MONITORING REPORT OF

REDD+ PROJECT
RESGUARDO INDÍGENA UNIFICADO – SELVA DE MATAVÉN (RIU-SM)

Document Prepared by

Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén – **ACATISEMA**

MEDIAMOS F&M S.A.S.

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DEFINITIONS AND ACRONYMS

DEFIN / ACRON	DESCRIPTION
ACATISEMA	*Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén* (Association of Indigenous Councils and Traditional Authorities of the Matavén Jungle)
***Cabildo* / Council**	Representative of a sector within Resguardo Indígena Unificado – Selva de Matavén
CONPES	*Consejo Nacional de Política Económica y Social* (National Council of Economic and Social Policy)
Conuco	Small plot of land under cultivation
CORPORINOQUIA	*Corporación Autónoma Regional de la Orinoquía* (Regional Autonomous Corporation of the Orinoquía)
DANE	*Departamento Administrativo Nacional de Estadística* (National Administrative Department of Statistics)
DNP	*Departamento Nacional de Planeación* (National Planning Department)
DPS	*Departamento para la Prosperidad Social* (Department for Social Prosperity)
FAPUS	Family Agrifood Production Units System
Fustal	Trees over 10 cm in diameter at breast height (*AFE-COHDEFOR, ITTO http://www.itto.int/files/user/pdf/publications/PD47%2094/pd%2047-94-9%20rev%203%20(I)%20s.pdf*)
HRP	Historical Reference Period: the historical period prior to the project start date that serves as the source of data for defining the baseline
IDEAM	*Instituto de Hidrología, Meteorología, y Estudios Ambientales* (Institute of Hydrology, Meteorology and Environmental Studies), attached to Minambiente
IGAC	*Instituto Geográfico Agustín Codazzi* (Geographic Institute Agustín Codazzi)
INCODER	*Instituto Colombiano de Desarrollo Rural* (Colombian Institute of Rural Development)
INCORA	*Instituto Colombiano de Reforma Agraria* (Colombian Institute of Agrarian Reform)
MADS / MINAMBINTE	*Ministerio de Ambiente y Desarrollo Sostenible* (Ministry of Environment and Sustainable Development) (2011-current)

DEFIN / ACRON	DESCRIPTION
MAVDT	*Ministerio de Ambiente, Vivienda y Desarrollo Territorial* (Ministry of Environment, Housing and Territorial Development) (same MADS between 2002-2011)
MININTERIOR	*Ministerio del Interior* (Ministry of Interior)
MLS	Matrix of Logic Structure
MMP	Maximum GHG Mitigation Potential
PND	*Plan Nacional de Desarrollo* (Development National Plan)
PNN	*Parque Nacional Natural* (Natural National Park)
PRA	Participatory Rural Appraisal
RESA	*Red de Seguridad Alimentaria* (Food Safety Network)
RIU-SM	*Resguardo Indígena Unificado – Selva de Matavén* (Unified Indigenous Reservation – Matavén Jungle)
SENA	*Servicio Nacional de Aprendizaje* (National Learning Service)
SIGOT	*Sistema de Informacion Geografica para la Planificacion y Ordenamiento Territorial* (Geographic Information System for Planning and Land Management)

1 PROJECT DETAILS

The **REDD+ Project *Resguardo Indígena Unificado–Selva de Matavén*** (REDD+ Project RIU-SM) is an initiative of the *Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén* – ACATISEMA that aims to develop a participatory process to achieve the establishment of an integrated management system of forests and lands in the territory of the *Resguardo Indígena Unificado–Selva de Matavén* (RIU-SM), to mitigate threats to its conservation, protection and recovery, to ensure its sustainability, and to mitigate greenhouse gases (GHG) emissions by avoiding deforestation and degradation in an area of 1,461,360 ha. of forests within the RIU-SM, as it was determined in January 2018 (1,636,423 ha. of natural forest if the Project Area and the Leakage Belt are considered in baseline), through the implementation of a Project that is part of the international REDD+ mechanism[1] framed in the decisions of the UNFCCC. The RIU-SM is located in east of the high plain Orinoco Colombian region, in the transition belt between the savannas of the Orinoco and the Amazon forests, in the eastern part of the Department of *Vichada*, in the municipality of *Cumaribo*[2].

Illustration 1. Sunset in the *Sarrapia* community, *Matavén Fruta* Sector, RIU-SM

[1] "*Activities that reduce GHG emissions from deforestation and/or degradation by reducing or stopping conversion of forests to non-forest land and/or reducing the degradation of forest land where forest biomass is lost; and/or activities that enhance carbon stocks through improved forest management and/or afforestation, reforestation or revegetation*" (according to VCS Definitions).

[2] Project Design Document of REDD+ Project RIU-SM (PDD), page 17.

1.1 Summary Description of the Implementation Status of the Project

The REDD+ Project RIU-SM's Results, Products, and Objectives which correspond to those defined in the Matrix of Logical Structure - MLS in Project Design Document of REDD+ Project RIU-SM (*PDD*, page 45) are being achieved due to the execution of Tasks and Activities during 2018 & 2019, with the economic resources that the Project has achieved as compensation for the environmental services provided in the reduction of GHG emissions by avoiding deforestation in the Project Area, contributing to the protection and conservation of the forests of the *Resguardo Indígena Unificado – Selva de Matavén* (RIU-SM).

To avoid the deforestation and degradation of the forests and the affectation of fauna, flora and water resources in the RIU-SM, the following actions have been carried out permanently, concordant with the Logical Structure of the Project:

- Monitoring the territory of Indigenous Reservation. Through the implementation of 37 routes of surveillance and control, carried out by the indigenous guard, in each Sector and Zone of RIU-SM, to contribute to ensuring the protection, conservation and recovery of lands and forests of the RIU-SM.

  The improvement of the organization of the 300 indigenous guards has continued, consolidating it as a group of agents of vigilance and control in environmental protection.

  The indigenous guard has been provided with economic support, clothing, equipment, tools, food, transportation (boats with outboard motors) and fuel necessary to carry out its work.

  The indigenous guard have received training about Project, resources protection, internal regulations and how do its work better.

  5 surveillance and control stations, with their respective information billboards, and 4 floating fluvial "hangar" rafts, have been built to strengthen the logistics and transportation in the surveillance and control of the territory.

  The communities of RIU-SM know about this activity, and also, they offer their support in the surveillance and protection of the territory.

  Deforestation threat has stopped with an efficiency of 87.95% during 2018 and 89.68% for 2019.

- Revision of early warnings about forest fires and deforestation issued by the IDEAM. Between the months from December 2017 to May 2018 and from December 2018 to February 2019, the alerts have increased in level (reaching the highest) due to that a higher probability of occurrence of forest fires has been presented.

  Fires have arisen, which has required a greater vigilance, attention, and intervention by indigenous and a response to emergency by local authorities.

- Implementation of communication and information systems in RIU-SM. Multiple meetings and socialization workshops have been carried out with the *Cabildos* Board, Coordinator Committee, Zonal Coordinators, Captains, Indigenous Guard and other community leaders. Project promotes and supports these meetings with logistics on transport, accommodation and food. In these meetings the progress of the Project has been presented and a time-space is provided to discuss the issues that correspond to the Association and to the Indigenous Reservation.

  The Project has provided boats with outboard motors, fluvial equipment and fuel, to contribute to the improvement of the means of transport of the indigenous people in Indigenous Reserve.

  Inter-community bridges were built and roads were improved to improve the communication by way through the forest.

- Support to improve ACATISEMA governance. The Association continues strengthening its organizational operating procedures, its self-determination and its presence in the Indigenous Reserve. With this development, the Association improves infrastructure, consolidates work staff, reinforces administrative management capacities, receives specialized advice, provides economic support to the indigenous authorities, calls for meetings, creates internal regulations, resolves its internal differences based on its statutes, executes budget items, improves their accounting systems, works in Life Plans, executes indigenous cultural events with traditional games, handicrafts and music, among others.

  Work is already being done based on the decision to continue the Project for an additional cycle of others 30 years (from the year 2043 to the year 2072).

- Strengthening the Family Agri-food Production Units System (FAPUS). It consists in the identification and follow-up of the lots/“conucos” where the indigenous people of the RIU-SM develop their crops. They worked with an updated information of FAPUS, in order that food production is characterized as best as possible.

  575 cassava graters and other cookware have been delivered for each community of RIU-SM to strengthen the FAPUS.

  The first steps are being taken to implement a silvopastoral system that supports indigenous food security and reduce the pressure to local wildlife.

  About food production, in 2018 an average of 23 tons/community have been produced, consisting of, among others products: cassava, *plátano*, corn, sugarcane, yam, sweet potato, and some fruits, which allows to infer that around 6,096.9 tons of food in total have been produced in 2018.

  In 2019 an average of 25.5 tons/community have been produced, consisting of, among others products: cassava, *plátano*, sugar cane, *caimarón*, corn, sweet potato, chili pepper, and some fruits, which allows to infer that around 6,763.4 tons of food in total have been produced in 2019.

- Self-census was development in 2018 to improve the information about the inhabitants of RIU-SM, based on the guidelines established by the Ministerio del Interior (Ministry of the Interior) to update the social and economic characterization of the RIU-SM population.

This census is very important so that the information of the people in RIU-SM is registered in the official institutional databases and they can access the government programs.

- Training programs plan to administration and management of natural resources of the RIU-SM. Economic support is being provided to 121 indigenous youth students of RIU-SM so that they can develop higher education.

  Improvements to school facilities within the RIU-SM are also being made, and school supplies have been delivered to children in basic education. school rooms and a dining room were built and schools received sports equipment and important endowment for their libraries.

  Socialization and training workshops have continued to be developed for indigenous communities, indigenous guard, community Captains, women, the elderly, young people and other leaders of the RIU-SM.

- Design and development of productive projects to strengthen agro-food production. In the Zonal Meetings convened by ACATISEMA, carried out in November 2017, the identification, prioritization, design, preparation and budget of needs, proposals and productive projects in the RIU-SM were gotten, according to the requirements of the indigenous communities. The development of productive projects includes the purpose of establishing them in productive chains and through a cooperative.

  Those needs, proposals and productive projects were analyzed and systematized and let that the Investment Plan and the Budgets for 2018 & 2019 were defined. The economic resources for this Plan are from the first compensations for the Carbon bonds, generated and certified by the verification of the 2013 & 2014-2015.

  Some proposals are already being implemented, as the pilot productive project “agroforestry system” to cultivate cocoa, *plátano*, corn and forestal tress in 100 ha and with 10 families of RIU-SM, in covenant with FEDECACAO, the most important union in Colombia about the cocoa production chain, and it is expected to produce 2,560 tons at 20 years and receive support for transformation and commercialization of derived products. Other proposals are being technically defined to initiate them, as cassava cultivation (to obtain *mañoco*), sugarcane, nature tourism, minor species (hens), crop of fish in floating cages (food fish farming), ornamental fishes, self-sufficient integral community farms (agrosilvopastoral), silvopastoral, lapa breeder for consumption, and crafts.

  Support was given for the efforts that allowed to create the cooperative and training in cooperativism

  Tools have been provided to support work in several aspects and indigenous craftsmen of the RIU-SM has been helped to attend artisan exhibitions, where they can present their products.

- Verification of REDD+ Project RIU-SM. In the second half of 2018, verification of the results of the execution of the REDD+ RIU-SM Project during 2016-2017 was carried out. This corresponds to the second occasion in which this Activity is carried out, having as an audit entity (VVB) EPIC Sustainability Services Pvt. Ltd, body duly authorized by VERRA to perform the validation /

verification of this type of initiatives. This is how the Project achieved this verification and in November 2018 EPIC issued the Verification Report 2016-2017.

Documents about second verification of REDD+ Project RIU-SM are in Annex 4.7.2 of this Monitoring Report.

- Transaction of the Carbon Bonds (or VCUs) achieved by the GHG emissions reductions. This task is being made gradually and requires a management that can be done by having satisfactorily completed the validation, verification, review and registration stages by the Validation/Verification Bodies – VVBs: ICONTEC (in 2013 & 2014-2015) and EPIC Sustainability Services Pvt. Ltd (2016-2017), by the registration entity (APX VCS Registry) and by VCSA (Verified Carbon Standard Association, now VERRA).

  With the resources coming from the first compensations of VCUs (2013 & 2014-2015), the break-even point was achieved in the fifth year (2017) as it was programmed (PDD, page 168), and the development and implementation of the REDD+ Project RIU-SM has been strengthened by resources coming from the second verification (2016-2017).

The evaluation of the implementation of the Project Activities leads to the conclusion that the Project Products and Objectives are being adequately achieved. This evaluation is made based on the indicators defined in the Matrix of Logical Structure (PDD, page 45). For more detailed about execution of Project Activities, see Section 3.1 “Implementation Status of the Project Activity” of this Monitoring Report.

Below is a table with a review of the information about relevant dates related to the implementation of the REDD+ Project RIU-SM, all duly supported and socialized through meetings.

Table 1. Relevant implementation dates about meetings and events

Date (dd/mm/yyyy) **and place**	**Event**	**Affairs**
08/11/2017-09/11/2017 Villavicencio - Meta[3]	Meeting of *Cabildos* Board, Coordinator Committee and Zonal Coordinators	• Information and evaluation of the development, current status and perspectives of the REDD+ Project RIU-SM, and between other aspects: - The **continuity of the Project** was approved for an **additional cycle of others 30 years (from the year 2043 to the year 2072)**. - *Cabildos*, members of the Coordinator Committee and Zonal Coordinators express their support for the REDD+ Project RIU-SM and authorize the Directive Board of ACATISEMA to design and implement the necessary measures for the continuity and

[3] Although this meeting is dated in year 2017, it is important for this Monitoring Period as it determines the continuity of the Project for another 30-year cycle.

Date (dd/mm/yyyy) and place	Event	Affairs
		strengthening of the Project, taking into account the Strategic Alliance Agreement ACATISEMA-MEDIAMOS.
16/11/2017-17/11/2017 *Cumaral* community	Zonal meeting with Captains and leaders: Zone 5	• Inform and evaluate the development, current status and perspectives of the REDD+ Project RIU-SM. - Several of the elements and themes presented and discussed at the meeting carried out between November 8 and 9, 2017 were also presented at the Zonal Meetings, as well as the minutes of that meeting. • The participants to each Zonal meeting are presented prior to the start. They show willingness to participate as a team in the consolidation and unity of ACATISEMA and in the development of the Project. • The working groups and the person in charge of each group are defined and are responsible for the task of gathering the needs that require be satisfy, the proposals to generate benefits in the communities and the projects that can be implemented to generate development in the indigenous reservation: - Zone 5: the groups are formed according to the sectors and one more of the indigenous guard. - Zone 4: the groups are formed according to the sectors and others of women, pastors and teachers. - Zone 3: the groups are formed according to the sectors and one more of the indigenous guard. - Zone 2: the groups are formed according to the delegations and their sector: indigenous guard, women, social work, youth and pastors. - Zone 1: the groups are formed according to the delegations and their sector: women, teachers, social work, indigenous guard, youth, health and pastors. The list of needs, proposals and projects presented by the working groups in the Zonal Meetings, as well as a synthesis of this information, is presented in the Annexes 1.7 and 1.8 of this Monitoring Report.
19/11/2017-20/11/2017 *Laguna Colorada* community	Zonal meeting with Captains and leaders: Zone 4	
22/11/2017-23/11/2017 *Barranco Colorado* community	Zonal meeting with Captains and leaders: Zone 3	
25/11/2017-26/11/2017 *Camunianae* community	Zonal meeting with Captains and leaders: Zone 2	
28/11/2017-29/11/2017 *Matsuldani* community[4]	Zonal meeting with Captains and leaders: Zone 1	
07/02/2018-09/02/2018 Cali - Valle	Meeting of Joint Commission	• Evaluation of the results of the meeting of the *Cabildos* Board, the Coordinator Committee and the Zonal Coordinators of the Project and of the Zonal Meetings held on November 07-09 of 2017. • Report about the situation of the REDD+ Project RIU-SM related to alleged overlap with REM and *Visión Amazonía* Program and presentation of a legal concept.

[4] Although these meetings are dated in year 2017, they are important for this Monitoring Period, since they determined the budget for 2018 & 2019.

Date (dd/mm/yyyy) and place	Event	Affairs
		• Definition of the Investment Plan and its budget structure of REDD+ Project RIU-SM for 2018 & 2019 will be defined.
20/02/2018-21/02/2018 Villavicencio - Meta	Meeting of Joint Commission	• Adjust draft budget prepared in Cali. • Prepare the meeting of the *Cabildos* Board, Coordinator Committee and Zonal Coordinators of the Project to inform and evaluate the results of the Zonal Meetings and to define the budget for 2018 & 2019. • Define the public statement of ACATISEMA about the alleged overlap of the REM Program with the REDD+ Project RIU-SM. • Information about: - Inventory of applications submitted by communities. - Description of request proposals. - Proposal for budget of execution of the Activities of the Project and of the ACATISEMA Reserves (2018-2019). - Activities and tasks of the REDD+ Project RIU-SM. Responsible and participants. - Review of the programming proposal and documents for the meeting of the *Cabildos* Board, Coordinator Committee and Project Zonal Coordinators - Review of the programming and schedule of work for the first semester in 2018.
22/02/2018-23/02/2018 Villavicencio - Meta	Meeting of *Cabildos* Board, Coordinator Committee and Zonal Coordinators	• Information and evaluation of the results of the Zonal Meetings (November 2017; see minutes): - Inventory of applications submitted by communities. - Description of request proposals. - Proposal for budget of execution of the Activities of the Project and of the ACATISEMA Reserves (2018-2019). - Activities and tasks of the REDD+ Project RIU-SM. Responsible and participants. - Programming and schedule of work for the first semester in 2018. • Present and define the Investment Plan / Implementation Budget of REDD+ Project RIU-SM for 2018 & 2019.
10/04/2018-12/04/2018 Villavicencio - Meta	Meeting of Joint Commission	• Topic 1: Report and analyze the current accounting, financial and auditing situation of the Project. • Topic 2: Analyze the status of deforestation in the Reservation in the years 2016 and 2017 and its implications in terms of the external audit for the accreditation of the new VCUs, as well as taking the measures that are considered pertinent. • Topic 3: Report and analyze the situation regarding the publication and application of the MADS´s Resolution project about: "SMRV

Date (dd/mm/yyyy) and place	Event	Affairs
		Regulation (Monitoring, Reporting and Verification System) of mitigation actions at the national level (Article 175, Law 1753 of 2015)" and its implications in the Project. • Topic 4: Analyze the execution of the 2018 budget and define the activities and tasks to achieve its prompt and agile execution. • Topic 5: Identify and resolve the gaps and missing in the accounting and financial execution and in the pending aspects of audit, jointly with the professional group of MEDIAMOS and ACATISEMA. • Topic 6: Carry out the accounting and auditing closures corresponding to the year 2017. • Topic 7: Define guidelines and responsibilities for the swift and prompt budget execution for 2018, specifying the schedule of the corresponding tasks.
01/06/2018-03/06/2018 Inírida - Guainía	Workshop of training to zonal coordinators for second verification of the REDD+ Project RIU-SM	Workshop of training to zonal coordinators for second verification of results of REDD+ Project RIU-SM. • Objective: Train the ACATISEMA indigenous group conceptually and methodologically in the field work to contribute to the execution of the process of the second verification of results of the REDD+ Project RIU-SM. • Themes: - Theme 1 (T1): Objective, background and context of the second verification of results of the REDD+ Project RIU-SM. State of progress of budgetary execution for 2018. - Theme 2 (T2): Resolution Proposal of MADS "*By which the monitoring, reporting and verification system of mitigation actions at the national level referred to article 175 of Law 1753 of 2015 is regulated*", and its possible impacts on the development of the Project". - Theme 3 (T3): Analysis of the results of the monitoring of deforestation in the indigenous reservation in the years 2016 and 2017 and comparison with the results of the years 2014, 2014 and 2015. - Theme 4 (T4): Concepts and methods of the second verification of the results of the Project and preparation of the visit of the auditors. Subthemes: ST4.1 Verification of deforestation points. ST4.2 Surveillance and control routes. ST4.3 Monitoring of FAPUS. ST4.4 Preparation of measurement plots for the audit. ST4.5 Testing the use of drones in monitoring land use change.

