals and gift baskets.</p> <p>Organization of indigenous games.</p>	<p>Required Transportation: To transport the population of the reserve, 6 vans were required for the journey from the reserve to Campo Alegre, and 5 for the return trip.</p> <p>Quantity of plates per type of meal: Breakfast: 250 units Snacks: 250 units Lunch: 250 units Gift baskets: 270 units</p> <p>Indigenous Games Activity: The games conducted during the day are documented in the photographic record on page 23 of Annex 4</p>	<p>Start Date: November 2020</p> <p>End Date: December 2020</p> <p>Support: In the provided support documentation, you can find photographic evidence of the logistics of the traditional knowledge and indigenous games activity.</p> <p>See Annex 3, 3a, 3b</p>	<p>Fundación Yaniana</p> <p>Governor Council of the Ríos Tomo and Beweri Reserve.</p> <p>Community of the Ríos Tomo and Beweri Reserve.</p>
<p>Implementation of technology as an educational tool for the student population of the RÍOS TOMO AND BEWERI reserve.</p>	<p>Contribute to the educational development, through technological tools, in the student community of the Ríos Tomo and Beweri Reserve.</p>	<p>Acquire, by means of a purchase, technological equipment for the educational institutions of the Ríos Tomo - Beweri reserve.</p>	<p>Number of students benefited by Educational Center:</p> <p>Omar Sánchez – 44 students Kokopi - 39 students Akadali – 36 students Nakuanu – 33 students Francisco Reinaldo – 37 students</p>	<p>Start Date: December 2020</p> <p>End Date: Ongoing, the mentioned project has not completed activities and is still ongoing.</p> <p>Support:</p>	<p>Governor Council of the Ríos Tomo and Beweri Reserve.</p> <p>Community of the Ríos Tomo and Beweri Reserve.</p> <p>Students from the 9 Educational Centers.</p>

				<p>Camilo Rodriguez – 31 students Manuanu – 29 students La rosita – 33 students La aurora – 31 students TOTAL: 9 Educational Centers 313 Students</p> <p>Computer labs created: 9 Labs for each educational center</p>	See Annex 4, 4a ¹³ , 4b	<p>Centro educativo Camilo Rodriguez, Manuanu, La rosita, la aurora, Omar Sánchez, Kokopi, Akadali, Nakuanu, Francisco Reinaldo</p>
	<p>Hire administrative professionals for the projects of the Ríos Muco and Guarrojo reserve who will assist in the project formulation process, along with the office setup and equipment purchase.</p>	<p>Strengthen the administrative functioning of the Palameku Kuwei Redd+ Project by hiring professional staff and providing office supplies in order to offer support and assistance in the processes required for the development of projects that benefit the communities.</p>	<p>Hire professionals for the development of administrative and technical processes Provide office supplies, stationery, and accounting software Rent an office for administrative activities, carry out trips to conduct various activities (briefings, characterization, and others).</p>	<p>Professionals Hired: Lawyer, Project Professional, Accountant, Indigenous Liaison</p> <p>Office Supplies: Laptops - 2 units, Desks and Chairs - 5 units, Desktop Computers - 3 units, Filing Cabinets - 2 units, Accounting Software - 1 unit, Printers - 2 units, Stationery</p> <p>Infrastructure and Mobility: Monthly office rent during the project + Rental and expenses for the vehicle responsible for mobilizing project stakeholders."</p>	<p>Start Date August 2020</p> <p>End Date December 2020</p> <p>Support: See annex 5, 5a, 5b</p>	<p>Cabildo Governor of the Ríos Muco and Guarrojo Reserve</p> <p>Community of the Ríos Muco and Guarrojo Reserve</p> <p>Hired Professionals</p>

¹³ The feasibility concepts confirm that the project was reviewed by professionals from BIOFIX SAS BIC, thereby granting feasibility to start such projects and triggering the financial disbursement to proceed with execution.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Health, Education, Infrastructure, Sanitation, Clean Water, and Energy</p>	<p>Purchase of food and biosecurity kits¹⁴ for 1100 families from the indigenous reserves of San Luis del Tomo, Valdivia, La Esmeralda, and Punta Bandera, members of the Association of Traditional Authorities and Indigenous Councils of the Tomo Palameku Region.</p>	<p>Provide food and biosecurity items to 1100 families from the indigenous reserves of San Luis del Tomo, Valdivia, La Esmeralda, and Punta Bandera.</p>	<p>Purchase groceries for the basic family basket and biosecurity kits for 1100 families from the San Luis del Tomo, Valdivia, La Esmeralda, and Punta Bandera indigenous reserves.</p>	<p>List of purchased products: Rice 500g Coffee 500g Lentils 460g Wheat Flour 500g Corn Flour 500g Salt 1 kg Vegetable Oil 1000 ml Sugar 500 mg Panela (unrefined whole cane sugar) 450 mg Pasta 250g Egg Trays AAX30 Soda Crackers x325 mg Powdered Milk x250 mg Biosecurity Kit (1000 mg Alcohol, 250ml Hand Sanitizer) Washable Face Masks</p> <p>(pp 22, annex 6) Families from each reserve benefited with the supply of food and biosecurity kits:</p> <p>San Luis del Tomo: 327 families</p>	<p>Start Date September 30 2020</p> <p>End Date October 30 2020</p> <p>Support: Annex 6, 6a, 6b</p>	<p>Tribal Council Governance San Luis del Tomo, Valdivia, La Esmeralda, and Punta Bandera Reserves</p> <p>Legal Representative Orinoquia Marie</p> <p>Legal Representative Asopalameku Association</p>

¹⁴ It should be noted that initially, in the basic sanitation action line, there was no provision to address health or climatic emergencies. However, considering the social impact caused by the pandemic, it was necessary to assist the community to ensure a good quality of life during the health emergency.