Date (dd/mm/yyyy) **and place**	**Event**	**Affairs**
12-25/7/18 Several communities of RIU-SM	Socialization meetings	Between June 12-25, 2018, a series of meetings was held with the indigenous people of different RIU-SM communities, in order to socialize the progress in the execution of the REDD+ Project RIU-SM Activities and to specify the needs and proposals of people, especially everything related to productive projects.
27/07/2018 Cali - Valle	Meeting of Joint Commission	• Analyze the results of the audit visit carried out in the offices of ACATISEMA in the Villavicencio city, in which the accounting supports of the budget execution of the resources from the REDD+ Project RIU-SM were verified. • Make the respective corrections for a better budget execution. • Protect the image and seriousness of REDD+ Project RIU-SM and the entities involved, such as ACATISEMA and MEDIAMOS. • Have the documentation in the event of a national or international audit visit.
17/08/2018-19/08/2018 Inírida - Guainía	Meeting of *Cabildos* Board and Coordinator Committee	• Presentation about the status of the health in the indigenous reservation, and the need to create a *Institución Promotora de Salud – IPS* (Health Promoting Institution). For that was created a technical group. - Results of self-census that is being developed by ACATISEMA is important to know the required coverage to health needs. - Malnutrition of women and children was mentioned. A boat-hospital, health posts and health promoters are required. • In zones 4 and 5 there are victims due to winter-wave. They require food and medicines. • Budget report of the REDD+ Project RIU-SM: - In the eighth month of 2018, 36% of the planned budget has been executed. It is necessary to intensify the investment. - The audit for the verification 2016-2017 is already running, which will provide the resources for the budget execution 2020-2021. - A report about the executed actions is presented. - Ways must be defined to make the Project visible in the territory of the RIU-SM. - Workshops will be held to train the indigenous guard soon. • Resolution 1447/2018 of MADS is an aspect that requires attention because it can affect the Project RIU-SM. A document with a pronouncement from the indigenous peoples of the RIU-SM regarding the points of the Resolution that affect them was agreed. • Different committees work to prioritize new proposals. • The Fiscal Observer of ACATISEMA is appointed.

Date (dd/mm/yyyy) **and place**	**Event**	**Affairs**
		• Management is authorized with the National Registry for the identification of the people.
20/08/2018-22/08/2018 *Laguna Negra* community	Workshop of training to indigenous guard: Zones 3, 4 and 5.	Second workshop of training to new indigenous guards. • Objective: Train the Indigenous Guard of the indigenous reservation to develop the control and surveillance of the RIU-SM Activities. • Expected results: 1. Indigenous guards have understood the causes of climate change and its consequences. 2. Indigenous guards have understood the actions that can mitigate climate change. 3. Indigenous guards know the surveillance and control routes and how to report the events. 4. Indigenous guards receive their endowment. • Themes: - Theme 1 (T1): Problems of climate change, causes, consequences, actions, carbon cycle, water cycle, REDD+ projects, protocols and agreements, International and national regulatory framework. - Theme 2 (T2): REDD+ Project RIU-SM, history, products and activities, current affairs, investment plan. - Theme 3 (T3): What is the indigenous guard, responsibilities, activities, materials, control stations, surveillance routes, development of field templates. - Theme 4 (T4): Internal Regulation.
24/08/2018-26/08/2018 *Camunianae* community	Workshop of training to indigenous guard: Zone 2	
28/08/2018-29/08/2018 *Cumariana* community	Workshop of training to indigenous guard: Zone 1, Sector 2	
29/08/2018-30/08/2018 *Miraluz* community	Workshop of training to indigenous guard: Zone 1, Sector 1	
22/09/2018-23/09/2018 *Caño Fistol* community	Assemblies Zones 3, 4 and 5	• Reform to the Statutes of ACATISEMA is proposed. • Agreement and alliances between zones 3, 4 and 5. • Meetings to build internal regulations for own justice processes. • Strengthen the participative and organizational guarantee of ACATISEMA (6 ethnic groups).
11/10/2018-12/10/2018 Granada - Meta	Meeting of *Cabildos* Board and Health Committee	Extraordinary meeting, in which the following aspects were discussed: • Report about the Health Committee and the technical commission: Models for the creation of indigenous IPS are being analyzed. • Socialization and feedback about SISPI (indigenous health system). • Curricular presentation. • Remodeling of the headquarters of ACATISEMA in Inírida. • Socialization of the ruling of the tutela action and response of entities to pronounce about the health problem. • A work path of Health Committee is defined. • A proposal related to Special Indigenous Jurisdiction is presented.

Date (dd/mm/yyyy) **and place**	**Event**	**Affairs**
		• A session is proposed to socialize the results of the self-census. • A proposal related to the indigenous educational system requires that State supports, not only the REDD+ Project RIU-SM.
24/01/2019 Bogotá	Meeting of Joint Commission	• Analysis and evaluation of the budget execution for 2018 of the REDD+ Project RIU SM. • Present, analyze and define the proposal for the budget adjustment for 2019 of the REDD+ Project RIU SM, to be presented to the *Cabildos* Board and Coordinator Committee of ACATISEMA. • Organize the meeting of the *Cabildos* Board, Coordinator Committee and Zonal Coordinators of the REDD+ Project RIU SM.
25/01/2019-27/01/2019 Bogotá	Meeting of *Cabildos* Board, Coordinator Committee and Zonal Coordinators	• Report and analyze the budget execution for 2018 of the REDD+ Project RIU-SM. • Adjust the budget allocation for 2019 of the REDD+ Project RIU-SM. • Evaluate the performance of the participants in the REDD+ Project RIU-SM. • Define guidelines for the execution of activities in relation to the objectives of the REDD+ Project RIU-SM. • Analyze and resolve organizational points of ACATISEMA.
06/02/2019 Cali - Valle	Meeting of Joint Commission	• Presentation of the work of systematization of the requests for modification to the 2019 budget, by the *Cabildos* Board, Coordinator Committee, and Zonal Coordinators of the REDD+ Project RIU SM. • Analysis and evaluation of the modification of the 2019 budget, according to the requests presented by the *Cabildos* Board, Coordinator Committee, and Zonal Coordinators of the REDD+ RIU SM Project. • Definition of the adjusted budget for 2019. • Preparation of the socialization meetings of the results of the meeting of the *Cabildos* Board, Coordinator Committee, and Zonal Coordinators of the REDD+ Project RIU SM held in Bogotá from January 25 to 27, 2019. This meeting will be for the communities of all the Zones of the RIU SM by the members of ACATISEMA.
10/02/2019 *Boponé* community 10/02/2019 *Jaraba* community 12/02/2019 *Macocoba* community	Zonal Meetings to socialization of budget execution according to the Activities of the REDD+ Project RIU-SM	• Report about the budget execution for 2018 of the REDD+ Project RIU-SM to indigenous leaders. - Budget execution in the implementation of Project Activities. - Budget execution in the implementation of ACATISEMA Reserves. • Present the budget of the REDD+ Project RIU SM defined for 2019.

Date (dd/mm/yyyy) **and place**	**Event**	**Affairs**
12/02/2019 *Wereto* community		
12/02/2019 *Barranco Colorado* community		
18/03/2019-20/03/2019 *Caracol* community	Workshop of training to indigenous guard: Zone 1	Workshop of training to indigenous guards. • Objective: Train the Indigenous Guard of the indigenous reservation to develop the control and surveillance of the RIU-SM Activities. • Expected results: 1. Indigenous guards have understood the causes of climate change and its consequences. 2. Indigenous guards have understood the actions that can mitigate climate change. 3. Indigenous guards know the surveillance and control routes and how to report the events. 4. Indigenous guards receive their endowment. • Themes: - Theme 1 (T1): Problems of climate change, causes, consequences, actions, carbon cycle, water cycle, REDD+ projects, protocols and agreements, International and national regulatory framework. - Theme 2 (T2): REDD+ Project RIU-SM, history, products and activities, current affairs, investment plan. - Theme 3 (T3): What is the indigenous guard, responsibilities, activities, materials, control stations, surveillance routes, development of field templates. - Theme 4 (T4): Internal Regulation.
22/03/2019-24/03/2019 *Camunianae* community	Workshop of training to indigenous guard: Zones 3, 4 and 5	
27/03/2019-29/03/2019 *Sejalito* community	Workshop of training to indigenous guard: Zone 2	
19/05/2019-21/05/2019 *Puerto Lucía* community	Workshop of training to Captains: Zone 1 – Sector 1	Workshop of training to community Captains. • Objective: Train the Captains of the indigenous reservation in governance themes and REDD+ Project RIU-SM. • Expected results: 1. Captains have understood the causes of climate change and its consequences. 2. Captains have understood the actions that can mitigate climate change. 3. Captains know the progress of the REDD+ Project RIU-SM.
22/05/2019-24/05/2019 *Matsuldani* community	Workshop of training to Captains: Zone 1 – Sector 2	
25/05/2019-27/05/2019	Workshop of training to Captains:	

Date (dd/mm/yyyy) **and place**	**Event**	**Affairs**
Urba Morichal community	Zone 1 – Sector 2	4. Captains understand the Products and Activities of the REDD+ Project RIU-SM. 5. Captains handle the reports and formats of FAPUS. 6. Captains update the information of the new communities • Themes: - Theme 1 (T1): Problems of climate change, causes, consequences, actions, carbon cycle, water cycle, REDD+ projects, protocols and agreements, International and national regulatory framework. - Theme 2 (T2): REDD+ Project RIU-SM, history, products and activities, current affairs, investment plan. - Theme 3 (T3): Productive projects, FAPUS format fill out. - Theme 4 (T4): ACATISEMA organizational structure. New communities and self-census.
28/05/2019-30/05/2019 *Wereto* community	Workshop of training to Captains: Zone 2	
07/06/2019-09/06/2019 *Laguna Negra* community	Workshop of training to Captains: Zones 3, 4 and 5	
3-5/09/2019 *Cumariana* community	XV General Assembly of ACATISEMA	Indigenous authorities of RIU-SM held their XV General Assembly of ACATISEMA, in which the new Coordinator Committee was elected for 2020 - 2022 and, among others aspects, the following was decided "*The indigenous authorities of the Reservation ratify their decision to continue carry out the REDD+ Project RIU-SM*".
30/01/2020-01/02/2020 Bogotá	Meeting of *Cabildos* Board and Joint Commission Workshop of training to Zonal Coordinators	Meeting of *Cabildos* Board and Joint Commission to present result of the execution of budget 2018 & 2019 of Project Activities, and to agree on the budget 2020. Training workshop with Zonal Coordinators to carry out the fieldwork in RIU-SM territory, to prepare the on-site visit by auditor in the verification process 2018 & 2019 of the REDD+ Project RIU-SM.

Minutes of meetings, socialization and training with *Cabildos* Board, Coordinator Committee, Joint Commission, Zonal Coordinators, Zonal Meetings, workshop to indigenous guards, Captains, and community leaders are in Annexes 1 (meetings with *Cabildos* Board, Coordinator Committee, Zonal Coordinators and other leader), 4.2.1 (socialization meetings, June 2018), 4.5.5 (training workshops for indigenous guards, August 2018 / March 2019), and 4.5.6 (training workshops for Captains, May-June 2019) of this Monitoring Report.

For this Monitoring Period the total GHG emission reductions generated are 9,117,133 tCO_2-e, and the total of VCUs are 8,097,815.

1.2 Sectoral Scope and Project Type

SECTORAL SCOPE: 14 - Agriculture, Forestry and Other Land Use (AFOLU).

AFOLU PROJECT CATEGORY: Reduced Emissions from Deforestation and Degradation (REDD).

ACTIVITY TYPE: Avoiding Unplanned Deforestation and Degradation (AUDD).

Identification of the Most Plausible VCS-eligible Activity(s) (according to VM0007)

<table>
<tr><td colspan="4">A) Is the forest land expected to be converted to non-forest land in the baseline case, or expected to be subject to authorized conversion to a managed tree plantation in the baseline case?</td></tr>
<tr><td colspan="2">YES</td><td colspan="2">NO</td></tr>
<tr><td colspan="2">B) Is the land legally authorized and documented to be converted to non-forest or a managed tree plantation?</td><td colspan="2">C) Is the forest expected to degrade by fuelwood extraction or charcoal production, in the baseline case?</td></tr>
<tr><td>YES</td><td>NO</td><td>YES</td><td>NO</td></tr>
<tr><td>D) Avoided planned deforestation / planned degradation</td><td>E) Avoided unplanned deforestation</td><td>F) Avoided forest degradation</td><td>G) Proposed project is not a VCS REDD activity currently covered by the module framework</td></tr>
<tr><td colspan="4">H) Is part of the land non-forest land or with degraded forest?</td></tr>
<tr><td colspan="2">YES</td><td colspan="2">NO</td></tr>
<tr><td colspan="2">I) Suitable for ARR</td><td colspan="2">J) No additional activity</td></tr>
</table>

REDD+ Project RIU-SM is not a grouped project.

1.3 Project Proponent

Strategic Alliance between ACATISEMA and MEDIAMOS

The Project Proponent is the Strategic Alliance between the *Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén* – ACATISEMA and the MEDIAMOS F&M S.A.S. company.

Organization name	Strategic Alliance ACATISEMA - MEDIAMOS
Contact person	Francisco A. Quiroga Zea
Title	Project Director
Address	Alto del Rosario, Km 12 vía El Otoño, La Buitrera, Cali - Colombia
Telephone	(57) 314 830 48 69
Email	mediamosfym@hotmail.com

Illustration 2. Meeting with the participation of members of ACATISEMA and MEDIAMOS (February, 2018. Villavicencio - Meta)

Background [5]

ACATISEMA and MEDIAMOS F&M S.A.S. celebrated an agreement on July 6, 2012 for the establishment of a Strategic Alliance to offer environmental services with the irrevocable objective to preserve, improve and manage natural forest and to restore territories with existing forest land, so they can be useful in reducing greenhouse gas (GHG) emissions from deforestation and forest degradation, as in the conservation and enhancement of forest carbon stocks, under a project to consider the Life Plan, worldview, cultural integrity, autonomy and dignity of their communities, in compliance with the guidelines and rules on forest conservation and protection of the inhabitants rights of the territories inside of the natural forest areas defined by the National Environmental Authority, *Ministerio de Ambiente y Desarrollo Sostenible – MADS* (Ministry of Environment and Territorial Development), taking into account the legal and regulatory framework of the country and the requirements of international standards.

Expressing, therefore, in order to make the necessary management for environmental, social, community and climate benefits generated by the project that is developed and implemented, and to negotiate and sell in domestic and/or international markets, on behalf of this strategic alliance, the GHG certificates that can be quantified and verified, and to receive the agreed payments for environmental services generated by the Project.

This negotiation and Strategic Partnership should be governed by principles of transparency, loyalty, ethics and equitability.

[5] PDD, page 24

Ratifications [6]

This agreement was ratified on July 22, 2012 (Annexes 1.1.2 and 1.1.3 of PDD) and unanimously endorsed by the members of ACATISEMA *Cabildos* Board and Coordinator Committee, attending the "4th workshop for socializing and training of REDD+ Project RIU-SM" (see Annex 1.1.5 of PDD).

It was also ratified by leaders and Captains at meetings of socialization and training, in Zonal Meetings of the Reservation and the Summit of Indigenous Chiefs, which is included in their respective records (Annex 1.7 of PDD). In ACATISEMA General Assembly, held in Laguna Cacao community (Sector *Lagunas Negra y Cacao*) on September 7th to 9th 2013 Zonal Meetings Proceedings were approved (Annex 1.8 of PDD).

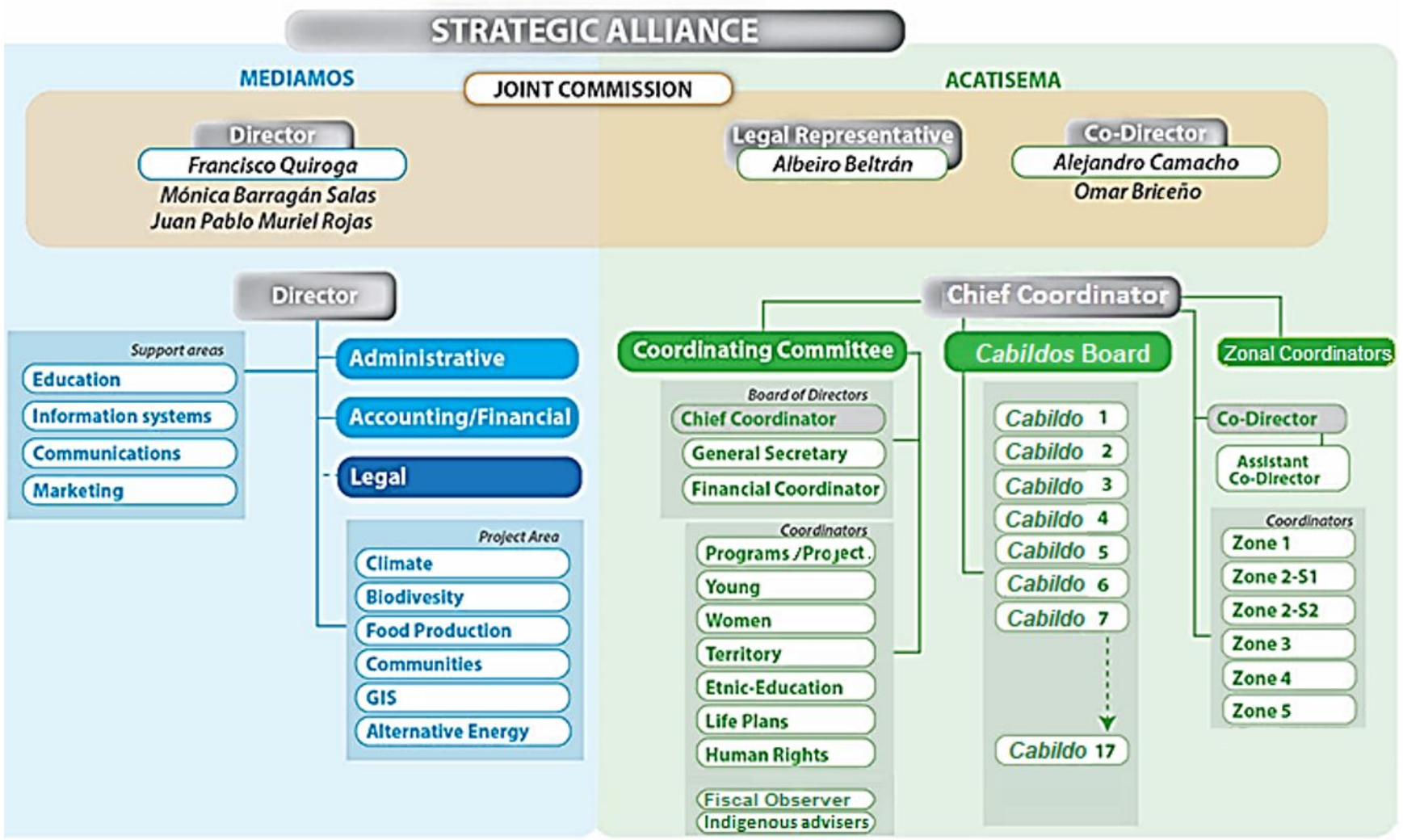
On November 22nd and 23rd, 2013, the *Cabildos* Board and the Coordinator Committee, gathered in Laguna Negra community (*Lagunas Negra y Cacao*) (Annex 1.2.2.1 of PDD), authorized the continuation of the REDD+ Project RIU-SM and the definitive Strategic Alliance Agreement for the Protection, Conservation and Recovery of Natural Forest of the *Resguardo Indígena Unificado – Selva de Matavén* between ACATISEMA y MEDIAMOS F&M S.A.S. was signed (Annex 1.2.2.2 of PDD).

In general, Annex 1 of PDD contains information about the process of socialization, training and consultation that has occurred in the stages of design and implementation of REDD+ Project *Resguardo Indígena Unificado - Selva de Matavén* (REDD+ Project RIU-SM); in that Annex are also evidence of concerted action that have been placed in a sequence of agreements, included the current Strategic Alliance Agreement ACATISEMA - MEDIAMOS F&M S.A.S., up the validation of Project.

The following diagram illustrates the organizational structure of the Strategic Alliance.

[6] PDD, page 25

Illustration 3. Organizational structure of the Strategic Alliance ACATISEMA - MEDIAMOS



Source: REDD+ Project RIU-SM

Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén – ACATISEMA [7]

Organization name	ACATISEMA
Contact person	Albeiro Beltrán Salcedo
Title	Legal Representative - General Coordinator
Address	Street 5 # 11-75 Cumaribo, Vichada - Colombia
Telephone	(57) 350 279 40 04
Email	albeirobeltran@hotmail.es

ACATISEMA is an association formed by *Cabildos* and Traditional Authorities of 17 indigenous groups that conform the *Resguardo Indígena Unificado – Selva de Matavén*. It is a public entity of a special nature with legal status, with own assets and administrative autonomy. It has the capacity to acquire, to own and to dispose of property, to accept donations, to hold national and international conventions, scientific and cultural exchanges and generally, to celebrate all kinds of negotiations and agreements with which the Association can achieve its objectives.

The main objective of the Association is: to foster the integral development, social and cultural preservation of the indigenous communities in the Matavén Jungle and to consolidate the territory, self-government by partners, the defense, conservation and preservation of the environment and biodiversity of the Matavén Jungle.