				<p>Valdivia: 258 families La Esmeralda: 258 families Punta Bandera: 257 families</p> <p>(pp3-6 annex 6)</p>		
	<p>Natural Resource Utilization: Solar Electrification in Communities and Educational Institutions of the Ríos Muco and Guarrojo Reserve</p>	<p>Provide a solution to the difficulties in the provision of energy services in the communities and educational institutions benefiting from the Ríos Muco and Guarrojo Reserve.</p>	<p>Implement a photovoltaic energy system in 10 communities and 3 educational institutions of the Ríos Muco and Guarrojo Reserve.</p>	<p>Number of Benefited Families in the Community: 23 families</p> <p>Number of Benefited Educational Institutions in the Reserve: 3</p> <p>Solar Panels Implemented: 30 panels</p> <p>(pp 12 Annex 7)</p>	<p>Start Date October 2020</p> <p>End Date December 2020</p> <p>Support See annex 7, 7a, 7b, 7c, 7d</p>	<p>Governing Council of the Muco Guarrojo Reserve</p> <p>Educational Institutions: La Uribe, Limoncito, Kaikainali</p> <p>Communities: La Rosita, Villanueva, La Esmeralda, Milan, La Revancha, San Pablo, Canaguaro, Caño Sucio, Santa Helena</p> <p>B&C Integrated Business Services</p>
	<p>Contribution to the development of sports activities</p>	<p>Promote and ensure the development of sports activities in the Ríos Muco and Guarrojo Reserve</p>	<p>Selection and delivery of sports equipment for the teams in the reserves.</p>	<p>Number of soccer equipment delivered: 20 Balls 20 Sets of goals</p> <p>Total uniforms delivered: 175 Uniforms</p> <p>(Page 11 Annex 8)</p>	<p>Start Date October 2020</p> <p>End Date December 2020</p> <p>Support See Annex 8, 8a, 8b</p>	<p>Council Governor of Muco Guarrojo Reserve</p> <p>Muco Guarrojo Community</p> <p>Emprender T.G SA</p>

<p>Ensure the academic development of indigenous youth from the Muco Guarrojo Reserve in higher education</p>	<p>Contribute to the development of capacities and professional skills of indigenous youth from the Muco Guarrojo Reserve aspiring to higher education.</p>	<p>Carry out the payment of registration and tuition fees for the semesters at the university for the beneficiaries.</p>	<p>Students from the Muco and Guarrojo Reserve 4 students</p> <p>Semesters approved by each student 3 Semesters</p> <p>Careers chosen by each young person</p>	<p>The project, initially, has a duration of 18 months, providing financial support to students for their first 3 semesters of college. As of December 12, 2020, disbursements have been made for the first semester of the beneficiaries, so the project has not completed its activities and is still ongoing.</p> <p>Support See annex 9, 9a, 9b</p>	<p>Students from the Muco Guarrojo Reserve</p> <p>Legal Representative Muco Guarrojo Reserve</p>
<p>Strengthening Ground Transportation for Health Emergency Response in the Muco and Guarrojo Reserve</p>	<p>Implementing a means of transportation to facilitate the transportation of patients to the municipal center.</p>	<p>Purchase and necessary adaptations for the acquired vehicle</p> <p>Training and support on first aid</p> <p>Hiring of personnel responsible for providing driving services</p> <p>Financial assistance for hospitalized patients</p>	<p>Number of people benefited from the transportation service for medical care and emergencies</p> <p>Annual expenditure on financial assistance for hospitalized patients: \$9,999,000.00</p>	<p>Start Date October 2020</p> <p>End Date Ongoing; the project in question has not completed its activities and is still in effect.</p> <p>Support See annex 10, 10a, 10b, 10c</p>	<p>The Red Cross of Meta</p> <p>Legal Representative of the Muco and Guarrojo Reserve</p>
<p>Technical guidance with an intercultural focus for promoting health, habits of healthy lifestyles, for the prevention of prevalent childhood diseases such as: diarrhea, and acute respiratory infections for</p>	<p>Ensure and develop in them healthy habits and customs that are valued as basic aspects of life and the right to enjoy good health, both physical, social, and community-based.</p>	<p>Training with an intercultural focus for promoting health, habits of healthy lifestyles, for the prevention of prevalent childhood diseases such as: diarrhea, and acute respiratory infections for</p>	<p>Women trained to generate basic concepts in disease prevention 280 Women</p> <p>Care Pathway</p>	<p>Start Date November 2020</p> <p>End Date December 2020</p> <p>Support</p>	<p>Council Governor of the Tomo-Beweri Reserve</p> <p>Fundación Yaniana</p>

	the women of the Tomo - Beweri Reserve.		<p>the women of the Tomo - Beweri Reserve.</p> <p>Create a care pathway in the event of a health difficulty on the part of a member of the reserve.</p> <p>Create workshops to strengthen the knowledge acquired in the training.</p> <p>Appoint a liaison for each community to report public health issues in the reserve to the municipal government.</p>	<p>In case of health emergencies in the reserve</p> <p>The first care pathway was established for health emergencies in the reserve.</p> <p>Number of workshops per year to address childhood health issues in the community of the reserve</p> <p>2 were conducted</p> <p>Representative per community as a public health liaison in emergency cases</p> <p>Representatives</p>	See annex 11, 11a, 11b, 11c	
	Implementation of a plan to promote physical and sports activity in 6 educational institutions of the Tomo and Beweri Rivers Reserve.	Strengthen sports training, promote healthy habits, and encourage physical activity within the student community of the educational institutions of the Tomo and Beweri Rivers Reserve.	<p>Create sports training schools in educational communities, in the areas of soccer, indoor soccer, basketball, and volleyball.</p> <p>Create groups to carry out recreational activities in the reserve.</p>	<p>Participating educational institutions in relation to the number of students benefiting from the strengthening of sports activity:</p> <p>Inst. Omar Sánchez: 44 Students</p>	<p>Start Date November 2020</p> <p>End Date December 2020</p> <p>Support See annex 12, 12a, 12b, 12c</p>	<p>Council Governor of the Rio Tomo Beweri Reserve</p> <p>Participating Educational Institutions</p> <p>Fundación Yaniana</p>

			<p>Hold inter-institutional sports events in the reserve.</p>	<p>Inst. Francisco Reinaldo: 39 Students</p> <p>Inst. Campo Alegre: 36 Students</p> <p>Inst. Manuanu: 33 Students</p> <p>Inst. Puerto Rondon: 37 Students</p> <p>Inst. Nakuanu: 31 Students</p> <p>TOTAL 200 students</p> <p>Provision of sports equipment to the 6 educational institutions: Jump ropes, soccer balls, professional indoor soccer balls, basketballs No. 5, volleyball No. 5, volleyball net, soccer nets, mini-soccer nets, ball pump, pen-type pressure gauge.</p>	
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	Provide families in the communities of the Rios Tomo and Beweri Reserve with zinc sheeting material to improve the quality of family housing.	Ensure the universal right to decent housing and improvement of adequate housing.	<p>Coordinate with the supplier and the captains to carry out the delivery of the zinc sheets in each of the communities of the Rios Tomo Beweri Reserve.</p> <p>Verify the improvement of each of the houses.</p>	<p>Zinc Sheets delivered along with bundles of 100 units:</p> <p>Zinc Sheets: 23 Bundles of 100 units: 2</p> <p>Number of families in the Rios Tomo Weberi Reserve: 218 families</p> <p>Verification of housing improvement post-delivery:</p> <p>It was carried out between December 5-10 of 2020.</p>	<p>Start Date September 2020</p> <p>End Date December 2020</p> <p>Support See annex 13, 13a, 13b</p>	<p>ommunity of the Rios Tomo and Beweri Reserve</p> <p>Council Governor of the Rio Tomo Beweri Reserve</p> <p>Sumocol Suministros y obras de Colombia SAS</p>
Green Businesses and Biodiversity Protection	Conduct technical support in the productive projects executed by Palameku Kuwei Redd+ to ensure a positive impact on the population of the Muco and Guarrojo Reserves.	Strengthen the development of productive activities in the Muco and Guarrojo Rivers Reserve.	<p>Develop training on good livestock practices</p> <p>Provide essential tools for crop management</p> <p>Distribute seeds</p> <p>Supply nutritional supplements and tools for livestock</p> <p>Conduct workshops on commercialization processes</p>	<p>Number of trainings conducted 26</p> <p>Number of people trained</p> <p>Percentage of crop management tools distributed</p> <p>Number of seeds distributed</p>	<p>Start Date September 2020</p> <p>End Date Open, the project in question has not yet completed activities, so it remains in effect.</p> <p>Support See annex 14, 14a, 14b</p>	<p>Legal Representative of the Muco and Guarrojo Rivers Reserve</p> <p>Community of the Muco and Guarrojo Rivers Reserve</p>

				<p>Nutritional supplements provided</p> <p>Workshops conducted on commercialization processes 11</p>		
	<p>Develop a silvopastoral program in the Santa Helena community that contributes to increased production yield, soil quality improvement, and mitigation of environmental impacts caused by livestock farming.</p>	<p>Encourage change in livestock farming techniques, through the creation of new production alternatives.</p>	<p>Conduct a soil description with the people belonging to the community. Purchase trees with shading and feeding functions. Training in the Santa Helena Community about the importance of silvopastoral systems and the planting process of shrubs and forage species. Implement the silvopastoral system in the Santa Helena community.</p>	<p>Report on the physical characteristics of the community. Number of shrubs acquired: 324 shrubs</p> <p>Personnel knowledgeable in silvopastoral systems hired: 2</p> <p>Workshops given to the community: 3</p> <p>Hectares prepared for planting: 10 Ha</p> <p>Number of trees planted: 324 trees planted</p>	<p>Start Date September 2020</p> <p>End Date: Open, the project in question has not yet completed activities, so it remains in effect.</p> <p>Support See annex 15, 15a, 15b, 15c</p>	<p>Legal Representative of the Muco and Guarrojo Rivers Reserve</p> <p>Santa Helena Community</p>