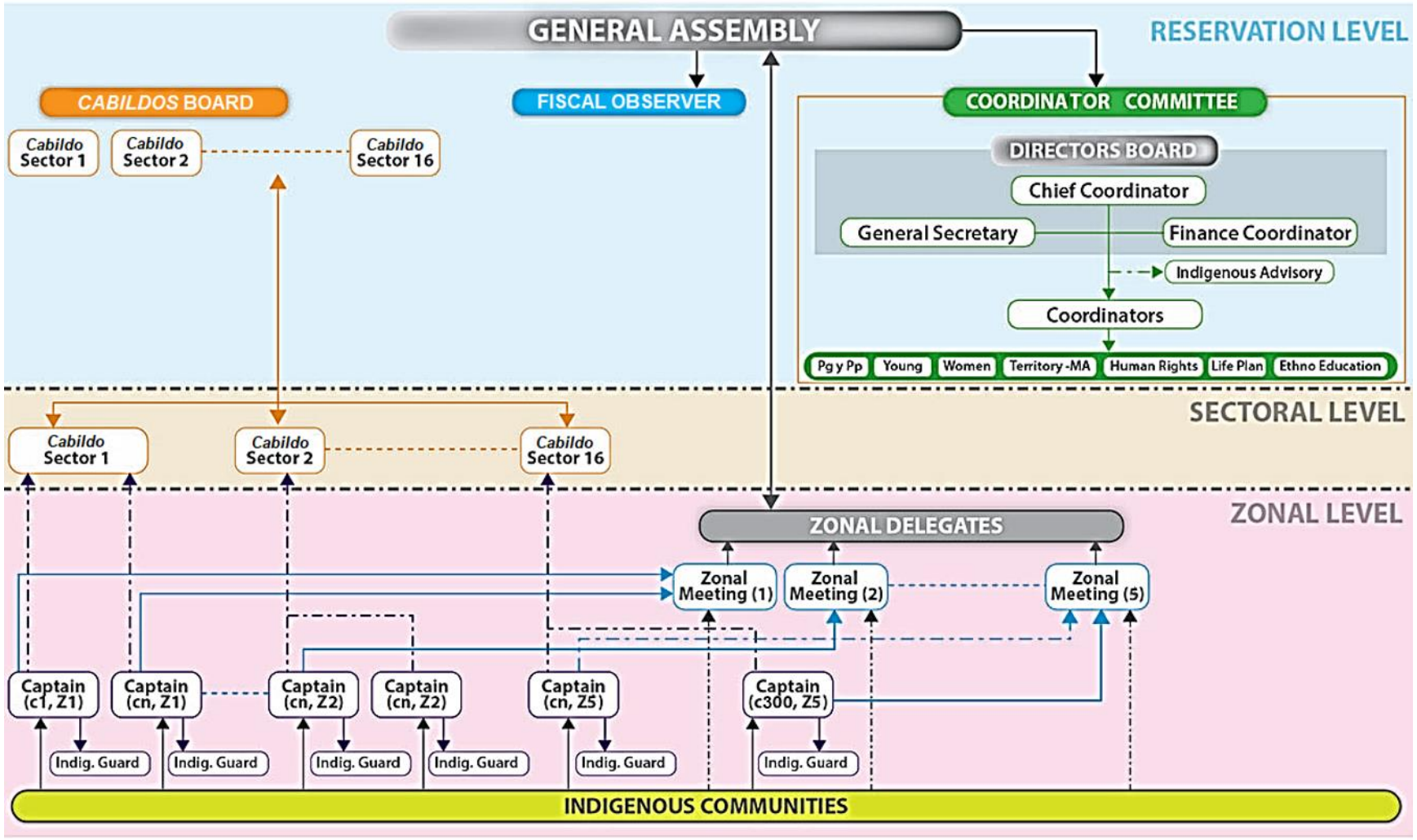
By Resolution No. 0177 of December 9th, 2002, issued by the *Departamento de Asuntos Indígenas, Minorías y ROM* (Department of Indigenous Affairs, Minorities and ROM) of the *Ministerio del Interior y de Justicia – MinInterior* (Ministry of Interior and Justice), the constitution of the *Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén* – ACATISEMA was enrolled and recorded, with jurisdiction in the departments of Vichada and Guainía. Its Tax Identification Number is 842000174-8.

Annex 2 of PDD "Information about ACATISEMA and the *Resguardo Indígena Unificado – Selva de Matavén*" contains legal, statutory and organizational information related to ACATISEMA and the RIU-SM.

The following diagram illustrates the organizational structure of ACATISEMA.

[7] PDD, page 27

Illustration 4. Organizational structure of ACATISEMA



Pg y Pp: Programs and Projects; MA: Envitonmental; c1, …, cn: communities; Z1, Z5: Zones 1 to 5

Source: REDD+ Project RIU-SM

This composition and organization are outlined in the diagram indicating the zonal level, sectoral level and related to the Reservation. Three Management Entities are: The General Assembly, the *Cabildos* Board (one *Cabildo* by each Sector), and the Coordinator Committee. The diagram indicates the form of composition and hierarchical relationships between these entities indicated by the arrows. The details of this organization may be revised in ACATISEMA Statutes about the above points. Annex 2 of PDD is related to information of ACATISEMA and the *Resguardo Indígena Unificado – Selva de Matavén*.

MEDIAMOS F&M S.A.S. [8]

Organization name	MEDIAMOS F&M S.A.S.
Contact person	Francisco A. Quiroga Zea
Title	Legal Representative - General Manager
Address	Alto del Rosario, Km 12 vía El Otoño, La Buitrera, Cali - Colombia
Telephone	(57) 314 830 48 69
Email	mediamosfym@hotmail.com

MEDIAMOS F&M S.A.S. is a Colombian company founded by Deed No. 1555 on May 12th, 1999 of Sixth Notary in Cali, registered at the Chamber of Commerce on May 26th, 1999 under No. 3589 of Folio IX, with commercial registration No. 511356-16 on May 26th, 1999 and domiciled in the city of Cali. Its Tax Identification Number is 805017493-2.

Its social objective is to develop environmental and educational activities, in areas of consultancy, research, development of environmental and productive projects, innovation and technology transfer, including in this structuring, development and marketing of projects that generate reductions of greenhouse gases (GHGs) under any standard of voluntary or compliance market, in particular, projects of Reduction of Emissions from avoided Degradation and Deforestation under the REDD+ scheme.

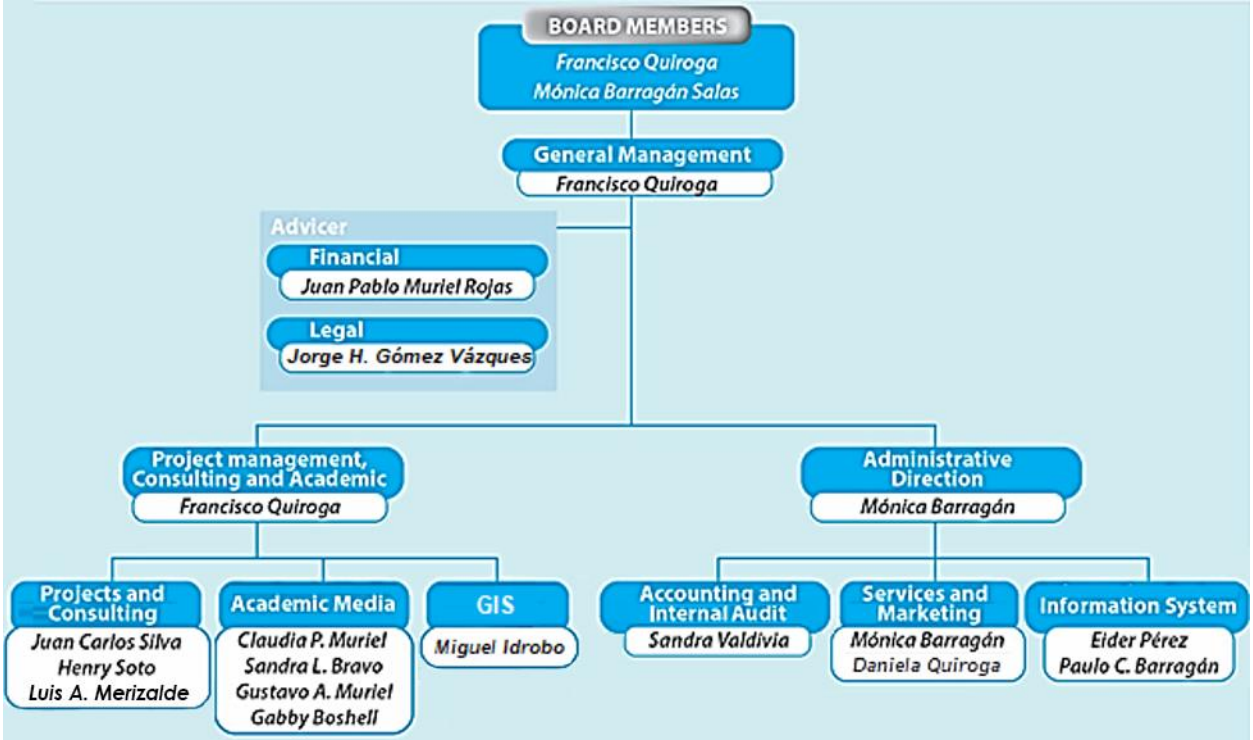
In the implementation of its social objective, the company may be associated with other natural or legal persons performing the same or similar object or related directly or indirectly with it, and in general can celebrate all kinds of contracts suitable for achieving its social objective.

Annex 3 of PDD contains MEDIAMOS F&M S.A.S. legal, statuary and organizational information.

The illustration below illustrates the organizational structure of MEDIAMOS F&M S.A.S.

[8] PDD, page 30

Illustration 5. Organizational structure of MEDIAMOS F&M S.A.S.



Source: REDD+ Project RIU-SM

1.4 Other Entities Involved in the Project

There are no other entities involved in the REDD+ Project RIU-SM.

1.5 Project Start Date

The project start date was January 1st, 2013.

Project Activities began on January 1st, 2013, with the implementation of the Sustainable Management Plan for Land and Forest in RIU-SM to reduce deforestation and, consequently, reduce the emission of greenhouse gases.

This initiation of Activities was defined by ACATISEMA and MEDIAMOS on December 1st, 2012, according to the signed agreement of July 22nd, 2012, and minutes accepted by Omar Briceño and Monica Barragán, who were legal representatives of the two entities (in 2012), in the Inírida city - Guainía. This minute is in Annex 1.4.6 of PDD.

1.6 Project Crediting Period

REDD+ Project RIU-SM crediting period:

Start: January 1st, 2013

End: December 31st, 2042

Total number of years: 30 years

Communication addressed by the Chief and the *Cabildos* Board of ACATISEMA, about life cycle and the crediting period of the project. *(Annex 2.1.13 of PDD)*

"The Association Directive Board and the Cabildos Board of ACATISEMA communicate to all members of different ethnic groups, regions, sectors and communities of the reservation that according to the design of the project with the company MEDIAMOS and knowing the different socialization and training workshops, the project cycle and crediting period is 30 years.

The different documents and, in particular, the PDD (Project Description Document) shall record this joint decision by ACATISEMA and MEDIAMOS, which is also included in the Strategic Alliance Agreement for the Protection, Conservation and Recovery of Natural Forest of Resguardo Indígena Unificado – Selva de Matavén.

For the record, this document is signed by the General Coordinator of ACATISEMA,

Omar Augusto Briceño Chipiaje

ID. 18.262.305

Date at which the Project baseline will be revised: The review to baseline was established originally each 10 years but, due to Colombian regulations (Resolution 1447/2018 of MADS, see Section 1.9.1 of this Monitoring Report), baseline of REDD Projects must be revised in 2020.

Duration of Monitoring Period: The monitoring period can be annual or biennial.

The first Monitoring Period included two sub-periods: 2013 (annual) and 2014-2015 (biennial).

The second Monitoring Period was biennial: 2016-2017.

The third Monitoring Period included two sub-periods: 2018 (annual) and 2019 (annual).

Current monitoring start date: 1st January 2018.

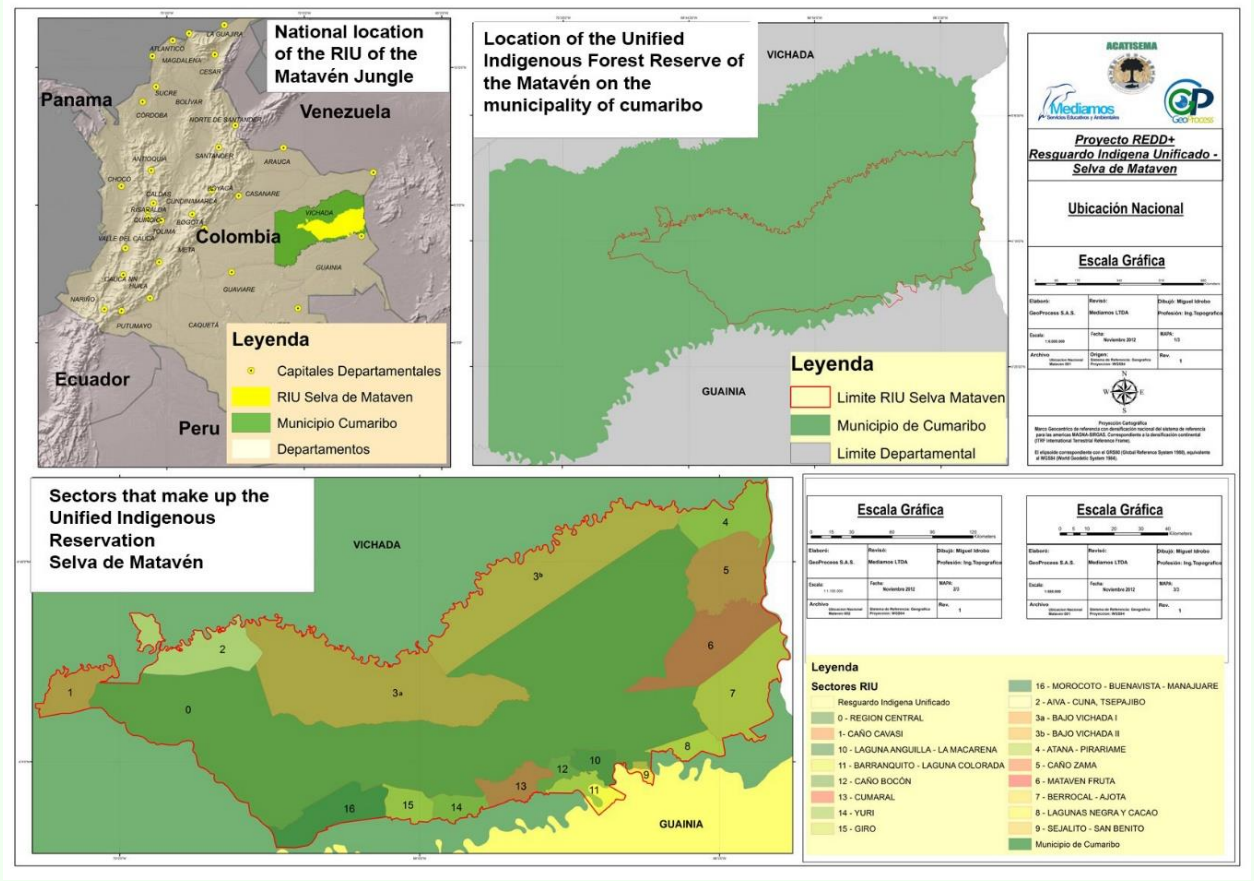
Current monitoring end date: 31st December 2019.

1.7 Project Location

Location

Resguardo Indígena Unificado – Selva de Matavén (RIU-SM) is located east of the Colombian Orinoco high plain, at the eastern end of the Department of Vichada, municipal jurisdiction of Cumaribo (Illustration 6), between the following geographical coordinates: North: 4º56'23 'N - 3º45'48"N and 70º16'50"W - 67º46'W.

Illustration 6. Geographical location of the *Selva de Matavén*



Source: REDD+ Project RIU-SM - GIS

Geographic boundaries

RIU-SM limits to the north with the Vichada river, to the south with the Guaviare river, to the east with the *Orinoco* river and to the west with the *Chupave* Creek. RIU-SM is hydrographically located in the basin of Creek *Matavén*. By physiographic and geological characteristics, the Project Area (PA) is part of the western edge of the *Escudo Guayanés* and corresponds to the *Selva de Matavén*.

RIU-SM belongs to the Colombian Orinoco region and is one of its four sub-regions called Transition Strip between the Orinoco and Colombian Amazon, coinciding with the natural boundary of the transition among natural savannas of the Orinoco and the Amazon rainforest.

The spatial and geographic boundaries of the Project were presented in Section 2.3 of PDD.

The description of biomes and their characteristics were presented, likewise, in Section 2.3 of PDD.

The following Table presents areas of geographic and spatial limits of REDD+ Project RIU-SM [Project Area (PA) Leakage Belt (LB) and the Reference Regions (RRD and RRL)].

Map 1 shows all spatial boundaries of the REDD+ Project RIU-SM (PA, LB, RRD, RRL) and Map 2 shows specifically the Project Area (PA), Leakage Belt (LB) and RRL.

Table 2. Project Area (PA) Leakage Belt (LB) of the Reference Regions (RRD and RRL)

Spatial boundary	Area (has)	Spatial boundary	Area (has)
PA	1,150,212	RRD	1,444,805
LB	486,211	RRL	2,028,439

Source: PDD, page 60

Resguardo Indígena Unificado – Selva de Matavén (RIU-SM) [9]

The Project Area is within the indigenous territory that consists of 17 sectors corresponding to ancient indigenous reservations, which are now called *Resguardo Indígena Unificado – Selva de Matavén (RIU-SM)*, according to Resolution 037, July 2003, of the *Instituto Colombiano de Reforma Agraria (INCORA)*[10] (Colombian Institute of Agrarian Reform), with a total area of 1,856,836 hectares and where the following Zones and Sectors are part: Zone 1: Sector 1 *Caño Cavasi*, Sector 2 *Aiwa Cuna Tsepajivo y Warracaña*; Zone 2: Sector 3a *Río Vichada I*, Sector 3b *Río Vichada II*; Zone 3: Sector 4 *Atana Pirariami*, Sector 5 *Caño Zama*, Sector 6 *Matavén Fruta*, Sector 7 *Berrocal - Ajota*; Zone 4: Sector 8 *Lagunas Negra y Cacao*, Sector 9 *Sejalito - San Benito,* Sector 10 *Laguna Anguilla - La Macarena*, Sector 11 *Barranquito - Laguna Colorada*; Zone 5: Sector 12 *Caño Bocón*, Sector 13 *Cumaral*, Sector 14 *Yuri*, Sector *15 Giro* and Sector 16 *Morocoto - Buenavista-Manajuare*.

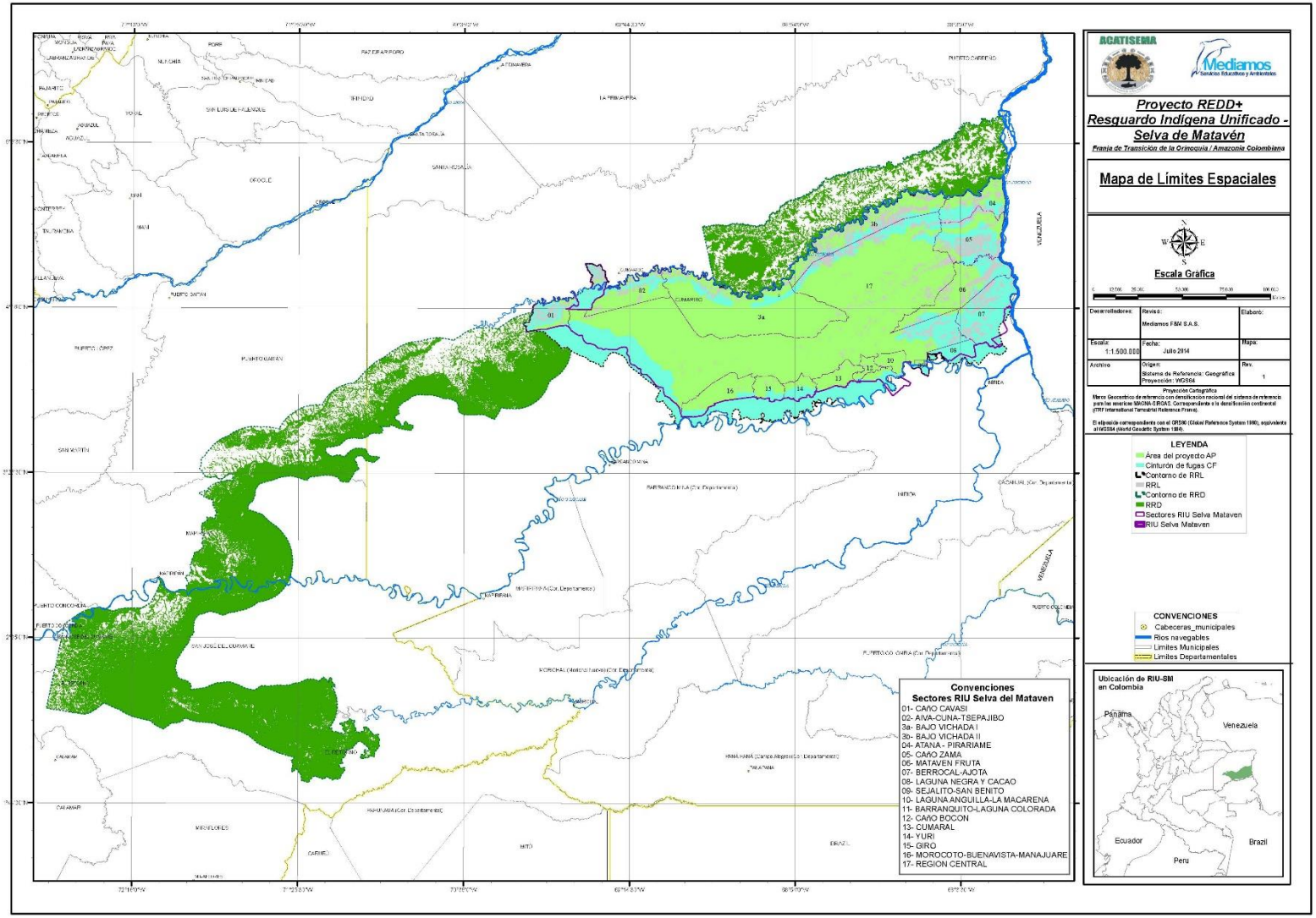
The Map 3 shows the territorial distribution of the RIU-SM according to Zones and Sectors. This distribution is the basis of the technical and administrative organization of the Project.