				Amount in Kilos of seeds sown: 47 kilos		
	Implement a pilot plan on one hectare with the planting of 1,000 sacha inchi plants (<i>Plukenetia volubilis L.</i>), oversee the germination process through to the transformation of the same seed, and subsequently harvest the crop. Purchase the seed, which will be processed through our trading company Mora Colombia S.A.S.	Implementation of a pilot plan for planting 1,000 Sancha Inchi plants in the Rios Tomo and Beweri Reserve.	Soil preparation for planting and daily monitoring Transplanting of the soil Maintenance and pruning of the sancha inchi crop	Sancha Inchi plants planted: 1,000 Sancha Inchi plants planted	<p>Start Date October 2020</p> <p>End Date Open, the project in question has not yet completed activities, so it remains in effect.</p> <p>Support See annex 16, 16a, 16b</p> <p>This project has a viability concept but has not been implemented due to a change in the leaders of the Reserve's Council. As such, the new administration has not authorized the disbursement, and therefore it does not have financial support.</p>	<p>Legal Representative of the Rio Tomo Beweri Reserve</p> <p>Beneficiary families of the Rio Tomo Beweri Reserve</p>

Source: PALAMEKU KUWEI REDD+ Project

9. STANDARDIZED BENEFITS

The standardized benefits and indicators for the monitoring period 2019 – 2020 were estimated according to the indicators achieved by each of the projects executed by the project proponents. Below is the summary table.

Table 12. Summary of Standardized Benefits

Category	Indicator	Quantity
Trainings	Total number of community members who have improved their skills and/or knowledge as a result of the training provided as part of the project activities.	550
	Number of female community members who have improved their skills and/or knowledge as a result of the training provided as part of the projects.	280
	Number of trainings and workshops carried out provided as part of the projects.	39
Employment	Total number of people employed in the project activities.	13
	Number of women employed in the project activities.	2
Living conditions	Total number of families with improved livelihoods generated by the project.	1135
	Total number of women with improved livelihoods generated by the project.	1000
Education	The total number of people for whom access to or the quality of education was improved as a result of the project's activities.	692
Plantations	Number of plantations carried out by the community of the reserve as a result of the project's activities.	13324

Source: PALAMEKU KUWEI REDD+ Project

10. DISTURBANCE EVENTS RECORDED DURING THE MONITORING PERIOD

Disturbance events correspond to processes of natural¹⁵ or anthropogenic¹⁶ origin that can prevent the projected greenhouse gas emissions reductions from being achieved. In this regard, the standard stipulates that in the event that any of the contemplated events occur, the proponent will be responsible for consolidating information about the situation, informing the relevant stakeholders, and disclosing the actions that will be taken.

The methodology to be used is based on the coordination of activities and sub-activities to be carried out during the implementation period, as specified in the action lines of the monitoring plan related in Table 13. These activities directly contribute to the prevention of events, risk assessment, monitoring in the event of a possible occurrence, and mitigation of identified disturbances.

¹⁵ For instance, natural emergencies such as floods, fires, or pest attacks, widespread burning, among others.

¹⁶ Those caused by human actions, either intentionally or unintentionally.

Table 5. Methodology Implemented for the Prevention, Assessment, Monitoring, and Mitigation of Disturbances

Action line	Subactivity	Justification of the link with the disturbance
Institutional Strengthening and Governance	Promotion and strengthening of traditional culture, ensuring spaces for the exchange of intergenerational knowledge.	Given that one of the identified drivers of deforestation in the area is the population migration dynamics, especially by external agents to the territory, providing indigenous reserves with resources to build their own governance instruments will enable them to carry out forest guardianship tasks. This will help prevent the invasion of the territory by settlers and external actors promoting deforestation and degradation activities. In case of such incursions, they will also be responsible for issuing the necessary alerts to take appropriate conflict resolution measures.
Participatory reforestation of degraded ecosystems	Prioritization and definition of areas to be intervened and species to be reforested.	
Participatory reforestation of degraded ecosystems	Reforestation and afforestation programs, in conjunction with community nurseries.	
	Involvement of sawmill workers in reforestation processes.	
	Monitoring of reforested areas.	
Deforestation and Forest Degradation Monitoring and Control Program	Monitoring of deforestation areas based on geospatial information and early deforestation alerts generated by Biofix Consultancy and IDEAM.	Through the early warning system for disturbance prevention and assessment, utilizing remote sensors, technological tools, and human capital, a collaborative effort will be undertaken between technical and social monitoring. This will enable not only the quantification of disturbances but also provide qualitative context for the associated causes, allowing the establishment of an effective mechanism for disturbance prevention, assessment, and correction.
	Satellite image capture and processing.	
	Identification of causes and agents generating changes in land cover, with the assistance of community monitoring.	
	Training for forest guardians who were previously sawmill workers.	

Source: PALAMEKU KUWEI REDD+ Project

For the PALAMEKU KUWEI Project, the following events have been recognized as threats within the scope of compensation, closely related to the agents and drivers of deforestation identified in Section 4. These events also contemplate short, medium, and long-term actions for their monitoring:

- Loss of forest cover: The area may be threatened by natural fires associated with degradation, as well as the risk of illegal logging for commercial purposes. As explained in the same context, the dynamics of population migration and the establishment of grasslands for land appropriation and land grabbing for livestock and agricultural activities are latent disturbances in the territory. These disturbances will be prevented, mitigated, and evaluated through technical and social monitoring associated with the established lines of action.
- Discrepancies among different members and authorities of the communities regarding the project and the decisions made during the implementation of prioritized action lines can represent a risk of generating anthropogenic disturbance events. However, to prevent and/or manage such disagreements, the project

places institutional strengthening and territorial governance as a cross-cutting axis. This is crucial for ensuring the social sustainability of the project, providing the indigenous reserve with conflict management tools, negotiation, community projection, territorial autonomy, resource management, financial management of economic resources, dissemination and communication of results, training in regulatory matters regarding their rights and protective measures as ethnic communities, as well as regulations related to resource utilization.

- In case the proposed green business activities in the Monitoring Plan related to the inclusion of indigenous communities in the implementation of productive lines are not carried out properly, there is a possibility that the deforestation control achieved in the first verification period may decrease. In this situation, the consolidation of inter-institutional relationships and synergy among different project stakeholders and interested parties is considered to ensure oversight and support from local environmental authorities, municipal governments, and the Ministry of Environment and Sustainable Development.

In any case, if any of the described disturbances occur, the affected area will be estimated, and the emitted tCO₂e will be deducted from the total estimated quantity.

11. ESTIMATION OF EMISSION REDUCTIONS DURING THE MONITORING PERIOD

The calculation of emissions from project activities has been determined for the monitoring period. The verified parameters correspond to those outlined in the monitoring plan. The ex-post emissions from the project for this verification period were calculated from 2019 to 2020, summing the emissions from the observed deforestation transition during this monitoring period.

The change in land cover in hectares was divided between the verified years. The total emission reduction of the project is **80.409 tCO₂e** during this monitoring period¹⁷, of which **68.348 tCO₂e** are marketable.

Table 14. Emission Reductions During the Monitoring Period

t	Year	Annual avoided deforestation and degradation area.	Potential carbon reduction (t CO ₂)	15% discount reserve (t CO ₂)	Net carbon reduction (t CO ₂)
10	2019	282,7	40.425	6.063,7	34.361
11	2020	279,6	39.985	5.997,7	33.987
		TOTAL	80.409	12.061	68.348

Source: PALAMEKU KUWEI REDD+ Project

¹⁷ Document "Verificación 2. Cálculo de Remociones PK 240521" Ubicado en la ruta: 5. VERIFICACION ICONTEC 2019-2020 PALAMEKU KUWEI REDD+15. CALCULOS DE CARBONO"

12. ALIGNMENT WITH SUSTAINABLE DEVELOPMENT GOALS

The action lines formulated and approved by the indigenous reserves participating in 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 SDGs¹⁸ 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." The aim of this agenda is to ensure social and economic growth for global populations while seeking harmony with ecological dynamics and environmental needs expressed daily by communities and addressed as follows¹⁹:

Table 15. Relationship between SDGs, Action Line Programs, and Monitoring Report

Sustainable Development Goal	Goal SDG	Action line program	Projects in the monitoring report line	Monitoring report indicator	Monitoring indicator results
1. No Poverty	1.1 1.3 1.4	<ul style="list-style-type: none"> • Water and Energy Supply Program • Housing Improvement • Acquisition of Clean Energy Systems • Strengthening of productive systems and value chains in communities to generate higher incomes 	<ul style="list-style-type: none"> • Purchase of biosecurity kits and food for 1,100 families in the RI San Luis del Tomo, Valdivia, La Esmeralda, and Punta Bandera. • Housing improvement project through the provision of zinc sheets in the RI Ríos Tomo and Beweri. 	<ul style="list-style-type: none"> • Number of residents of the reserve communities benefited by the provision • Number of items and supplies acquired • Number of improved houses 	<ul style="list-style-type: none"> • 1.318 families from the reserve communities benefited²⁰ • 34.769²¹ items and supplies acquired • 218 improved houses
	2.ZERO HUNGER	2.3 2.4 2.5	<ul style="list-style-type: none"> • Strengthen or design the production and self-sufficiency system for various native varieties of agricultural units such as maize, rice, plantains, chili peppers, and citrus in the territory. 	<ul style="list-style-type: none"> • Productivity Strengthening Project in the IR Muco and Guarrojo 	<ul style="list-style-type: none"> • Percentage of trained and certified population • Percentage of local labor hired in different stages • Indigenous communities within the reserve

¹⁸ Update and expansion of the Millennium Development Goals established in the year 2000.

¹⁹ Harmonized with the guidance provided in reference to paragraph 70, in Appendix I of Decision 1/CP 16 of the UNFCCC, subsection g which states: "To be implemented in the context of sustainable development and poverty reduction, while simultaneously addressing climate change."