Table 3 shows the distribution of area, ethnic groups, population, communities and families of RIU-SM by the Zones and the Sectors.

[9] PDD, page 60

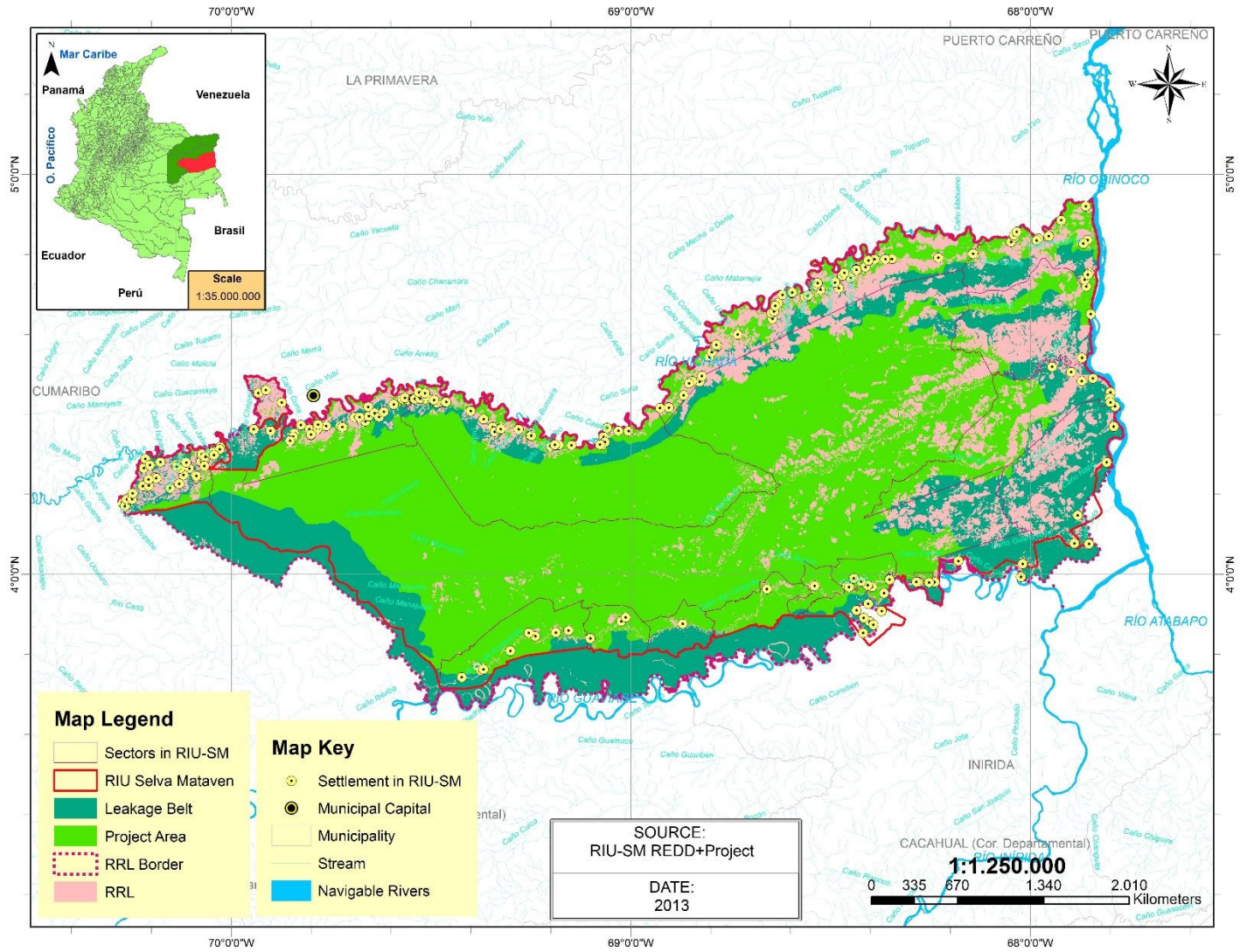
[10] Annex 2.2.1 of PDD. Also available in http://siatac.co/c/document_library/get_file?uuid=130cb9da-4054-4063-9b58-fde4ec0f5b3d&groupId=762

Illustration 7. Map 1 - Spatial boundaries of the REDD+ Project RIU-SM



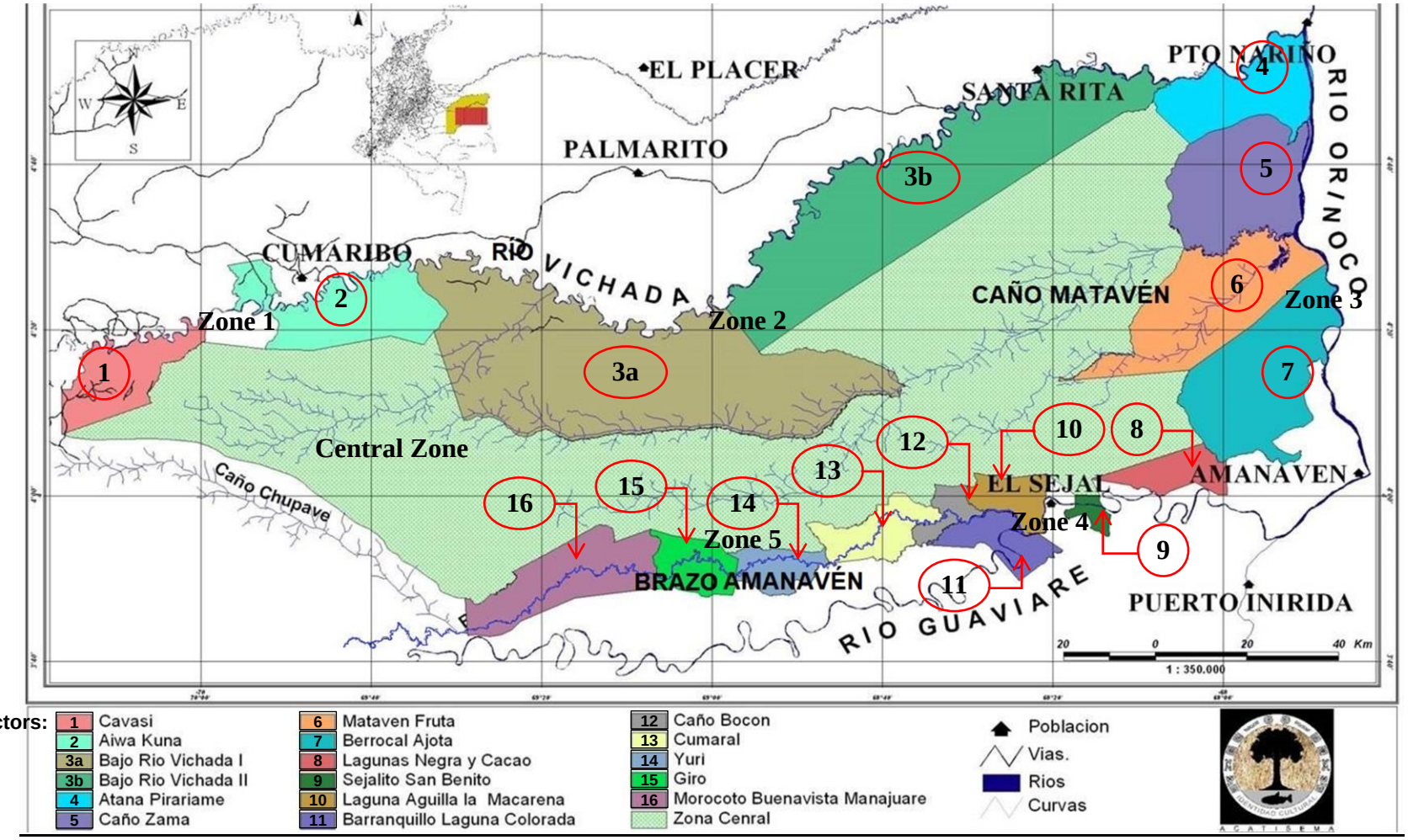
Source: REDD+ Project RIU-SM – GIS (for more details, see file "map1_RRD_PA_LB_RRL.pdf" in folder "general_maps")

Illustration 8. Map 2 - Project Area (PA), Leakage Belt (LB) and RRL



Source: REDD+ Project RIU-SM – GIS (for more details, see file "map2_boundaries_PA_LB.pdf" in folder "general_maps")

Illustration 9. Map 3 - Territorial Division of RIU-SM according to sectors



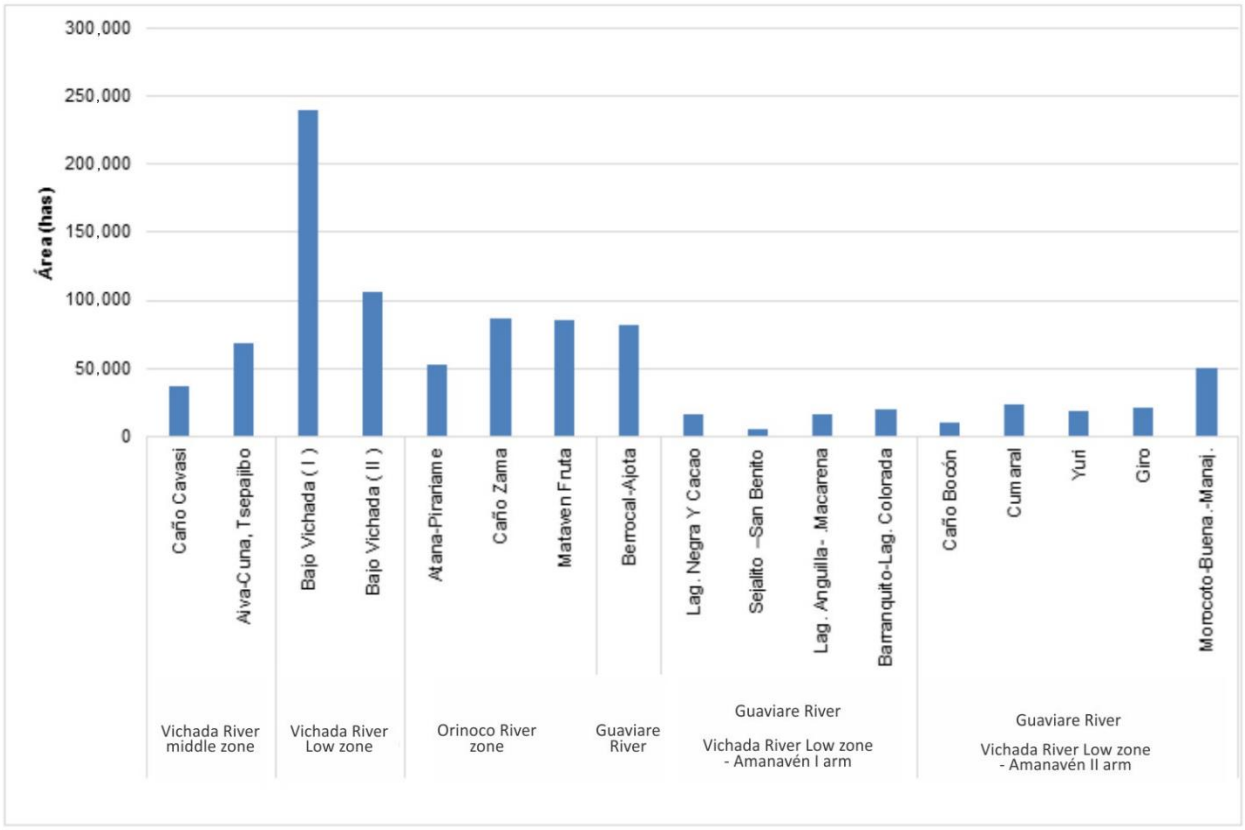
Source: PDD, page 62

Table 3. Distribution area, ethnic groups, communities, families, and population of RIU-SM by the Sectors

#	Sectors	River	Area (ha)	Ethnic(s)	Communities	Families	Population
ZONE 1 MEDIA RÍO VICHADA							
1	*Caño Cavasi*	Vichada	36,229	Sikuani	40	329	1,616
2	*Aiwa-Cuna, Tsepajivo*	Vichada	68,861	Sikuani	40	650	2,876
		Subtotal Z1	**105,090**		**80**	**979**	**4,492**
ZONE 2 BAJO RÍO VICHADA							
3a	*Bajo Río Vichada 1*	Vichada	239,607	Sikuani	44	516	2,249
3b	*Bajo Río Vichada 2*	Vichada	105,798	Sikuani	60	775	3,090
		Subtotal Z2	**345,405**		**104**	**1,291**	**5,339**
ZONE 3 RÍO ORINOCO							
4	*Atana-Pirariami*	Orinoco	52,335	Sikuani, Piaroa	14	133	631
5	*Caño Zama*	Orinoco	86,552	Piaroa	4	59	280
6	*Matavén Fruta*	Orinoco	85,181	Piaroa	6	131	587
7	*Berrocal-Ajota*	Guaviare	82,302	Piaroa, Puinave	10	158	759
		Subtotal Z3	**306,371**		**34**	**481**	**2,257**
ZONE 4 BAJO RÍO GUAVIARE – *Amanavén* creek I							
8	*Lagunas Negra y Cacao*	Guaviare	16,285	Curripaco, Cubeo, Puinave	4	83	315
9	*Sejalito –San Benito*	Guaviare	4,669	Sikuani, Piapoco	5	131	569
10	*Laguna Anguilla- La Macarena*	Guaviare	15,869	Sikuani	13	172	812
11	*Barranquito-Laguna Colorada*	Guaviare	19,542	Sikuani	5	121	515
		Subtotal Z4	**56,365**		**27**	**507**	**2,211**
ZONE 5 BAJO RÍO GUAVIARE – *Amanavén* creek II							
12	*Caño Bocón*	Guaviare	10,341	Puinave	1	26	91
13	*Cumaral*	Guaviare	23,636	Piaroa	2	37	167
14	*Yuri*	Guaviare	18,522	Piapoco	2	22	105
15	*Giro*	Guaviare	20,619	Piapoco	3	23	141
16	*Morocoto-Buenavista-Manajuare*	Guaviare	49,617	Puinave	12	225	1,140
		Subtotal Z5	**122,735**		**20**	**333**	**1,644**
		Subt, Sectors	**935,965**		**265**	**3,591**	**15,943**
Central Zone		*Matavén* creek	920,871				
		TOTAL	**1,856,836**				

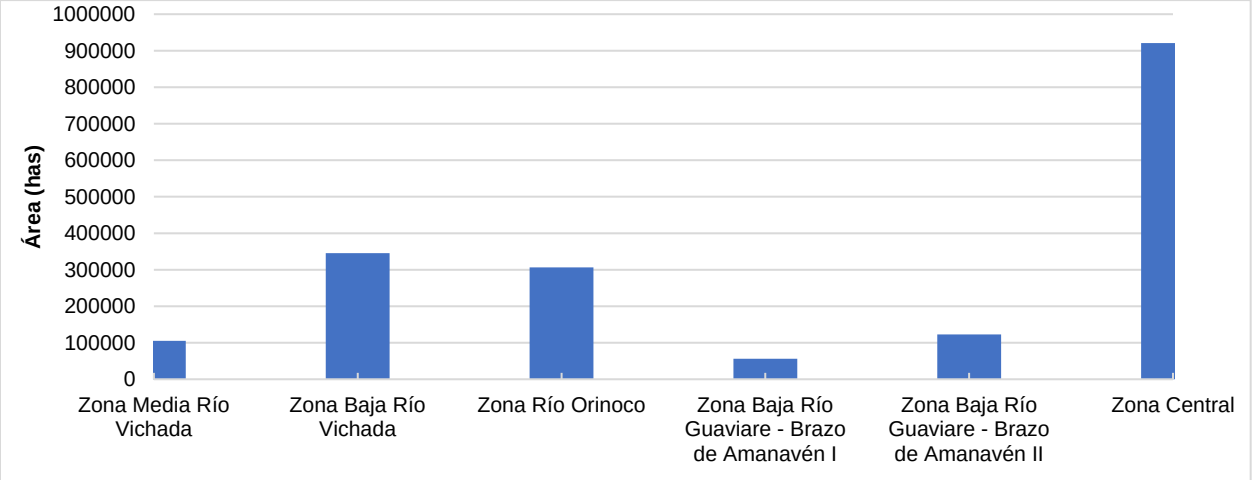
Source: Zones, Sectors and Ethnic Groups by ACATISEMA / Resolution 037, 2003; Area by cartography of the REDD+ Project RIU-SM; Communities, Families, and Population by self-census 2018 carried out as part of Activity A.2.1 of the REDD+ Project RIU-SM.

Illustration 10. Graph of the distribution of the RIU-SM by Sectors and Zones



Source: PDD, page 64

Illustration 11. Graph of the distribution of the RIU-SM areas by Zones



Source: PDD, page 64

Illustration 12. Indigenous people in *Urba Morichal* community - RIU-SM

1.8 Title and Reference of Methodology

Verified Carbon Standard (VCS) Program, version 4, 2019

In the following Table, the methodology and modules applied in the design and implementation of REDD+ Project RIU-SM are presented.

Project meets the requirements established in *VCS VM0007 REDD Methodology Framework (REDD-MF) - Table 3 Avoiding Unplanned Deforestation / Degradation*. In the last column of the table below these requirements and their application in the REDD+ Project RIU-SM are shown.

Justification and documentation are provided in the relevant Sections of PDD and the respective Annexes.

Table 4. Methodology and modules applied. REDD+ Project RIU SM

Title	Reference		Version	Date	Requirements (*)	Applicability in Project	
						Yes	No
METHODOLOGY							
REDD Methodology Modules	REDD-MF	VM0007	1.5	9 March 2015	Mandatory	X	
MODULES							
Carbon Pools							
Estimation of carbon stocks in the above- and belowground biomass in live tree and non-tree pools	CP-AB	VMD0001	1.1	11 October 2013	Mandatory	X	
Estimation of carbon stocks in the dead-wood pool	CP-D	VMD0002	1.0	11 October 2013	m^3		X
Estimation of carbon stocks in the litter pool	CP-L	VMD0003	1.0	11 October 2013	Optional		X
Estimation of stocks in the soil organic carbon pool	CP-S	VMD0004	1.0	11 October 2013	Optional	X	
Estimation of carbon stocks in the long-term wood products pool	CP-W	VMD0005	1.1	20 November 2012	m^1		X
Baseline							

Title	Reference		Version	Date	Requirements (*)	Applicability in Project	
						Yes	No
Estimation of baseline carbon stock changes and greenhouse gas emissions from planned deforestation and planned degradation	BL-PL	VMD0006	1.2	3 May 2013	-		X
Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation	BL-UP	VMD0007	3.2	3 May 2013	Mandatory	X	
Estimation of baseline emissions from forest degradation caused by extraction of wood for fuel	BL-DFW	VMD0008	1.0	11 October 2013	-		X
Estimation of baseline carbon stock changes and greenhouse gas emissions in ARR project activities on peat and mineral soil	BL-ARR	VMD0041	1.0	9 March 2015	-		X
Estimation of baseline soil carbon stock changes and greenhouse gas emissions in peatland rewetting and conservation project activities	BL-PEAT	VMD0042	1.0	9 March 2015	-		X
Leakage							
Estimation of emissions from activity shifting for avoided planned deforestation	LK-ASP	VMD0009	1.2	9 March 2015	-		X
Estimation of emissions from activity shifting for avoided unplanned deforestation	LK-ASU	VMD0010	1.1	9 March 2015	Mandatory	X	
Estimation of emissions from market-effects	LK-ME	VMD0011	1.1	9 March 2015	m[1]		X
Estimation of emissions from displacement of fuelwood extraction	LK-DFW	VMD0012	1.0	11 October 2013	-		X
Estimation of emissions from displacement of pre-project agricultural activities	LK-ARR	VMD0043	1.0	9 March 2015	-		X
Estimation of emissions from ecological leakage	LK-ECO	VMD0044	1.0	9 March 2015	-		X
Emissions							
Estimation of greenhouse gas emissions from biomass and peat burning	E-BPB	VMD0013	1.1	9 March 2015	Mandatory	X	
Estimation of emissions from fossil fuel combustion	E-FFC	VMD0014	1.0	11 October 2013	Optional		X
Estimation of direct N_2O emissions from nitrogen application	E-NA	*[CDM tool]*	1.0	3 October 2013	m[4]		X
Monitoring							
Methods for monitoring of greenhouse gas emissions and removals	M-MON	VMD0015	2.1	20 November 2012	Mandatory	X	
Methods for monitoring greenhouse gas emissions and removals in ARR project activities on peat and mineral soil	M-ARR	VMD0045	1.0	9 March 2015	-		X
Methods for monitoring of soil carbon stock changes and greenhouse gas emissions and removals in peatland rewetting and conservation project activities	M-PEAT	VMD0046	1.0	9 March 2015	-		X
Miscellaneous							
Methods for stratification of the Project area	X-STR	VMD0016	1.1	9 March 2015	Mandatory	X	
Estimation of uncertainty for REDD Project activities	X-UNC	VMD0017	2.1	9 March 2015	Mandatory	X	
Tools							

Title	Reference		Version	Date	Requirements (*)	Applicability in Project	
						Yes	No
Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities	T-ADD	*[CDM Combined Tool]*	3.0	1 February 2012	Mandatory	X	
Tool for testing significance of GHG emissions in A/R CDM Project activities	T-SIG	*[CDM Tool]*	1	04 May 2007	Mandatory	X	
VCS AFOLU Non-Permanence Risk Tool	*[Procedural Document]*		4	19 September 2019	Mandatory	X	

Notes:

(*) Avoiding Unplanned Deforestation/ Degradation

Mandatory: These modules and tools are fully mandatory, they must be used.