²⁰ To corroborate the results related to the SDG 1 indicators, please refer to Annexes 6 and 13.

²¹ 28.600 food items acquired + 1.100 biosecurity kits + 5.069 zinc sheets delivered.

²² To corroborate the results related to the SDG 2 and 8 indicators, please refer to Annex 14.

<p>8.DECENT WORK AND ECONOMIC GROWTH</p>	<p>8.2 8.3 8.4 8.6 8.8</p>	<ul style="list-style-type: none"> • Sustainable poultry utilization program. • Program for the strengthening of "conucos" (small family farms) in favor of agricultural and food sovereignty. • Silvopastoral utilization. • Sustainable forest utilization program for moriche and seje. • Training in good production practices. 		<p>benefited with supplies and technical assistance (qualitative)</p> <ul style="list-style-type: none"> • Number of residents from reserve communities benefited with supplies and technical assistance • Number of equipment delivered • Total investment amount for program implementation 	<p>technical assistance</p> <ul style="list-style-type: none"> • 2.564 inputs delivered
<p>3.GOOD HEALTH AND WELL- BEING</p>	<p>3.2 3.5 3.7 3.8</p>	<ul style="list-style-type: none"> • Community education programs on sexual and reproductive health, teenage pregnancy, sexually transmitted diseases, substance abuse, and alcoholism, among others. • Medical assistance for pregnant and lactating women. • Nutrition, growth, and comprehensive development program for children. • Medical assistance and supplies for people with disabilities and the elderly. • Vaccination and dental health brigades. • Strengthening, provisioning, and improvement of health posts. 	<ul style="list-style-type: none"> • Project contribution to sports activities in the RI Muco and Guarrojo. • Project for the strengthening of land transportation for health emergency care in RI Muco and Guarrojo. • Technical guidance project for the promotion of health, healthy habits, and disease prevention in women of RI Ríos Tomo and Beweri. 	<ul style="list-style-type: none"> • Number of items and supplies acquired • Number of residents from reserve communities benefited with supplies 	<ul style="list-style-type: none"> • 125 supplies acquired • 20 reserve communities benefited with supplies • 280 residents from reserve communities benefited²³
<p>4. QUALITY EDUCATION</p>	<p>4.1 4.2 4.3 4.4 4.5 4.7</p>	<ul style="list-style-type: none"> • Improvement and provision of educational institutions with enrolled students from the Reserve • Economic assistance program for students 	<ul style="list-style-type: none"> • Project implementation of technological tools in educational institutions of the Ríos Tomo and Beweri Reserve • Project Promotion of higher education 	<ul style="list-style-type: none"> • Number of alliances created with higher education institutions • Number of young people enrolled in higher education 	<ul style="list-style-type: none"> • 4 young people enrolled in higher education programs assisted with financial support • 517 benefiting students • 72 elements and supplies acquired

²³ To corroborate the results related to the SDG 3 indicators, please refer to Annexes 8, 10, and 11.

		<p>enrolled in higher education</p> <ul style="list-style-type: none"> • Counseling and vocational guidance program for high school graduates and students in secondary education to enter the University • Consolidate the public education and ethnoeducation system to protect the culture of the Sikuani People • Rescue and strengthening of handicrafts and manual work: cebucan, guapa, etc., through training processes and the search for means of commercialization • Training for teachers in languages: Sikuani - Spanish - English • Training and awareness-raising workshops on the environmental issues of the municipality 	<p>among young people of the Muco and Guarrojo Reserve</p> <ul style="list-style-type: none"> • Project promotion of physical activity in educational institutions of the Ríos Tomo and Beweri Reserve 	<p>programs assisted with financial support</p> <ul style="list-style-type: none"> • Number of benefiting students • Number of elements and supplies acquired • Number of educational venues provided and improved in infrastructure 	<ul style="list-style-type: none"> • 15 educational venues provided and improved in infrastructure
5.GENDER EQUALITY	5.4 5.5	<ul style="list-style-type: none"> • Program for strengthening, promoting entrepreneurship, associativity, and opportunities for participation for indigenous women (Guardia, Captaincy, and Traditional Authorities) • Training on sexual and reproductive health topics 	<ul style="list-style-type: none"> • Project for technical guidance in promoting health, healthy habits, and disease prevention for women in the Rios Tomo and Beweri Indigenous Reserve 	<ul style="list-style-type: none"> • Number of women trained • Number of workshops conducted 	<ul style="list-style-type: none"> • 280 women trained • 1 workshop conducted
6.CLEAN WATER AND SANITATION	6.1 6.2 6.6 6.b	<ul style="list-style-type: none"> • Design of groundwater capture systems to be built or improved • Construction and/or improvement of aqueducts. • Reforestation program with native plants and trees to 			