Optional: These modules are fully optional: the indicated pools and sources can be included or excluded as decided by the Project but if included in the baseline they must also be in the Project scenario.

m[1] Mandatory where the process of deforestation involves timber harvesting for commercial markets

m[3] Mandatory if this carbon pool is greater in baseline (post-deforestation/degradation) than project scenario and significant; otherwise can be conservatively omitted.

m[4] Mandatory where leakage prevention activities include increases in the use of fertilizers

Source: PDD, page 123

1.9 Participation under other GHG Programs

DECLARATION

The subscribed Legal Representatives of the organizations of the Strategic Alliance: *Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén* (ACATISEMA) and MEDIAMOS F&M S.A.S., that constitute the "Project Proponents" of the "REDD+ Project *Resguardo Indígena Unificado - Selva de Matavén* (RIU-SM)", with Registration ID VCS PD 1566 (VCS Project Database http://www.vcsprojectdatabase.org/#/home) and APX -VCS Registry VCSR1235 (https://vcsregistry2.apx.com/myModule/rpt/myrpt.asp?r=111), are declaring that for the period of verification 2018 & 2019 the Project has not participated or registered under another GHG program.

For constancy, we are signing on the 24th day of the month of February, 2020:

Albeiro Beltrán Salcedo	Francisco A. Quiroga Zea
C.C. No. 18250791	C.C. No. 14196754
Legal Representative	Legal Representative
ACATISEMA	MEDIAMOS F&M S.A.S.

In Annex 3.6 of this Monitoring Report, there is a updated declaration (dated 16th April, 2020).

1.9.1 Impacts of Articles 40 and 41 of Resolution 1447/2018 of MADS on the Project

Regarding the application of Resolution 1447/2018 of MADS, issued by the *Ministerio de Ambiente y Desarrollo Sostenible* - MADS (Ministry of Environment and Sustainable Development), and the impacts on the REDD+ Project RIU-SM, first it is necessary consider what is referred in **Article 41 "*Establishment of baselines for REDD+ Projects*"**.

Article 41 is applicable to the REDD+ Project RIU-SM about the requirement that the holder of the same "*will must establish its baseline based on the most updated FREL that has been formally submitted by Colombia and evaluated by the UNFCCC...*".

However, because the REDD+ Project RIU-SM validated its baseline according to the "VCS PROJECT REVIEW REPORT" issued by VCSA on June 28, 2017, prior to the issuance of Resolution 1447/2018 of MADS that came into force on August 02, 2018, applies "*parágrafos*" 1 and 2 of this Article 41:

- According to **"*parágrafo*" 1**, the REDD+ Project RIU-SM should comply with "the provisions of Article 40 regarding the Maximum GHG Mitigation Potential [**MMP**] object to national accounting of emission reduction and GHG removal for the period between January 2016 and December 2019, for REDD+ activities and carbon deposits included in the FREL submitted by Colombia to the UNFCCC", that is, for the present verification of results for 2018 & 2019 of the REDD+ Project RIU-SM, the **Article 40 would be applicable**, about which an expansion will be made later.
- According to **"*parágrafo*" 2**, the REDD+ Project RIU-SM should adjust and validate its baseline based on the most updated FREL to carry out the verification of emission reductions and GHG removals generated from January 2020 onwards.

In conclusion, for the present verification (2018 & 2019) of the REDD+ Project RIU-SM, Article 40 would still apply; that is, the adjustment and validation of the baseline of the REDD+ Project RIU-SM based on the most updated FREL for 2016, 2017, 2018, and 2019 are not required, but they will be a requirement for future verifications from January 2020.

As the application of Article 41 to the REDD+ Project RIU-SM is already clarified, now the application of **Article 40 "*Maximum potential for GHG mitigation*"** will be considered.

According to "*parágrafo*" 1 of Art. 41, because the REDD+ Project RIU-SM validated its baseline before the issuance of Resolution 1447/2018 of MADS, the Project must comply with the provisions of Article 40 about the MMP for the period between January 2016 and December 2019; that is, for the present verification (2018 & 2019) of the REDD+ Project RIU-SM, the maximum mitigation potential would be applied.

The RENARE Technological Platform and its Technical Guide, to the current date -February 2020-, is not available to users yet, considering the statement of the *Dirección de Cambio Climático y Gestión del Riesgo* - **DCCGR** (Directorate of Climate Change and Risk Management) of MADS, dated August 16, 2019 (Annex 3.1 of this Monitoring Report) when they expected it to be ready in second semester of 2019, but now its start up is not defined yet, as it was expressed by the delegates of the DCCGR in the training workshop about this platform, undertook on December 20, 2019, when they said that

RENARE is in its final adjustment phase (which has been corroborated by the communication of the DCCGR of April 1, 2020 -Annex 3.7 of this Monitoring Report). So, when the operation of the platform begins, the MADS and the *Instituto de Hidrología, Meteorología y Estudios Ambientales* - **IDEAM** (Institute of Hydrology, Meteorology and Environmental Studies) must establish the MMP applicable to the Project for the results of the present verification (2018 & 2019), that is, the determination of this MMP does not depend on the Project. Its future application will be done by the Project according to what the MADS specified in an official communication dated October 8, 2018 (Annex 3.2 of this Monitoring Report), where it explains some aspects about application of Resolution 1447/2018 of MADS, and in two subsections says:

> **"6. *Article 40, Maximum GHG mitigation potential for REDD+ Projects, object to national accounting.***
>
> ...
>
> *In case of referring to results accounted above the maximum GHG mitigation potential, based on a project baseline validated prior to the issuance of Resolution 1447/2018 [of MADS] in the validity periods between 2016-2019, these may be used for the purposes of mitigation different to the national goals in climate change and although they must be registered, they will not be part of the national accounting.*
>
> *In addition to what is described in the previous paragraph and taking into account that Article 40 states that for purposes of accounting for GHG emissions reduction and removal, only those GHG mitigation results will be valid if, in addition to being verified and registered in RENARE, they are included in the maximum GHG mitigation potential object of said national accounting. Consequently, the interpretation according to which the mitigation results that are above the calculated maximum GHG mitigation potential can be marketed and cancelled in other mechanisms different to those established by the National Government is correct. Thus, although they must also be registered in RENARE, these surpluses do not count for national accounting nor for payments for results or similar compensations that have been established by the National Government."*

In conclusion, the Maximum GHG Mitigation Potential for the present verification of results for 2018 & 2019 of the REDD+ Project RIU-SM will be determined by the MADS and IDEAM as soon as the RENARE Technological Platform be put in operation, and its application will make by the Project according to the specifications presented in the two previous paragraphs.

1.10 Other Forms of Credit

Emission Trading Programs and Other Binding Limits

The REDD+ Project RIU-SM has not any emission reductions generated by the Project Area (PA) as a part of an Emissions Trading Program or other binding limit.

Other Forms of Environmental Credit

The REDD+ Project RIU-SM has not tried to issue emission reductions from any way of environmental credits.

1.11 Sustainable Development

The Sustainable Development Goals (SDGs) are major social, economic and environmental purposes that 193 countries agreed to achieve to improve living conditions in the world. These were proposed by Colombia through the *Ministerio de Relaciones Exteriores* (Ministry of Foreign Relations) to expand the scope of the Millennium Development Goals (MDGs). The SDGs are:

1. No Poverty: Economic growth must be inclusive to provide sustainable jobs and promote equality.
2. Zero Hunger: The food and agriculture sector offer key solutions for development, and is central for hunger and poverty eradication.
3. Good Health and Well-Being: Ensuring healthy lives and promoting the well-being for all at all ages is essential to sustainable development.
4. Quality Education: Obtaining a quality education is the foundation to improving people's lives and sustainable development.
5. Gender Equality: Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world.
6. Clean Water and Sanitation: Clean, accessible water for all is an essential part of the world we want to live in.
7. Affordable and Clean Energy: Energy is central to nearly every major challenge and opportunity.
8. Decent Work and Economic Growth: Sustainable economic growth will require societies to create the conditions that allow people to have quality jobs.
9. Industry, Innovation, and Infrastructure: Investments in infrastructure are crucial to achieving sustainable development.
10. Reduced Inequalities: To reduce inequalities, policies should be universal in principle, paying attention to the needs of disadvantaged and marginalized populations.
11. Sustainable Cities and Communities: There needs to be a future in which cities provide opportunities for all, with access to basic services, energy, housing, transportation and more.
12. Responsible Consumption and Production: Responsible Production and Consumption.
13. Climate Action: Climate change is a global challenge that affects everyone, everywhere.
14. Life Below Water: Careful management of this essential global resource is a key feature of a sustainable future.

15. Life On Land: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss.
16. Peace, Justice and Strong Institutions: Access to justice for all, and building effective, accountable institutions at all levels.
17. Partnerships: Revitalize the global partnership for sustainable development.

An exercise of prioritization of these goals led to that in Colombia more than half of the votes being oriented towards: good education (4), better health service (3), better job opportunities (8), an honest and efficient government, protection of forests, rivers (15), and oceans (14), protection against crime and violence (16) and affordable and nutritive food (2).

Colombia is actively participating in meetings and follow-up to the implementation of the SDGs. According to the voluntary review sent by Colombia to the United Nations High-level Political Forum, the country has incorporated the SDGs framework into several of its most important public policy plans (Colciencias, 2017).

The REDD+ Project RIU-SM Activities are consistent with some of the SDGs, because they seek to develop benefits that address the goals about:

- Reduce the state of poverty and abandonment that afflict the indigenous communities of the RIU-SM by providing resources that improve their life quality and ensure adequate food (see “Specific Objective” according to Matrix of Logical Structure – MLS in PDD page 46 and implementation results of Project Activity A2.1 about food sustainability, page 103 of this Monitoring Report).
- Provide elements to improve the provision of health services (see implementation results of ACATISEMA Reserves RA1 health, RA2 drinking water, RA3 housing, RA4 attention to special population, RA6 attention to calamities, page 149 of this Monitoring Report).
- Support education programs (see implementation results of Project Activity A2.2 about educational programs in RIU-SM, page 113 of this Monitoring Report).
- Carry out actions with equity and a gender-based approach, opportunities for everyone, provide elements to improve sanitary conditions and obtain drinking water (see implementation results of Project Activity A1.3 about strengthening of governance in the RIU-SM including the gender approach, page 90 of this Monitoring Report, and ACATISEMA Reserve RA2 about drinking water, page 152 of this Monitoring Report).
- Support indigenous initiatives to develop projects, business and infrastructure for their economic growth and occupation, including options to implement clean energy procurement (see implementation results of Project Activity A1.2 about improvement of communication, information and transport mechanisms, page 79 of this Monitoring Report, and Project Activity A2.3 about developing projects in productive chains, page 126 of this Monitoring Report).
- Aim to protect the forests of the Selva Matavén in order to mitigate climate change (which is the primary objective of entire Project) through the implementation of the Sustainable Management Plan for Land and Forest and the surveillance and control of the territory of the RIU-SM (see “Specific

Objective" according to Matrix of Logical Structure – MLS in PDD page 46 and implementation results of Project Activity A1.1 about control and surveillance of the territory, page 70 of this Monitoring Report).

- Support the improvement of the Governance of ACATISEMA in the Indigenous Reservation (see implementation results of Project Activity A1.3 about strengthening of governance in the RIU-SM (page 90 of this Monitoring Report), and ACATISEMA Reserve RA5 about improvement of infrastructure and offices, page 156 of this Monitoring Report).

On the other hand, in the Project Design Document - PDD, Section 1.11, the main set of public policy plans, laws and regulatory frameworks that specify the priorities established at the national level for the country's sustainable development were presented.

The National Government considers as a key strategy to develop REDD projects in Colombia, as defined by the *Consejo Nacional de Política Económica y Social* (National Council for Economic and Social Policy) approved as CONPES Document 3700 "*Estrategia Institucional para la articulación de políticas y acciones en materia de cambio climático en Colombia*" (Institutional Strategy for Policy Coordination and Action on Climate Change in Colombia) (CONPES, 2011), four routes for critical work or actions achieve sustainable national development by reducing the negative impacts generated by climate change.

These routes work were reflected in the *Plan Nacional de Desarrollo - PND 2010-2014* (Development National Plan) (Law 1450 of June 16, 2011) (Congreso de Colombia, 2011) and in the *Plan Nacional de Desarrollo PND 2014-2018* (Law 1753, 2015) (Congreso de la República, 2015):

- *Plan Nacional de Adaptación al Cambio Climático – PNACC* (National Plan for Adaptation to Climate Change, as mandated by the Law 1450, 2011 in its Article 217 - *PND 2010-2014*) (DNP, 2011).
- *Estrategia Colombiana de Desarrollo Bajo en Carbono* – ECDBC (Colombian Strategy Low Carbon Development) (MADS, 2011).
- *Estrategia Integral de Control a la Deforestación y Gestión de los Bosques* – EICDGB (MADS-IDEAM, 2017) (Comprehensive Strategy of Deforestation Control and Forest Management), before called *Estrategia Nacional de Reducción de Emisiones por Deforestación y Degradación Forestal* – ENREDD+ (MADS, 2011).
- *Estrategia de Protección Financiera ante Desastres* (Strategy for Disaster Financial Protection).

The last of the four routes is reflected in the PND 2010-2014, while in the PND 2014-2018 is considered as *Fondo de Adaptación* (Adaptation Fund) - Decree-Law 4819, 2010 (Minhacienda, 2010) as part of *Sistema Nacional de Gestión del Riesgo de Desastres* (National System of Disaster Risk Management)".

The REDD+ Project RIU-SM, with 7 years of implementation (2013-2019) has contributed to the first three work routes indicated above, and especially in the third route, which at the beginning was called ENREDD+ and is now defined as EICDGB. The REDD+ Project RIU-SM contributes specifically to

achieving the goals of reducing deforestation and forest degradation in the transition zone of the Colombian Orinoquía-Amazonía, as defined in the Project Objectives.

Illustration 13. Members of the indigenous community participate in the meetings about the REDD+ Project RIU-SM Activities. *Berlin* and *Miraluz* communities


The *Plan Nacional de Desarrollo - PND 2014-2018 "todo por un nuevo país"* (Development National Plan 2014-2018 "all for a new country") - Law 1753 (Congreso de la República, 2015), directly incorporates 92 of the 169 goals stipulated in the SDGs. These goals are especially related to, among others, protection of the marine and terrestrial environment, action against climate change, access to water and renewable energy (Colciencias, 2017). Likewise, in its Article 171, Chapter VI: Green Growth, says:

> *"Article 171. Prevention of deforestation of natural forests. The Ministerio de Ambiente y Desarrollo Sostenible will make a national policy to combat deforestation, which will contain an action plan aimed to avoid the loss of natural forests by year 2030. This policy will include provisions to substantively link to the sectors that act as drivers of deforestation, including the productive chains that use the forest and its derivatives".*

Together with the PND 2014-2018, Colombia also defined in the Document CONPES ODS 3918 (CONPES, 2018) 16 actions aimed at the fulfillment of the first Sustainable Development Goals, which will stimulate the fulfillment of the 169 targets of the SDGs (UNSD, 2018), in addition to the designation of 30 national entities that will be in charge of leading the actions that until 2030 will mark the route of social and economic development of Colombians in harmony with the environment (DNP, 2018). The REDD+ Project RIU-SM is part of the private actions with which the National Government seeks to articulate for the implementation and achievement of the "*2030 Agenda*" in relation to:

- its "*objectives that promote environmental conservation and efficient use of resources, as well as sustainable economic growth*",
- to "*development of concrete issues such as green growth, innovation and employment, among the main ones*",

- to fulfill the specific objective 4 "*Develop the guidelines for the strategy of interlocution with non-governmental actors, to materialize the multi-stakeholder approach of the 2030 Agenda, and the definition of alliances for their active involvement and participation in the implementation and social control through accountability exercises*" (providing adequate information to contribute to national statistics, as was done with data from the indigenous self-census of the RIU-SM delivered to the *Ministerio del Interior* - Ministry of Interior),
- the implementation of "*Guideline 4: dialogue and promotion of alliances with non-governmental actors*" when it mentions that "*the 2030 Agenda for Sustainable Development and its SDGs is the result of an open and inclusive intergovernmental process and with active participation of strategic non-governmental actors for its achievement ... recognizes the need to adopt a multi-stakeholder approach, which involves all development actors ... representatives of different ethnicities, ... the private sector, ... the scientific and academic community and the citizenship.*

  Achieving the effective and harmonious concurrence of all sustainable development actors constitutes one of the main challenges in the implementation of the SDGs, since it requires interventions that win, in the first instance, the willingness and confidence of the parties to carry out inter-sectoral work. around the same goals. On the basis that there is will and trust, progress must be made in guaranteeing conditions, developing the mechanisms and instruments that will facilitate the interaction and interlocution of the actors, as well as the monitoring and evaluation of inter-sectoral action around the SDGs.

  In this way, an implementation scheme in which various actors and action initiatives for sustainable development converge implies the formulation of short and medium term interventions among which the following have been defined: (i) dialogue and interlocution mechanisms with non-governmental actors; (ii) alliances for financing; (iii) alliances for the mobilization of actors (iv) alliances for knowledge; and (vi) alliances between countries and the international ambit. "

In the same way, the REDD+ Project RIU-SM will attend with the provisions when this document mentions that *"... the national Government, through the SDG Commission, will convene the actors to be jointly responsible for the implementation, through mechanisms such as the multi-stakeholder platform, defined in this CONPES document. This with the objective that the 2030 Agenda and its SDGs be incorporated into the narrative and operation of non-governmental actors. In this sense, it is strategic that these actors become amplifiers of the message of sustainable development, through their own economic, social and environmental activities, enabling them as active actors in the implementation and monitoring of the SDGs.*

... Knowledge from the private sector comes from various sources: the first is quantitative and qualitative information recorded in the sustainability reports of companies; the second is qualitative information from good practices and models applied to management and production; and third, it is information from its developments in technology and innovation to improve efficiency, productivity and competitiveness.

... Regarding civil society, centers of thought, observatories and in general organizations that produce quantitative and qualitative information and knowledge, they play an essential role because they are

those who will do the role of citizen oversight to the implementation of the 2030 Agenda, in the accountability exercise framework, according to methodological guidelines established in the Manual Único de Rendición de Cuentas (Single Manual of Accountability) with a focus on human rights and peace prepared by the Departamento Administrativo de la Función Pública (Administrative Department of Public Function). In addition, they are the ones who prepare multidisciplinary analysis and recommendations, recognized and valued not only by governments for decision-making, but also by public opinion. Experiences such as those developed by the internal work group of Innovación Pública Digital (Digital Public Innovation) of the Ministerio de Tecnologías de la Información y las Comunicaciones (Ministry of Information and Communications Technologies) and the Centro de Innovación Social (Center for Social Innovation) of the Departamento para la Prosperidad Social (Department for Social Prosperity) are relevant in this work.

In order to enhance all this knowledge around the SDGs, a network should be established that integrates the different actors and allows them to share and disseminate all the knowledge generated for sustainable development.".

As in the PDD was established, the particular Project activities (PDD, page 54, referred to Section 1.8 Matrix of Logic Structure, MLS) that have been implemented and consolidated, also have been contributing to achieve the Development Objective and the Specific Objective (PDD, pages 45 and 46), which are fully consistent with national priorities regarding the reduction of deforestation and degradation of natural forests. And, of course, Project contributes to what is established in the PND 2010-2014 about biodiversity:

> *Regarding biodiversity, the PND in Chapter VI "Environmental sustainability and risk prevention", looked at the need to pursue actions to:*
>
> *a. Strengthen the protection and restoration of biodiversity and eco systemic services.*
>
> *b. Risk management for losing biodiversity and eco-systemic services.*
>
> *c. Strengthen sustainable use of biodiversity for competitiveness and economic and social growth.*

And what is established in the *Plan de Acción en Biodiversidad de la Cuenca del Orinoco - Colombia* (Action Plan in Biodiversity of Orinoco Watershed - Colombia) (Correa, Ruiz, & Arévalo, 2005).

> *"Vision: In 10 years, there will be greater awareness of biodiversity in the Orinoco and increased the processes of conservation and sustainable use; human groups are more aware of the biological and cultural wealth for the improvement of their living conditions".*

Finally, the REDD+ Project RIU-SM contributes to the purpose of "Technical and Scientific Institutional Capacity to Support Reduce Emissions from Deforestation and Degradation Projects (REDD) in Colombia" [11].

As established by the VCS standard about monitoring and reporting, the REDD+ Project RIU-SM carries out the monitoring plan (PDD, Section 4.3, page 265) and performs the corresponding record by monitoring the established parameters and variables (PDD, Section 4.2, page 247), particularly on the reduction of GHG emissions generated by deforestation in the Project Area and the Leakage Belt in the RIU-SM. A first report about the monitoring of results for 2013 & 2014-2015 was presented in 2016; a second report about the monitoring of results for 2016-2017, and now this third monitoring report is presented according to the results for 2018 & 2019.

It is necessary to highlight that in the country two important decrees were issued that specify measures on priorities of sustainable development that were previously stated.

- The **Decree 870 of 2017** issued by the *Ministerio de Ambiente y Desarrollo Sostenible - MADS* (Ministry of Environment and Sustainable Development) (MADS, 2017), "*por el cual se establece el Pago por Servicios Ambientales y otros incentivos a la conservación*", the recognition for the provision of environmental services is ratified and consolidated in its *whereas*, giving a special valuation of cultural and spiritual intangibles, and protecting the social interest, systems of sustainable food production and silvopastoralism, reforestation*, Zonas de Reserva Campesina - ZRC* (peasant reserve zones), indigenous territories and, in general, other forms of organization of the rural population and of the sustainable peasant economy.

  Likewise, the free self-determination of indigenous peoples to the concept of indigenous territoriality contemplated in Convention 169 of International Labour Organization - ILO is ratified, integrated into the block of constitutionality, with the purpose of safeguarding the cultural, administrative and spiritual autonomy of the peoples in relation to their territoriality. In this sense, the incentive of Payment for Environmental Services when dealing with the territories of indigenous peoples and communities, will give special consideration to the cultural and spiritual intangibles that indigenous peoples have interpreted in their own government functions, through the close relationship they have with the natural order and conditions of good living and full life of the indigenous peoples.

  And in its Article 3 mentions about the payment for environmental services in the indigenous territories, that the interpretation and application of this decree in indigenous territories of reservations, ancestral, possessed and/or traditionally used in relation to payment for environmental services, will be governed, in addition to what is established here, under the precepts of greater right, own right and law of origin, and of the environmental functions of the indigenous authorities;

[11] During 2002-2009 IDEAM, supported by the Gordon and Betty Moore Foundation, developed the project *"Technical and Scientific Institutional Capacity to Support Reduce Emissions from Deforestation and Degradation Projects (REDD) in Colombia"* with which the country was preparing to address the demands of REDD through historical knowledge of deforestation and the estimation of potential reserves of carbon stored in aboveground biomass in natural forests of Colombia.

as well as the principles of self-determination, autonomy, effective participation and the fundamental right to prior, free and informed consultation; to the identity, social, economic and cultural integrity, the rights over their lands, territories and resources, which imply the recognition of their ancestral territorial practices and their integral plans of life or their equivalents and the block of constitutionality.

The REDD+ Project RIU-SM complies with all the specifications of Decree 870 of 2017 and therefore contributes to this National purpose of developing payments for environmental services and likewise to all justifications and considerations related to sustainable development.

- The **Decree 926 of 2017** issued by the *Ministerio de Hacienda y Crédito Público* (Ministry of Finance and Public Credit) and the *Ministerio de Ambiente y Desarrollo Sostenible* (MADS) (Ministry of Environment and Sustainable Development) (Minhacienda, MADS, 2017), which regulates/establishes regarding the carbon tax and its non-causation for passive subjects who certify being carbon neutral. This decree allows to do effective the non-causation of the national carbon tax through reductions of GHG emissions coming of a GHG mitigation initiative developed in the national territory, such as the REDD+ Project RIU-SM.

  The REDD+ Project RIU-SM complies with all the requirements established in this Decree and, therefore, contributes to the development of these provisions that aim to achieve sustainable development priorities at the national level.

According with the above, many of the REDD+ Project RIU-SM Activities are precisely aimed at bringing development and benefits to indigenous communities, achievements directly related to the different national strategies for sustainable development, in accordance with national regulations.

Also, the REDD+ Project RIU-SM contributes to the goal known as Nationally Determined Contribution - NDC, that Colombia adopted as a part of the United Nations Framework Convention on Climate Change (UNFCCC), and which is contained in the "Paris Agreement". The country intends to achieve 20% less emissions than projected in the year 2030, according current trends. Thus, the total estimated emissions in 2030 (335 MtonCO_2-e) is expected to be reduced to 268 MtonCO_2-e (MADS, 2016).

2 SAFEGUARDS

2.1 No Net Harm

Safeguards "are policies and procedures to avoid social or environmental damages in the preparation and implementation of REDD+". The REDD+ Project RIU-SM does not affect the rights of indigenous peoples or the integrity of their territory, on the contrary, it provides benefits, as determined in the Planning of the "Safeguards for REDD+ in the RIU-SM" (Annex 3.3 of this Monitoring Report), which was defined within the institutional and legal framework of Colombia.

In the Strategic Alliance Agreement for the Protection, Conservation and Recovery of Natural Forests of the *Resguardo Indígena Unificado - Selva de Matavén*, signed between ACATISEMA and MEDIAMOS, clause 5 establishes ethnic and environmental safeguards.

These Safeguards refer to:

1. *Territory: as a reason for being of the physical and cultural existence of the Indigenous Reservation, since it is the fundamental guarantee to continue living as an indigenous people. In particular, the Integral Management Plan for the Reservation's Lands and Forests guarantees compliance with this aspect. In this sense, no entity that could intervene in the territory, acquires rights over the territory of the Unified Indigenous Reservation, making absolutely clear that the Plan does not imply commitments of sale or rent of any part of the territory of the Reservation, guaranteeing its integrity.*
2. *Autonomy: understood as the ability to make decisions about the territory, self-government and culture, in accordance with the ancestral practices of internal organization. The right to autonomy and self-determination of peoples is recognized by international law and in the Colombian National Constitution. It is made explicit that the Plan does not restrict the absolute freedom of the communities to access, transit and obtain the benefits of food, recreation, research and any other benefit that may derive from the protection, conservation and recovery of forests and other natural resources of its territory.*
3. *Culture: culture and identity as social, productive and spiritual practices that have been inherited from the elderly and nurtured in the relationship with other peoples, allows indigenous peoples to maintain and transmit their knowledge from generation to generation, and in this meaning, it allows them to continue being what they are: Indigenous Reservation.*
4. *Unity and "Minga": Unity is the set of territory, culture and autonomy. The "minga" is an expression of the strength and unity of the Indigenous Reservation.*
5. *Gender Equity: it is necessary that each and every one of the activities and actions to be developed in the Plan are based on gender equity, that is, on the possibility of applying measures that are not necessarily equal, but conducive to equality in terms of rights, benefits, obligations and opportunities between men and women.*
6. *Participation: a fundamental relationship to achieve the integration of all needs, with assertive responses adjusted to the reality that will consolidate the permanence of the Indigenous Reservation in the future, is the participation of each of its ethnic groups, its authorities and organizations: elderly, men, women, youth and children.*
7. *Environment and Biodiversity: it must be considered and act in favor of the protection of the environment, natural resources and all forms of life, as the existence of the Indigenous Reservation depends on the existence of the Selva Matavén.*"

In this way, under the Agreement, both ACATISEMA and MEDIAMOS defined the approach and type of actions for the maintenance of the life plan, worldview, cultural integrity, autonomy and dignity of the indigenous peoples that make up the *Selva de Matavén*.

In Annex 21 of PDD, the impacts to biodiversity are presented in two scenarios:

A. One that describes the problems that were estimated could continue to happen if the activities of the REDD+ RIU-SM Project are not carried out (negative impacts).

B. The other scenario describes the benefits (positive impacts) associated with the implementation of the REDD+ RIU-SM Project activities in the areas of flora, fauna, climate, air, landscape, soil and water.

Regarding native flora and fauna, it was estimated that the impact would be moderately to highly positive.

Regarding air, landscape, soil and water, it was estimated that the impact would be moderately positive.

In the same sense, measures to mitigate the nature of biodiversity in the Project scenario are described.

The conclusion obtained is that the net benefit of the Project on biodiversity is always positive, contrasting with the negative impact that would continue to occur in a scenario without Project, which are being minimized or avoided with the implementation of the Project activities.

With respect to socio-economic impacts, in Annex 22 of PDD, the vital importance of participation in the Project RIU-SM of the members of the indigenous communities that inhabit the Selva de Matavén is highlighted. During the years 2016 and 2017, Project activities have been continued that encourage the active participation of different actors of the indigenous communities, as described in Section 4 of that Annex. In this aspect, it has strived to continue integrating women, youth and the elderly in the development of the REDD+ Project.

In several meetings, as the Zonal Assemblies (November, 2017 – Annexes 1.2 to 1.6 of this Monitoring Report) and meetings of the *Cabildos* Board, Coordinator Committee and Zonal Coordinators, in which the future developments and plans of ACATISEMA were evaluated (for example, the investment plan 2018-2019 – Annexes 1.9a, and 1.9b of this Monitoring Report), the meeting of Joint Commission (Annexes 1.10, 1.11, 1.13, 1.15, 1.19, and 1.21 of this Monitoring Report), the meeting of *Cabildos* Board, Coordinator Committee and Zonal Coordinators (Annexes 1.12, 1.16, 1.17, 1.18, and 1.20 of this Monitoring Report), and the Zonal Meetings to socialization of budget execution according to the activities of the REDD+ Project RIU-SM (Annexes 1.22 to 1.26 of this Monitoring Report), no negative impact was reported about different aspects that could be related to the execution of the Project.

On the other hand, with respect to the so-called “ENVIRONMENTAL AND SOCIAL SAFEGUARDS OF THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC), following are the Cancun safeguards:

“*When undertaking REDD+ activities, the following safeguards should be promoted and supported:*

- *That actions complement or are consistent with the objectives of national forest programs and relevant international conventions and agreements;*
- *National forest governance structures are transparent and effective, taking into account national legislation and sovereignty;*
- *Respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the United Nations General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples;*
- *The full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities;*
- *That actions are consistent with the conservation of natural forests and biological diversity, ensuring that [REDD+] actions are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits;*
- *Actions to address the risks of reversals;*
- *Actions to reduce displacement of emissions."*

Next, aspects related to compliance with these safeguards are developed:

Consistency of the REDD+ Project RIU-SM with the objectives of national forest programs and relevant international conventions and agreements

The REDD+ mechanism corresponds to the policy of the United Nations Framework Convention on Climate Change - UNFCCC (Kyoto Protocol, Paris Agreement, among others). About this, Colombia has formalized its approval through different laws and regulations: CONPES Document 3700 "*Estrategia Institucional para la articulación de políticas y acciones en materia de cambio climático en Colombia*" (Institutional Strategy for Policy Coordination and Action on Climate Change in Colombia) (CONPES, 2011); Law 1450, 2011 *Plan Nacional de Desarrollo - PND 2010-2014* (Development National Plan) (Congreso de Colombia, 2011); *Plan Nacional de Adaptación al Cambio Climático – PNACC* (National Plan for Adaptation to Climate Change) (DNP, 2011); *Estrategia Colombiana de Desarrollo Bajo en Carbono* – ECDBC (Colombian Strategy Low Carbon Development) (MADS, 2011); *Estrategia Integral de Control a la Deforestación y Gestión de los Bosques* – EICDGB (Comprehensive Strategy of Deforestation Control and Forest Management) before ENREDD+; Decree-Law 4819, 2010 *Fondo de Adaptación* (Adaptation Fund) (Minhacienda, 2010); Law 1753, 2015 *Plan Nacional de Desarrollo PND 2014-2018* (Congreso de la República, 2015); *Plan de Acción en Biodiversidad de la Cuenca del Orinoco - Colombia* (Action Plan in Biodiversity of Orinoco Watershed - Colombia) (Correa, Ruiz, & Arévalo, 2005); Law 1955, 2019 *Plan Nacional de Desarrollo - PND 2018-2022*.

A description of national forest programs and the legislation through which Colombia has formalized and promoted initiatives to protect forests and natural resources and reduce GHG emissions is presented in Section 1.11 “Sustainable Development” of this Monitoring Report.

In this way, the REDD+ Project RIU-SM technically and legally supports its coherence and contribution to the national climate change strategies and the fulfillment of safeguards, an essential characteristic that guarantees the autonomy and independence of indigenous people.

Transparent and effective national forest governance structures, taking into account national legislation and sovereignty

As noted in the previous point, and as also indicated, for example, by MADS, the country has been developing efforts to integrate forest governance into the changes that are being experienced:

> “… *By the strategic importance that forests represent for the country today, in a context of modernization and promotion of productive sectors, climate change, reorganization of the territory and the eventual signing of the peace process agreements, it is intended to integrate different supplies of forest governance that have been gestating and others that are being developed in a way so that they are included in the Integral and Differential National Forest Policy, validating them in a way that they responds to the country's challenges in the current context and in future decades under the concept of sustainable development*”[12],.

In the same affair, MADS refers actions related to this matter:

- “*Proyecto de Consolidación de la Gobernanza Forestal en Colombia* – PCGFC” (Project of Consolidation of the Forest Governance in Colombia), which responds to the purpose of increasing and accompanying the implementation of Forest Governance instruments by the country's environmental authorities, an indicator that was incorporated into the Action Plan of Forests of the *Dirección de Bosques, Biodiversidad y Servicios Ecosistémicos* (Directorate of Forests, Biodiversity and Ecosystem Services) of MADS. The PCGFC operates with a regional focus and seeks to unify procedures and work schemes between the different environmental and support authorities, so that firm steps are taken towards the modernization of the forest administration through the appropriation and use of the eleven Forest Governance instruments.

  One of the expected results of this intervention is the improvement of forest governance by the Regional Environmental Authorities for the increment of access of populations, in the territory of their jurisdiction, to sustainable alternative production activities that comply with the current legal framework.

[12] http://www.minambiente.gov.co/index.php/bosques-biodiversidad-y-servicios-ecosistematicos/gobernanza-forestal.

On the other hand, and although this second safeguard makes specific reference at the national level, in the Resguardo Indígena Unificado – Selva de Matavén a work is being done to improve the Governance component of ACATISEMA, which has effects on the forest component of the territory.

Precisely, Activity A1.3 of the REDD+ Project RIU-SM "Design and establish a system of governance for development and sustainability of ACATISEMA Association" seeks to develop this improvement in the Governance of the Association, which strengthens the tools of the indigenous people of the RIU-SM to properly, transparently and effectively administer and manage the resources of their territory, complying with, of course, the central objective that responds to its own uses and customs: "*To strive for the integral development, the cultural and social preservation of the indigenous communities settled in the Selva de Matavén, as well as the consolidation of the territory, the own government of the associates, the* ***defense, conservation and preservation of the environment and the biodiversity of the Selva de Matavén***"(Article 5, ACATISEMA Statutes, Annex 2.1.2 of PDD).

Promotion of respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the United Nations General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples

In the Strategic Alliance Agreement signed between ACATISEMA and MEDIAMOS, the intention and the duty to respect the territory, autonomy and culture of indigenous peoples have been made explicit. So, this is how in the development of the REDD+ Project RIU-SM the respect for the knowledge and rights of the indigenous people of the Reserve is promoted and an important resource of economic compensation are allocated to strengthen and disseminate them, in events carried out autonomously by the leaders of the RIU-SM.

In addition, ACATISEMA, for being the entity that had the initiative to carry out this Project, for being one of the proponents of it and for carrying out the execution of the Activities within the territory of the RIU-SM, naturally has all the powers to ensure for the fulfillment of the Rights of Indigenous Peoples enshrined in the Declaration of the United Nations, since it is the indigenous themselves who are developing the Project with full autonomy and monitoring the application of their Statutes.

Respect for the indigenous peoples of the RIU-SM and all related aspects are also verified by the auditing entities (VVBs), who collect information on the field visits that they carry out in the territory of the Reserve and can observe how is the relationship of the communities with the Project.

Full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities

The entire REDD+ Project RIU-SM, from its conception until now that is in full implementation of its Activities and Tasks, has been framed by a process of consultation with the indigenous peoples of the RIU-SM. In Annex 1 of PDD all the information about the process of socialization, training and consultation that has been advanced in the stages of feasibility, design, formulation and

implementation of REDD+ Project RIU-SM will find. There are presented all the minutes of meetings that have been held since 2102, where the permanent, full, active and effective participation of all indigenous communities and their leaders in each of the steps that have been taken is evident. Also, in the PDD, Section 6 "*Stakeholder comments*" describes the characteristics of the stakeholders, their comments regarding the REDD+ Project RIU-SM (presented during local consultations) and legal opinions regarding execution.

Actions consistent with the conservation of natural forests and biological diversity, ensuring that [REDD+] actions are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits

The REDD+ Project RIU-SM makes clear in its objectives that the intention is to conserve the natural forests and biological diversity of the Indigenous Reserve:

> "*Development Objective: Contribute to sustainable environmental development of the Colombian Orinoco region through conservation and restoration of forest habitats and their eco-systemic services as a factor for the sustainability of the territory, local communities, climate and biodiversity.*
>
> *Specific Objective: Develop a participative process to achieve the establishment of an integrated management system of forests and lands of the RIU-SM, to ensure its sustainability and mitigate threats to their conservation.*"

The REDD+ Project RIU-SM does not promote, no way, the conversion of natural forests into other land uses, but, on the contrary, it encourages the protection and conservation of these forests and their environmental services, which has allowed to enhance social and environmental benefits for indigenous communities and their territory. This spirit of conservation of the natural resources of the RIU-SM is reflected in how the Project Activities are being achieved.

Actions to address the risks of reversals, and Actions to reduce displacement of emissions

The methodology applied by the REDD+ Project RIU-SM, the "VCS VM0007 REDD Methodology Framework (REDD-MF)", establishes the "VCS AFOLU Non-Permanence Risk Tool", which allows make an "analysis of the risk of a potential loss in the carbon inventory "(VCS Definitions), in the event that the Project presents negative results in the net benefit of reducing GHG emissions (taking into account the emissions, removals and leaks of the project), if reduced carbon emissions were reversed due to loss of biomass. All aspects of this tool seek to determine the degree of risk if the Project, maybe, does not achieve its goals.

The assessment of the risk of non-permanence is subject to periodic considerations, the review of the verification reports and the evaluation of the Project's behavior, all complying with the guidelines of the VCS Program. This is how the "VCS AFOLU Non-Permanence Risk Tool" determines, for each Monitoring Period, a quantity of GHG emissions reduced by the Project that are deposited in a "buffer"

account, that is, they are VCUs that the Project cannot issue immediately and that remain as a support for the future. The amount of emissions for "buffer" is defined by the risk rating of the VCS AFOLU Non-Permanence Risk Tool. For the REDD+ Project RIU-SM, some information about the analysis of risks of reversal and the amount of reduced emissions for "buffer" have been defined as indicated in the Section 3.1.3 "Monitoring of leakage and non-permanence risk factors / CONTROL AND MONITORING OF NON-PERMANENCE RISK FACTORS" of this Monitoring Report, and in the Annex 5.1 of this Monitoring Report the "VCS AFOLU Non-Permanence Risk Report" is presented, with all details about this issue.

Anyway, in the following table the amount of reduced emissions for "buffer" in each vintage are presented.

Table 5. Distribution of the amount of reduced GHG emissions for Buffer for each vintage of the REDD+ Project RIU-SM

Vintage	Reduced Emissions (*t CO_2e*)	% of risk	Reduced Emissions for Buffer	Accumulated Reduced Emissions for Buffer
2013	4,468,852	17%	853,536	853,536
2014-2015	8,769,222	17%	1,671,649	2,525,185
2016-2017	7,584,460	14%	1,179,685	3,704,870
2018	3,578,335	10%	402,394	4,107,264
2019	5,538,798	10%	616,924	4,724,188

In risk class 1 (internal risk factors related to project management) in its category h), the requirement to prepare and execute an Adaptive Management Plan is specified. Thus, in the PDD, in the Section 4.3.3 "Mitigation Measures and Monitoring actions" (page 280), an evaluation of the risk associated with each of the assumptions for each component of the Project (presented in the Matrix of Logical Structure) is presented, and with each of the risk factors of the non-permanence analysis, together with the mitigation measures (with the required documentation and evidence) and the appropriate monitoring actions for each case, also indicating with what specific Project Activity is related. In the Section 3.1.3 "Monitoring of leakage and non-permanence risk factors / Adaptive Management Plan" and Section 4.3.2 "Monitoring and documentation of mitigation measures. Adaptive Management Plan" of this Monitoring Report, more details on this subject are presented.