		protect and conserve water sources (springs, moriche palm swamps, rivers, and lagoons) and key ecosystems			
7. AFFORDABLE AND CLEAN ENERGY	7.1 7.2	<ul style="list-style-type: none"> • Access to electricity service program in the communities • Clean energy sources for electricity in the communities 	<ul style="list-style-type: none"> • Solar electrification project in educational institutions in the IR Muco and Guarrojo 	<ul style="list-style-type: none"> • Percentage of progress in the works • Indigenous communities within the reserve benefited from the provision • Number of solar panels delivered and installed 	<ul style="list-style-type: none"> • 100% progress in the works • 23 indigenous families within the reserve benefited from the provision • 30 solar panels delivered and installed
9.INDUSTRY, INNOVATION AND INFRASTRUCTURE	9.4	<ul style="list-style-type: none"> • Monitoring of deforestation and forest degradation through remote sensors and the use of drones 	<ul style="list-style-type: none"> • Forest Deforestation and Degradation Monitoring and Control Program in all project areas 	<ul style="list-style-type: none"> • Satellite images acquired • Number of alerts reported per year 	<ul style="list-style-type: none"> • 24 satellite images acquired • 2 alerts reported per year
12.RESPONSIBLE CONSUMPTION AND PRODUCTION	12.1 12.2 12.8 12.b	<ul style="list-style-type: none"> • Implementation of sustainable agricultural and livestock production processes • Sustainable use of non-timber forest products 	<ul style="list-style-type: none"> • Silvopastoral project in the community of Santa Helena, RI Muco and Guarrojo • Pilot project for planting 1000 Sacha Inchi plants 	<ul style="list-style-type: none"> • Indigenous communities within the reserve benefited from the provision and technical assistance (qualitative). • Number of residents from the reserve communities benefited from the provision and technical assistance. • Number of equipment delivered. • Quantity of equipment and machinery delivered for agricultural transformation. • Usable hectares utilized in the silvopastoral project. 	<ul style="list-style-type: none"> • 12 families benefited from the provision and technical assistance²⁴. • 10 usable hectares utilized in the silvopastoral project. • 80 livestock and small livestock acquired. • 10 usable hectares utilized in planting. • 330 equipment delivered. • 12 hirings. • 6 workshops or training sessions conducted.

²⁴ Annexes 15 and 16

				<ul style="list-style-type: none"> • Number of livestock and small livestock acquired. • Expected productivity per hectare. • Achieved productivity per hectare. 	
<p>13. CLIMATE ACTION</p> <p>15. LIFE ON LAND</p>	<p>13.1 13.2 13.3</p> <p>15.1 15.2 15.4 15.5 15.7 15.8 15.9 15.a 15.b 15.c</p>	<ul style="list-style-type: none"> • Increased and preserved carbon reservoirs. • Reduction of deforestation factors. • Protection of forest ecosystems. • Monitoring of forested areas by forest custodians. • Training in wildlife recovery and preservation. • Programs for the protection and conservation of biodiversity. • Participation in the development and commercialization of carbon credits. 	<ul style="list-style-type: none"> • Monitoring and control program for deforestation and forest degradation in all project areas. • Verification of the REDD+ project. 	<ul style="list-style-type: none"> • Total hectares affected by degradation and deforestation. • New and recurring agents and actors identified as generators. • New and recurring causes identified. • Number of alerts reported per year. 	<ul style="list-style-type: none"> • 200 hectares affected by deforestation. • Emissions reduced by 1,211,971 tons of CO2 equivalent. • 2 deforestation alerts reported per year.
<p>16. PEACE, JUSTICE AND STRONG INSTITUTIONS</p>	<p>16.7 16.8 16.10</p>	<ul style="list-style-type: none"> • Institutional strengthening and governance • Joint development of the Life Plans for the reserves affiliated with the project. 	<ul style="list-style-type: none"> • Endowment purchase project and identification of the indigenous guard, captains, and ancestral authorities for the RI San Luis del Tomo, Valdivia, La Esmeralda, Punta Bandera • Traditional knowledge meeting project and native games for RI Ríos Tomo and Beweri • Administrative strengthening for the area responsible for formulating projects in the RI Ríos Muco and Guarrojo. 	<ul style="list-style-type: none"> • Number of community leaders benefited • Number of items and supplies acquired • Number of professionals hired 	<ul style="list-style-type: none"> • 480 community leaders benefited²⁵ • 237 items and supplies acquired • 4 professionals hired

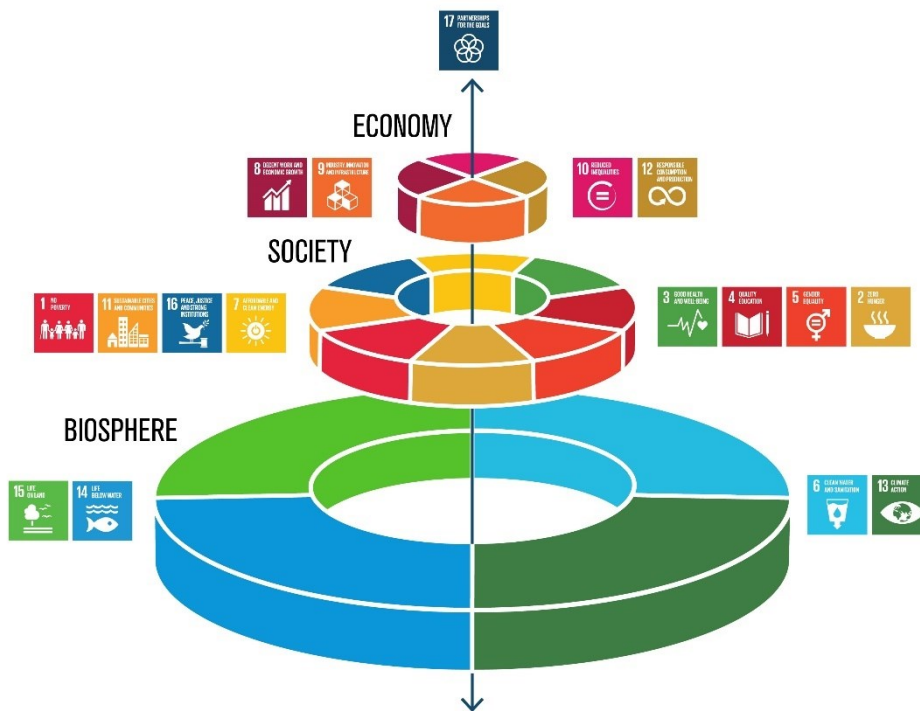
²⁵ To corroborate the results related to the SDG 16 indicators, please refer to Annexes 2, 3, and 5.