Regarding the **displacement of emissions**, the methodology applied by the REDD+ Project RIU-SM also considers an aspect called "leakage", which determines "*net changes in anthropogenic emissions by GHG sources that occur outside the project limit, but are attributable to the project*" (VCS Definitions), using the module VCS VMD0010 Estimation of emissions from activity shifting for avoided unplanned deforestation (LK-ASU). This module contains all the indications to manage the leaks that may occur due to the execution of the Project Activities. In the PDD, Section 3.3 "Leakage emissions" presents information about how the Project has calculated the quantification of leakage emissions.

Annex 12 of PDD presents all the documentation about the technical management that the REDD+ Project RIU-SM makes of leaks in its implementation and the Section 3.1.3 “Monitoring of leakage and non-permanence risk factors” of this Monitoring Report presents how this aspect has been handled during 2018 & 2019.

The monitoring actions corresponding to the mitigation measures that are applied and the Tasks of the Project Activities executed containing those actions are presented for each verification process. In the Section 3.1.3 “Monitoring of leakage and non-permanence risk factors”, of this Monitoring Report, explains what Project actions are aimed at mitigating the risks of reversal and displacement of emissions.

2.2 Local Stakeholder Consultation

The key local actors are the communities of the 6 indigenous ethnicities of the RIU-SM (see Table 3 of this Monitoring Report). The REDD+ Project RIU-SM is located within the territory of the RIU-SM. These 6 indigenous ethnicities are organized and associated in the "*Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén* – ACATISEMA", which has the organizational structure presented through the illustration 4 of this Monitoring Report. This structure is formally and legally recognized by the Colombian state (see Annex 2.1.1 of PDD: Resolution 0177 of December, 2002 of *Ministerio del Interior* - Ministry of Interior) and has its own Statutes (see Annex 2.1.2 of PDD) that defines its procedures to involve all indigenous peoples and their communities, their ways and regulations for consultation through their established organizational and management bodies (General Assembly, 5 Zonal Meetings, *Cabildos* Board and the Coordinator Committee with its Directive Board) and the new bodies created for the design and execution of the REDD+ Project RIU-SM (Joint Commission, Project Co-director and Zonal Coordinators). This structure and its statutory regulations for its operation have been respected and applied by every local communities of the RIU-SM; since the constitution of the Association (2002) until now, 18 years of operation and compliance.

Precisely, Project Activity A1.3 "Design and establish a system of governance for development and sustainability of ACATISEMA Association" seeks to strengthen the governance of ACATISEMA. Prior to the validation and first verification (2013 & 2014-2015) through the structure of ACATISEMA, the consultation process with the local communities about the REDD+ Project RIU-SM was carried out, taking into account that ACATISEMA participated directly in the design of it, as well as, in its divulgation and socialization. The convocations to meetings have a regulation in terms of times and formats, previously informing the objective, themes, sites and dates, taking into account the great extension and the complexity of the territory.

The procedures for documenting the results of this consultation process are those established in the statutes, that is, the preparation of minutes (subject to collective reading and approval and duly signed by the participants), photographic records; in addition, in these minutes the interventions, comments, proposals, discussions and decisions of the participants are recorded by writing. The Zonal Meetings, the General Assembly, the *Cabildos* Board, and the Coordinator Committee have their established procedures for the formation of Directive Boards and functioning (ACATISEMA Statutes, Annex 2.1.2

of PDD). In the case of the REDD+ Project RIU-SM, this process and its results were made explicit in the PDD (Annex 1 of PDD Consultation process).

It should be mentioned that the *Tribunal Superior del Distrito Judicial de Villavicencio – Sala Laboral* (Superior Tribunal of the Judicial District of Villavicencio - Labor Chamber) and the *Corte Suprema de Justicia – Sala de Casación Laboral* (Supreme Court of Justice - Labor Cassation Chamber), ruled about the legal validity of the consultation process that was carried out with the communities, as well as about the benefits obtained the communities with the execution of the Project (see PDD, Section 6.4 "Legal Rulings" - page 345 - and Annexes 1.11.5, 1.11.7, 1.11.8, and 1.11.10 of PDD).

In relation to Project capacity to execute its Activities in 2018 & 2019, in the Zonal Meetings held in November, 2017, the most urgent needs were defined, that would be subject to immediate solution through the definition and approval of the investment plan, which is executed with the income from sales of VCUs, issued from the verificated 2013 & 2014-2015, applying Decree 926 of 2017 (commented in Section 1.11 of this Monitoring Report), and that is specified in the budgets approved for 2018 & 2019. In the same way, the income obtained by the verification of Project results for 2016 and 2017 are the basis for the execution of the Project Activities in the years 2020 and 2021. The continuity of the Project was also decided for 30 more years, according to clause 12, paragraph 2, of Strategic Alliance Agreement ACATISEMA-MEDIAMOS (see Annex 1.1 of this Monitoring Report, page 8).

Everything was consulted and defined based on the organizational structure of ACATISEMA (community proposals in Annexes 1.1 to 1.6 of this Monitoring Report, and approved budget 2018 & 2019 for REDD+ Project RIU-SM's activities in Annexes 1.7 and 1.8 of this Monitoring Report).

As an aspect of special relevance of the current Monitorign Period subject to verification (2018 & 2019), are the several meetings covering the entire Unified Indigenous Reservation (Annexes 1.10 to 1.26 and Annexes 4.2.1 of this Monitoring Report). In these meetings the results that have been obtained by the Project were analyzed, indigenous people have presented their favorable opinion about the benefits they are receiving and the improvements they propose to budget execution, and in which the endorsements were ratified in all 5 zones to continue with Project Activities.

In this way, throughout processes of design and implementation of the Project, since June 2012 until this Monitoring Period, even the first months of the year 2020, direct communication has been maintained with local communities about the progress, difficulties, solutions, reports, and decisions regarding the Project (see Annex 1 of PDD). In particular, for the current verification for 2018 & 2019, consultation, decisions of the communities through ACATISEMA, the results of Project implementation, including the results of monitoring processes, are socialized with the indigenous authorities of the RIU-SM, as evidenced in the multiple meetings and workshops held with different community and ACATISEMA’s leaders (Annexes 1, 4.2.1, 4.5.5, and 4.5.6 of this Monitoring Report). In fact, Project Activity A1.2 consists of implementing actions whose purpose is to improve the communication mechanisms among the indigenous peoples of the RIU-SM, which is used to disseminate the aspects and results of the Project's progress and any changes related to risks, costs

and benefits, such as the effects of application of national regulations (e.g. Resolution 1447/2018 of MADS), the budgetary execution, and the improvements in the quality of life that have been giving.

Laws and regulations covering workers' right in Colombia remain stable.

Finally, it is important to note that the VCS Program verification is a process that is prepared with the indigenous authorities and the site visit by validation/verification body is is attended by the indigenous communities of the RIU-SM, with whom the auditors have been able to meet (see Annex 4.7.1.2 of this Monitoring Report: Validation & Verification Report 2013 & 2014-2015 issued by ICONTEC, and Annex 4.7.2.2 of this Monitoring Report: Verification Report 2016-2017 2016-2017 issued by EPIC).

2.3 AFOLU-Specific Safeguards

As it was mentioned in Section *2.1 No Net Harm* of this Monitoring Report, no negative impact was reported about different aspects that could be related to the Project implementation (PDD, Section 5 Environmental and socio-economic impact).

In Section "*3.1.3 Monitoring of leakage and non-permanence risk factors*" of this Monitoring Report, Mitigation measures for any risk that has been identified in the Project implementation (in technical and community affairs) are monitored, documented for corrections (if it is necessary), and incorporating them for Project decisions. Each Project Activity and its Tasks involving the monitoring, evaluation of results, systematization of these mitigation measures and, finally, its divulgation and socialization. These aspects constitute the Adaptive Management Plan of Project (see Table 26. Monitoring actions for Mitigation Measures according to identified Risks from Adaptive Management Plan", page 165 of this Monitoring Report, and Section 4.3.2 "Monitoring and documentation of mitigation measures. Adaptive Management Plan", page 210 of this Monitoring Report).

Property and land use rights of the indigenous people of the *Resguardo Indígena Unificado – Selva de Matavén* remain the same, without change (as recorded in the PDD, *Section 1.12 Ownership and other programs / 1.12.1 Right of use*, page 120). These rights have not been affected in any way by the REDD+ RIU-SM Project, as it is one of the main precepts of the Project to respect the rights of the indigenous peoples and authorities of the RIU-SM about their territory and culture (as determined in the Strategic Alliance Agreement, clause 5 about ethnic and environmental safeguards – PDD, Annex 2.1.2).

REDD+ Project RIU-SM had not caused damages, because it does not is implemented within these purposes, considering that the Project is an inicitive of communities of the RIU-SM and the indigenous people do not make anything that afect themselves. Even, Project Activity A1.1 is giving positive results in the control and surveillance of the territory (page 70 of this Monitoring Report), Project Activity A1.3 that contributes to strengthening of governance in the RIU-SM and the protection of autonomy of indigenous people (page 90 of this Monitoring Report), and Project Activities A2.1 and A2.3 through which processes of land use for food production and development of productive projects are improved (pages 103 and 126 of this Monitoring Report).

As it has been mentioned above, this topic has been studied by the *Tribunal Superior del Distrito Judicial de Villavicencio – Sala Laboral* (Superior Tribunal of the Judicial District of Villavicencio - Labor Chamber) and the *Corte Suprema de Justicia – Sala de Casación Laboral* (Supreme Court of Justice - Labor Cassation Chamber), ruled about the legal validity of the consultation process that was carried out with the communities, as well as about the benefits that the communities obtain with Project execution (see PDD, Section 6.4 "Legal Rulings" - page 345 - and Annexes 1.11.5, 1.11.7, 1.11.8, and 1.11.10 of PDD).

On the other hand, considering that the communities of the RIU-SM (as local stakeholders), represented by ACATISEMA, are part of the Project proponents, they are able to managment and resolve their own conflicts, as it was considered in the Strategic Alliance Agreement, clause 8 about special obligations of ACATISEMA, numeral 2 "*Autonomously resolve difficulties or conflicts of an internal and social nature that arise and that affect or hinder the execution of the normal development of the Project*", always under the fulfillment of the procedures established its own Statutes (PDD, Annex 2.1.2: Articles 29 and 37). In several meetings, the indigenous authorities have had the opportunity to socialize, discuss and resolve their internal affairs. Even, Project Activity A1.2 is giving positive results in terms of improving the mechanisms for communication and transportation in the RIU-SM (page 79 of this Monitoring Report).

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

3.1.1 Operation of the Project Activities during this Monitoring Period

The REDD+ Project RIU-SM implementation is based on the Matrix of Logic Structure (MLS, PDD Section 1.8, page 45) which presents Objectives and Products, with indicators, means of verification and assumptions associated with the Project components. Each Product is disaggregated in Activities and Tasks that are detailed in PDD (pages 52-58). Also, the Objectives Tree (Illustration 9 of PDD, page 44) links Objectives, Products, Activities and Tasks (from the general to the particular and specific).

Based on this Logical Structure, seven Yearly Plans of Operation (YPOs) have been defined and executed to date (2013, 2014, 2015, 2016, 2017, 2018, 2019) and the eighth YPO of year 2020 is in execution.

Each of the actions planned for YPO is systematized and synthesized in a table titled "*Annual Program by Activities*" that relates Products, Activities, Tasks, indicators, assumptions and monitoring/reporting (Section 1.2 of YPOs for 2018 & 2019 - Annexes 2.1 and 2.3 of this Monitoring Report, respectively). This table has associated the schedule and the budget of the respective year (Sections 1.3 and 2 of YPOs for 2018 & 2019).

For each executed YPO, the corresponding progress reports are available. These reports contain a table titled "*Progress in implementation of the Activities, Tasks and Outputs achievement*" that informs and relates systematically and synthetically the Products, Activities, and Tasks developed, Outputs achieved, evidences, start date, date of completion, indicators, assumptions and monitoring and reporting (see Section 1.1 of Project Progress Reports for 2018 & 2019 - Annexes 2.2 and 2.4 of this Monitoring Report, respectively). Also, the execution of the corresponding budget is reported (Section 3 of Project Progress Reports for 2018 & 2019).

In this way, there are seven YPOs with their corresponding progress reports for the years 2013, 2014, 2015, 2016, 2017, 2018, and 2019.

The YPOs, and their progress reports, of years 2013, 2014, and 2015 were presented for the validation and first verification process to ICONTEC (as a Validation/Verification Body). These documents include a summary of the actions developed by Project, according to the approach and methodology explained above, which are better specified in the Monitoring Report, within the PDD (Section 1.1.2 "Implementation Status of the Project", pages 20-22; and Section 1.1.3 "Developed actions", page 21). The Verification process for 2013 & 2014-2015 began on 10/30/2015, obtaining from ICONTEC the "VALIDATION & VERIFICATION REPORT", dated 03/06/2017 (version 1.3). Also, the ICONTEC issued on 06/12/2016 the "VALIDATION DEED OF REPRESENTATION" and the "VERIFICATION DEED OF REPRESENTATION".

The YPOs, and their progress reports, of years 2016 and 2017 were presented for the second verification process to EPIC Sustainability Services Pvt. Ltd (as a Validation/Verification Body), as a part of the Monitoring Report 2016-2017. This verification process began on 04/05/2018, obtaining the "VERIFICATION REPORT" from EPIC, dated 19/11/2018 (version 1.1). EPIC also issued on 20/11/2018 the "VERIFICATION DEED OF REPRESENTATION".

Illustration 14. Field work with EPIC auditor team, September 2018

EPIC Sustainability Services Pvt. Ltd, in the Section 1 of VERIFICATION REPORT (Annex 4.7.2.2 of this Monitoring Report), "Project Implementation Status" (page 10), expressed: "*The verification based on the onsite observation, found that there are no material discrepancies between the project*

implementation and the project description. The verification team checked the status of monitoring plan the completeness of monitoring system and found no discrepancies between the actual monitoring system and the monitoring plan set in the validated project description. The project has not applied for under any other GHG scheme and there will not be any double counting. The verification team was able to conclude the project has been implemented as described in the validated project description conform to the eligibility criteria".

Now, for this Monitoring Period regarding the Implementation Status of Project Activities, the same approach and methodology explained above is followed. Then the YPOs for 2018 & 2019 (Annexes 2.1 and 2.3 of this Monitoring Report, respectively) and its progress reports (Annexes 2.2 and 2.4 of this Monitoring Report, respectively) are presented.

Next Table presents the Tasks executed during 2018 & 2019 and, therefore, the execution of Activities, which contribute to the achievement of the Products and the Objectives of the Project. Special comments are made in which events or situations of importance for the development of the Project and its current implementation status are highlighted.

Table 6. Products, Activities and Tasks executed during this Monitoring Period 2018 & 2019

Products	Activities	Executed tasks
Product 1: Measures to reduce the vulnerability of the RIU-SM generated by external factors, designed and implemented.	**Activity A1.1**: Monitor and control the conservation and recovery of forests and lands of the RIU-SM.	**Task T1.1.1**: Review and adjustment of the design and planning of the surveillance and control of the forests and lands of the RIU-SM to avoid deforestation and degradation.
		Task T1.1.2: Execution of the established measures to implement the surveillance and control routes in the RIU-SM territory.
		Task T1.1.3: Review permanently the early warnings issued by the IDEAM on areas susceptible to forest fires within RIU-SM.
		Task T1.1.4: Supervision of the execution of the established measures to implement the surveillance and control routes of the territory and definition of contingency measures, if necessary, and reports.
		Task T1.1.5: Systematization and divulgation of results about surveillance and control of territory and early warnings about forest fires within RIU-SM.
	Activity A1.2: Develop and implement a communication and information system in the RIU-SM.	**Task T1.2.1**: Review and adjustment of design and planning of communication, information and transport systems.
		Task T1.2.2: Execution of the established measures to implement the communication system.
		Task T1.2.3: Execution of the established measures to implement the information system.
		Task T1.2.4: Execution of the established measures to implement the transport system.

Products	Activities	Executed tasks
		Task T1.2.5: Supervision of the execution of the established measures to implement the communication, information, and transport systems, definition of contingency measures, if it is necessary, and report of informs.
		Task T1.2.6: Systematization and divulgation of results about the implementation of the communication, information, and transport systems.
	Activity A1.3: Design and establish a system of governance for development and sustainability of ACATISEMA Association.	**Task T1.3.1**: Management special affairs: military situation, service of graduates, socialization of Project, alliances, census, woman in coordinator board, government system, indigenous jurisdiction, oversight, exchange with *Consejo Regional Indígena del Cauca* -CRIC (Regional Indigenous Council of Cauca)-, native culture, pastors.
		Task T1.3.2: Management of the normative and regulatory aspects of ACATISEMA.
		Task T1.3.3: Support to review of Life Plans in relation to the characteristics of the REDD+ Project RIU-SM.
		Task T1.3.4: Management of the boundaries.
		Task T1.3.5.1: Design, planning, and execution of the measures related to ACATISEMA headquarters.
		Task T1.3.5.2: Supervision of the execution of the established measures related to ACATISEMA headquarters.
		Task T1.3.6.1: Design and planning of the measures related to remuneration of authorities, indigenous guard, and Family Agrifood Production Units System - FAPUS activities.
		Task T1.3.6.2: Execution of the established measures related to remuneration of authorities, indigenous guard, and FAPUS activities.
		Task T1.3.6.3: Supervision of the execution of the established measures related to remuneration of authorities, indigenous guard, and FAPUS activities.
		Task T1.3.7.1: Design and planning of the measures to provide economic support to students.
		Task T1.3.7.2: Supervision of the execution of the established measures to provide economic support to students.
		Task T1.3.8.1: Design and planning of the measures to offer transport services in RIU-SM.
		Task T1.3.8.2: Supervision of the execution of the established measures to offer transport services in RIU-SM.
		Task T1.3.9: Perform internal financial audit.

Products	Activities	Executed tasks
Product 2: Sustainable production system implemented.	**Activity A2.1**: Establish and develop a Family Agri-food Production Units System - FAPUS.	**Task T2.1.1**: Review and adjustment of the design and planning of the Family Agrifood Production Units System (FAPUS) (endowment, crops, minor species, silvopastoral system, orchards, pisciculture, *plátano*, cassava).
		Task T2.1.2: Execution of the established measures to develop the FAPUS.
		Task T2.1.3: Supervision of the execution of the established measures to develop the FAPUS.
		Task T2.1.4: Systematization and divulgation of results about the implementation of the FAPUS.
		Task T2.1.5: Design and implementation of the indigenous self-census to update the social and economic characterization of the RIU-SM population.
	Activity A2.2: Design and develop a training and education program plan for the administration and management of natural resources RIU-SM.	**Task T2.2.1**: Management of special educational aspects.
		Task T2.2.2: Management to provide libraries and educational endowment.
		Task T2.2.3: Management to build / remodeling of schools.
		Task T2.2.4.1: Design and planning of the measures to develop training programs.
		Task T2.2.4.2: Execution of the established measures to develop training programs.
		Task T2.2.4.3: Supervision of the execution of the established measures to develop training programs.
		Task T2.2.4.4: Systematization and divulgation of management to develop training programs.
	Activity A2.3: Manage resources for project design and establishment of production chains.	**Task T2.3.1.1**: Design and planning of the measures related to development of productive projects.
		Task T2.3.1.2: Execution of the established measures related to development of productive projects.
		Task T2.3.1.3: Supervision of the execution of the established measures related to development of productive projects.
		Task T2.3.1.4: Systematization and divulgation of results about the management to develop productive projects.
		Task T2.3.2.1: Design and planning of the measures related to development of commercialization and cooperativism projects.
		Task T2.3.2.2: Execution of the established measures related to development of commercialization and cooperativism projects.
		Task T2.3.2.3: Execution of the established measures related to development of commercialization and cooperativism projects.

Products	Activities	Executed tasks
		Task T2.3.2.4: Systematization and divulgation of results about the management to develop commercialization and cooperativism projects.
Product 3: A mechanism for valuation and compensation for environmental services generated in the RIU-SM, validated and verified.	**Activity A3.1**: Validate a REDD+ Project with international standards.	**Task T3.1.1**: Review and adjustment of the design of the REDD+ Project RIU-SM fulfilling with international standards. *Task already executed in previous years.*
		Task T3.1.2: Implementation of required adjustments according to review of the design of the REDD+ Project RIU-SM (baseline, boundaries, stocks of aboveground and belowground carbon, GIS, calculations, quantity to reduced emissions, etc.). *Task already executed in previous years.*
		Task T3.1.3: Execution of validation process according to review and adjustment of the design of the REDD+ Project RIU-SM. *Task already executed in previous years.*
	Activity A3.2: Verify the Project and to registry the units of forest compensation for avoided deforestation.	**Task T3.2.1.1**: Planning of verification process of the REDD+ Project RIU-SM.
		Task T3.2.1.2: Execution of verification process of the REDD+ Project RIU-SM.
		Task T3.2.1.3: Systematization and divulgation of results about the verification process of the REDD+ Project.
		Task T3.2.2.1: Commercialization (planning, execution, supervision, systematization, divulgation) of carbon credits issued by REDD+ Project RIU-SM, according to opportunities and conditions of market and customer requirements.