<p>17. PARTNERSHIPS FOR THE GOALS</p>	<p>17.14 17.17</p>	<ul style="list-style-type: none"> • Alliances with territorial liaisons • Agreements with national entities • Institutional synergies with environmental authorities, governmental institutions in ethnic affairs. 	<ul style="list-style-type: none"> • Technical hiring for the training sessions and workshops required in each of the projects. 	<ul style="list-style-type: none"> • Number of alliances forged • Number and type of people involved 	<ul style="list-style-type: none"> • 13 people involved.
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Source: PALAMEKU KUWEI REDD+ Project

In Colombia, projects that align with and contribute to the fulfillment of the SDGs and the 2030 agenda are crucial for driving transformations at the regional, local, or national level that improve the quality of life for Colombians. At the same time, they strengthen the social and economic dimensions, protecting and preserving ecosystems and the environment. This integrates the three dimensions: social, environmental, and economic.

Figure 5. Classification of the SDGs into the 3 dimensions: social, environmental, and economic.



Graphics by Jenker Lohranzi/Azote

Source : Adapted from (PNUD & UNHABITAT.UCLG., 2019)

13. REFERENCES

- Dueñas, J. (2018). Articulación de Instrumentos de Conservación para Enfrentar la Deforestación en la Región del Guaviare, Colombia. *Relictos de Bosque En El Departamento Del Guaviare. Instituto Amazónico de Investigaciones Científicas SINCHI & Ministerio de Ambiente y Desarrollo Sostenible*, 214–231.
- De la Peña, G. & Illsley, C. (2001). Los productos forestales no maderables: su potencial económico, social y de conservación. Ecológica. México D.F: México.
- Etter, A., McAlpine, C., Wilson, K., Phinn, S. & Possingham, H. (2006). Regional patterns of agricultural land use and deforestation in Colombia. *Agriculture, ecosystems & environment*, 114, 369–386.
- FAO. (1991). Non-Wood Forest Products: the way ahead. Organización de la Naciones Unidas para la agricultura y la alimentación. Roma: Italia.
- FAO. (2008). *Bosques y energía: cuestiones clave*. Organización de la Naciones Unidas para la agricultura y la alimentación. Roma: Italia.
- Geist, H. J., & Lambin, E. F. (2002). Proximate Causes and Underlying Driving Forces of Tropical Deforestation Tropical forests are disappearing as the result of many pressures, both local and regional, acting in various combinations in different geographical locations. *BioScience*, 52(2), 143–150. [https://doi.org/10.1641/0006-3568\(2002\)052\[0143:pcaudf\]2.0.co;2](https://doi.org/10.1641/0006-3568(2002)052[0143:pcaudf]2.0.co;2)
- Ministerio de Cultura. (2010). Caracterización del Pueblo Sikuni: Entrañables defensores de su territorio. Obtenido el 10 de mayo de 2019, de Ministerio de Cultura: <http://www.mincultura.gov.co/areas/poblaciones/noticias/Documents/Caracterizaci%C3%B3n%20del%20pueblo%20Sikuni.pdf>
- Ministerio de Minas y Energía. (1982). Estudio nacional de energía. Impresora gráfica. Bogotá: Colombia
- PNUD, .TASKFORCE GLOBAL, & UNHABITAT.UCLG. (2019). Módulo de Capacitación 1 : Localización de los ODS / Introducción. In *El rol de las Asociaciones Nacionales de Gobiernos Locales en el proceso de elaboración de los Informes Nacionales Voluntarios*.
- Riveros, S. (1983). La Orinoquía colombiana. Obtenido el 10 de mayo de 2019, de Sociedad Geográfica de Colombia: https://www.sogeocol.edu.co/documentos/la_orinoquia_col.pdf
- SINCHI, & MADS. (2018). Relictos de Bosque en el Departamento del Guaviare. *Instituto Amazónico de Investigaciones Científicas SINCHI & Ministerio de Ambiente y Desarrollo Sostenible*, 259.
- Torres, M. (2003). Producción de biodiesel de moriche (*Mauritia flexuosa* L. f) como alternativa energética para las regiones apartadas de la Orinoquia colombiana. Tesis doctoral. Facultad de Ingeniería. Universidad di Roma "La Sapienza". Roma