In general, the Project Activities are carried out constantly, each year, with the exception of Activity A3.1, which refers to validation (which was executed in 2016 and part in 2017) and Activity A3.2, which refers to verification (which has been executed annually in some cases and biennially in other cases); what varies is the intensity of the execution of the Tasks, according to the time and the state of the Project. Therefore, it is important to examine compliance, adjustments and corrections of Tasks, when required, and their progress and contribution in terms of Products and Objectives, based on the indicators presented in the Matrix of Logical Structure (MLS). The evaluation of the execution is done based on this last table, to understand the achievement of the Objectives and Products of the Project and, therefore, to determine the effectiveness of the budget execution.

To consult details of the planning, execution, compliance, expected outputs, evidences, dates, indicators, assumptions and actions for monitoring and reporting of the Tasks of Activities in 2018 & 2019, see Section 1.2 "*Annual Program by Activities*" of the YPOs 2018 & 2019 (Annexes 2.1 and 2.3 of this Monitoring Report) and its corresponding Project Progress Reports 2018 & 2019 (Annex 2.2 and 2.4 of this Monitoring Report), Section 1.1 "*Progress in implementation of the Activities, Tasks and Outputs achievement*".

ACATISEMA Reserves

In addition to the Project Activities, other actions are also carried out to provide benefits and meet particular needs in the indigenous communities of the RIU-SM, which are called ACATISEMA Reserves:

RA1: Program of health care.

RA2: Program of drinking water and basic sanitation.

RA3: Program of housing construction and improvement.

RA4: Program of attention to special population.

RA5: Center of Indigenous Environmental Thought of the *Selva Matavén*.

RA6: Aspects of domestic calamity.

As stated above, this budget item and its execution is freely determined by ACATISEMA. The budget of these aspects is determined and executed also by ACATISEMA.

Development of Project Activities

The following are the results, indicators and benefits generated by the implementation of the Project Activities in 2018 & 2019, discriminated by Products, Activities and Tasks (as it was presented in the previous table), identifying the specific results and achievements of each one. Special comments are also made in which the events or situations of importance for the development of the Project and its current implementation status are highlighted. This point is essential to understand and evaluate the projection and execution of the budget for 2018 & 2019.

PRODUCT 1: Measures to reduce the vulnerability of the RIU-SM generated by external factors, designed and implemented.

- **ACTIVITY A1.1**: Monitor and control the conservation and recovery of forests and lands of the RIU-SM

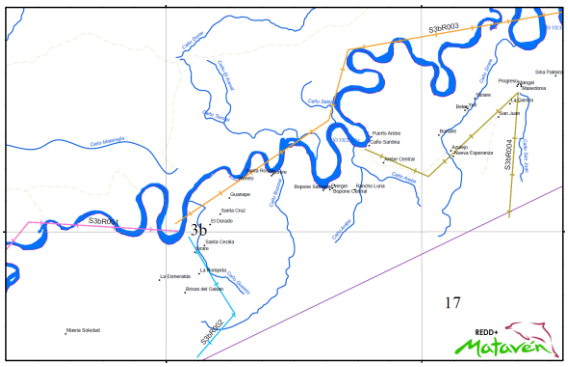
  This Activity constitutes an important axis of the Project and it is, essentially, an activity of conservation and sustainable management of the land, forests and other natural resources of the territory, protecting these resources from different threats, such as illegal logging of trees, the presence of illegal miners, the exploitation of flora and fauna, among others, avoiding deforestation in all sectors of the RIU-SM. This Activity is achieved by fulfilling the following tasks:

Task T1.1.1: Review and adjustment of the design and planning of the surveillance and control of the forests and lands of the RIU-SM to avoid deforestation and degradation.

Updated documentary tools with which the Project seeks to facilitate the surveillance and control of the territory that the indigenous guard performs has been made. These tools correspond to:

- Template for the description of events or presence of stranger individuals that may occur in the territory and that cause effects on the resources of the RIU-SM. In this template they can register: moment, place, identified affectation, corrective action executed and responsible (Annex 4.1.1 of this Monitoring Report).
- Maps with 37 surveillance routes that the indigenous guard permanently travels in the compliance of its work, and listed with the description of these routes (Annex 4.1.2 of this Monitoring Report).
- Document with Regulation of the indigenous guard. With this seeks to regulate the structure and responsibilities of this surveillance and control body (Annex 4.1.3 of this Monitoring Report).

Illustration 15. Material for indigenous guard work Illustration 16. An updated map of routes



Additionally, an important Task has been accomplished: the training of the indigenous guard. The indigenous guards were trained in 2018 & 2019, as in other years, through workshops held between August 20th and 30th, 2018 and between March 18th and 29th, 2019, in which aspects of the REDD+ Project were addressed (climate change, REDD mechanism, international and national regulatory framework, historical review of the Project and logical framework) and about the achieve of Products and implementation of Activities, specifically Activity 1.1 regarding the surveillance and control of the territory of the RIU-SM, responsibilities and internal regulations (see *Task T2.2.4.2.14 Training for the indigenous guard* and Annex 4.5.5 of this Monitoring Report).

Illustration 17. Indigenous guards in training, *Camunianae* community, RIU-SM. 2018

For more information about training of the indigenous guard, see "*Task T2.2.4.2: Execution of the established measures to development training programs*/*Task T2.2.4.2.14: Training for the indigenous guard*".

Task T1.1.2: Execution of the established measures to implement the surveillance and control routes in the RIU-SM territory

o *Task T1.1.2.1: Indigenous Guard*

In 2018 & 2019 there were 300 indigenous guards to perform the tasks of watching over and controlling the territory of the RIU-SM, as is defined. There were 150 indigenous individuals for the first semester of each year and another 150 indigenous individuals for the second semester of each year (see the list of these guards in Annexes 4.1.4a -2018- and 4.1.4b -2019- of this Monitoring Report). The selection of people for this task is carried out autonomously by indigenous communities.

Illustration 18. Indigenous guard in Zone 1 (left) and Zone 4 (right) of RIU-SM, semester 2 - 2018

Illustration 19. Indigenous guards in Zones 3, 4 and 5, RIU-SM. 2019

These indigenous guards receive economic aids in compensation for the tasks they leave to perform in their respective communities, when they dedicate their time to the surveillance and control of the territory of the RIU-SM, what has generated occupation and some resources to improve their economy.

o *Task T1.1.2.2: Fuel / Task T1.1.2.3: Food*

The Project provides the necessary fuel for the mobility of the indigenous guard in its work of surveillance and control of the territory, through the 37 surveillance routes.

Food provisions have been delivered as basic support in the feeding of indigenous guards, which, consequently, constitutes a strengthening of the task of surveillance and control of the territory. These provisions are delivered due to these people stop performing their own economic tasks (such as planting of conucos, hunting, fishing and gathering of fruits) to dedicate part of their time and effort in the care and protection work of the territory.

- According to Annex 4.1.5.1 of this Monitoring Report (Contract No. 25, 2018) the delivered food provisions are described in the phase I.
- According to Annex 4.1.5.2a of this Monitoring Report (Contract No. 19, 2019) the delivered food provisions are described in the phase II:

  In this Contract also the supplies delivered for the mobilization of the indigenous guard are described: 3,024 gallons of gasoline and 216 gallons of lubricant for boat engines. The Annex 4.1.5.2b (start minutes of the Contract No. 19, 2019), Annex 4.1.5.2c (supervisory report and certificate of compliance with the Contract No. 19, 2019) and Annex 4.1.5.2d (execution report) of this Monitoring Report, provide more information about the effective execution of this Task.

Illustration 20. Victuals, fuel and lubricant delivered to indigenous guard

o *Task T1.1.2.4: Control stations*

- 5 control stations were built to support the surveillance and control of the RIU-SM territory. These control stations are in:

  Zone 1, Sector 1 *Caño Cavasi*

  Zone 1, Sector 2 *Aiwa Cuna Tsepajivo*

  Zone 2, Sector 3a *Bajo Río Vichada 1*

  Zone 2, Sector 3b *Bajo Río Vichada 2*

  Zone 3, Sector 4 *Atana Pirariami*

  In Annex 4.1.6.1 of this Monitoring Report (Contract No. 27, 2018) are the specifications required for the construction of these control stations, which were made by same indigenous people. These consist in huts of 48 m^2 built of wood, ceilings zinc, among other characteristics.

Illustration 21. Control station in Sector 1

Illustration 22. Control station in Sector 2

Illustration 23. Construction in Sector 3a

Illustration 24. Control station in Sector 3b

Illustration 25. Control station in Sector 4

These control stations serve to support the actions carried out by the indigenous guard, related to the protection and care of the natural resources of the RIU-SM. These control stations were built in strategic places, such as near rivers, from where indigenous guards can watch.

The Annex 4.1.6.2 (start minutes of the Contract No. 27, 2018), Annex 4.1.6.3 (liquidation minutes of the Contract No. 27, 2018), Annex 4.1.6.4 (supervisory report and certificate of compliance with the Contract No. 27, 2018) and Annex 4.1.6.5 (execution report) of this Monitoring Report, provide more information about the effective execution of this Task.

- Managements were made to acquire four (4) floating fluvial "hangar" rafts in a metal structure, which can function as mobile control stations, for the organizational strengthening of the indigenous guard (Annex 4.1.7 of this Monitoring Report, Contract No. 36, 2019).

o *Task T1.1.2.5: Boats / Task T1.1.2.6: Engines*

- Boats were provided to offer adequate river transportation to the indigenous guard in the Task of surveillance and controlling the RIU-SM. As it is recorded in Annex 4.1.8.1a of this Monitoring Report

(Contract No. 16, 2018), 6 metallic boats of 12 meters in length were purchased with their respective 40 HP outboard engines. With the acquisition of these fluvial transport elements, with the economic resources of the Project, the indigenous guard can mobilize more easily and quickly, being able to make a more effective control of what happens in the RIU-SM.

The Annex 4.1.8.1b (start minutes of the Contract No. 16, 2018), Annex 4.1.8.1c (liquidation minutes of the Contract No. 16, 2018), Annex 4.1.8.1d (supervisory report and certificate of compliance with the Contract No. 16, 2018) and Annex 4.1.8.1e (execution report) of this Monitoring Report, provide more information about the effective execution of this Task.

Illustration 26. Boats and engines delivered to the indigenous guard in 2018


- According to Annex 4.1.8.2, Contract No. 9, 2019, another 14 boats (with their respective engines) were delivered to provide transportation to the indigenous guard, integral health and zonal coordinators of the Project. In this Annex are liquidation minutes, supervisory report with certificate of compliance and execution report.

Illustration 27. Boats for the indigenous guard, integral health and zonal coordinators (2019)



o *Task T1.1.2.11: Information hoardings*

Hoardings were installed, which seeks to strengthen the presence of indigenous authorities in different strategic points of the RIU-SM boundaries.

Illustration 28. A hoarding installed in a strategic location, in Zone 4 of the RIU-SM

o *Task T1.1.2.12: Endowment for indigenous guard*

Elements for the endowment of the indigenous guard were provided in relation to clothing, such as shirts, vests, pants, caps and life jackets.

Illustration 29. Endowment for the indigenous guard

Illustration 30. Indigenous guards receiving endowment during training workshops


Task T1.1.3: Review permanently the early warnings issued by the IDEAM on areas susceptible to forest fires within RIU-SM

The official information provided by the *Instituto de Hidrología, Meteorología y Estudios Ambientales - IDEAM* (Institute of Hydrology, Meteorology and Environmental Studies) is constantly being reviewed about the status of the threat of deforestation and the predictions of the occurrence of fires applicable to Vichada department and, in particular, to the RIU-SM area. Based on the information found, an increase in the prognosis of fires in terms of severity is being observed, which can be identified as a consequence of the climate change that is occurring and that affects the natural and human resources of the Indigenous Reservation. For more details about early warnings see the synthesis presented in Annex 4.1.10 of this Monitoring Report.

The indigenous guard reports that there have been small fires that were controlled in an effort made by inhabitants of the affected communities. These fires were attended and measures to suppress and/or prevent its spread and further damage were implemented.

Task T1.1.4: Supervision of the execution of the established measures to implement the surveillance and control routes of the territory and definition of contingency measures, if necessary, and reports

- Some actions were carried out due to events that were detected, which was notified to the zone indigenous authority and, in conjunction with the indigenous guard, the people who enter into the Indigenous Reservation were intervened. Venezuelan neighbors (some indigenous) were found fishing and hunting without authorization (in Sectors 4 *Atana-Pirariami*, 5 *Caño Zama* and 6 *Matavén Fruta*) and logging was found in communities *San Piñalito Morichal* and *Mangal* (of Sector 3b *Bajo Río Vichada 2*). Settlers were also found cutting trees to expand the pastures near the communities *Río-Arbolito-Warracaña* (Sector 2 *Aiwa-Cuna*), *San Luis* (Sector 8 *Lagunas Negra y Cacao*), *Sejalito* (Sector 9 *Sejalito-San Benito*) and *San Rafael* (Sector 16 *Morocoto*).
- The indigenous guard detected some deforestation in Zone 1 - Sectors 1 and 2, forest losses due to illegal mining in Sector 3b, flooding in Sectors 4 and 6, fires in Sector 4, and presence of strangers

in Sectors 3a and 3b. Some measures were taken such as preventing further deforestation, deterring illegal mining and contacting the national authority.

- Some damages were found due to external factors, such as the strong winds that brought down trees (Sector 13 *Cumaral*) and some fires near the communities of *San Piñalito Morichal*, *Tirso Atana* (Sector 3b *Bajo Río Vichada 2*), *Barranco Colorado*, *Nueva Esperanza*, *Pirariami*, *San Antonio* (Sector 4 *Atana-Pirariami*), *Berrocal*, *Guayabal Anapo*, *Sabanita Sucariepo*, *Pueblo Escondido* (Sector 6 *Matavén Fruta*), *Santa Cruz - Ajota* (Sector 7 *Berrocal Ajota*), *Cumaral* (Sector 13 *Cumaral*) and *Sabanita* (Sector 15 *Giro*).
- The intervention actions made have also been carried out within the limits of the Indigenous Reservation, in order to clearly determine the boundaries, which allows to determine with certainty what territory should be protected from incursion by strangers. There were some conflicts that have been resolved with the intervention of indigenous authorities.

Task T1.1.5: Systematization and divulgation of results about surveillance and control of territory and early warnings about forest fires within RIU-SM

- Members of the *Cabildos* Board, Coordinator Committee, Captains and indigenous leaders of RIU-SM know the results of the implementation of surveillance and control system. Communities also collaborate with identifying threats and communicate them to their leaders.
- Periodically, meetings and workshops are held to socialize the progress of the REDD+ Project RIU-SM Activities, in such a way that the indigenous authorities of the Coordinator Committee, *Cabildos*, Captains, leaders and other inhabitants of the communities know the events that have occurred, the state of development of the Tasks and benefits achieved (Annexes 1.22 to 1.26 of this Monitoring Report: Zonal Meetings for socialization of the implementation of REDD+ Project RIU-SM Activities and budget execution, and Annex 4.2.1 of this Monitoring Report: minutes of socialization meetings and workshops in 2018).
- By the end of 2019, copies of the bulletin were printed and delivered to leaders (for its distribution in RIU-SM communities), with which seeks to disseminate the results and benefits of the implementation of the Project Activities during 2018 & 2019 in the RIU-SM. This bulletin contains general elements of the Project, its objective, the problem to be solved, and the developments that have been achieved and that, precisely, are described in more detail in this Monitoring Report (on all its Section 3.1.1). In Annex 4.2.7 is this bulletin.

• **ACTIVITY A1.2**: Develop and implement a communication and information system in the RIU-SM

This activity constitutes the solution to a very felt need of all the communities of RIU-SM. Before the implementation of this Activity, there were many difficulties in communication, in the management of information and in the means of transport available to indigenous peoples, due to geographical

characteristics (there are no internal land routes), long river distances and the high costs to establish communication and transport systems. This Activity is achieved by completing the following tasks:

Task T1.2.1: Review and adjustment of design and planning of communication, information and transport systems

In the 5 Zonal Meetings held in November 2017, the community representatives expressed, among other aspects, their communication, information and transport needs, and they presented their proposals to determine how to develop improvements in these three aspects, in order to consolidate as systems (Annexes 1.2 to 1.8 of this Monitoring Report: minutes of Zonal Meetings of November 2017, lists of needs and proposals). Thus, these needs and proposals were reflected in the budget for 2018 & 2019 (Annexes 1.9a and 1.9b of this Monitoring Report), in order to satisfy and develop them.

Task T1.2.2: Execution of the established measures to implement the communication system

ACATISEMA has improved its organization and provision of logistics and equipment in order to establish better means for the authorities (members of the *Cabildos* Board, Coordinator Committee, Directive Board, Captains), other indigenous leaders and the RIU-SM communities in general, keep in touch and communication, including their participation in tours throughout the territory, meetings/workshops of socialization and training that support the dissemination of information for indigenous peoples. To communication of information also is available the Project website at: http://selvamatavenredd.org.

Illustration 31. Socialization meeting in *Pueblo Escondido* community

In particular, throughout 2018 a series of meetings was held with the indigenous people of different RIU-SM communities, in order to socialize the progress in the execution of the REDD+ Project RIU-SM Activities and to specify the needs and proposals of people, especially everything related to

productive projects that are desired and can be implemented. Minutes of these meetings are recorded, as listed below, which include assistance signatures and photographs:

In Zone 3:

- Meeting in *Barranco Colorado* community with 11 participants, June 12, 2018 (Annex 4.2.1.1).
- Meeting in *Pueblo Nuevo* community with 28 participants, June 13, 2018 (Annex 4.2.1.2).
- Meeting in *San Luis Caño Zama* community with 24 participants, June 13, 2018 (Annex 4.2.1.3).
- Meeting in *La Urbana* community with 33 participants, June 14, 2018 (Annex 4.2.1.4).
- Meeting in *Pueblo Escondido* community with 26 participants, June 14, 2018 (Annex 4.2.1.5).
- Meeting in *Sarrapia* community with 23 participants, June 14, 2018 (Annex 4.2.1.6).
- Meeting in *Guayabal Anapo* community with 25 participants, June 15, 2018 (Annex 4.2.1.7).

In Zone 4:

- Meeting in *Berlín 1* and *2* communities with 12 participants, June 25, 2018 (Annex 4.2.1.8).
- Meeting in *Laguna Colorada* community with 14 participants, June 25, 2018 (Annex 4.2.1.9).
- Meeting in *Sejalito* community with 26 participants, June 25, 2018 (Annex 4.2.1.10).
- Meeting in *Laguna Cacao* community with 22 participants, June 26, 2018 (Annex 4.2.1.11).
- Meeting in *Laguna Negra* community with 19 participants, June 26 2018 (Annex 4.2.1.12).
- Meeting in *San Luis de la Rompida* community with 12 participants, June 26, 2018 (Annex 4.2.1.13).

In Zone 5:

- Meeting in *Palmarito* community with 16 participants, June 22 2018 (Annex 4.2.1.14).
- Meeting in *Buena Vista* community with 13 participants, June 23 2018 (Annex 4.2.1.15).
- Meeting in *Morichal* community with 19 participants, June 23 2018 (Annex 4.2.1.16).
- Meeting in *Morocoto* community with 9 participants, June 23 2018 (Annex 4.2.1.17).
- Meeting in *Manajuare* and *Miraluz* communities with 17 participants, June 23 2018 (Annex 4.2.1.18).
- Meeting in *Cumaral* community with 22 participants, June 24 2018 (Annex 4.2.1.19).
- Meeting in *Giro* community with 12 participants, June 24 2018 (Annex 4.2.1.20).
- Meeting in *Yuri* community with 20 participants, June 24 2018 (Annex 4.2.1.21).
- Meeting in *Caño Bocón* community with 9 participants, June 25 2018 (Annex 4.2.1.22).

Illustration 32. Socialization meeting in *La Urbana* community

As mentioned in the minutes (according to previous annexes of this Monitoring Report), meetings were held to socialize about the REDD+ Project RIU-SM and productive projects with 412 indigenous people in 24 communities in Zones 3, 4 and 5 in 2018.

o *Task T1.2.2.1: Tour across Zone 1; Task T1.2.2.2: Tour across Zone 2, Sector 3a; Task T1.2.2.3: Tour across Zone 2, Sector 3b; and Task T1.2.2.4: Tour across Zone 3*

To carry out socialization and training meetings and workshops, budgetary resources were provided to the communities. Several boats adquired were used to transport the people that realize the tours accros territory.

Task T1.2.3: Execution of the established measures to implement the information system

ACATISEMA has improved its provision of equipment and means for the generation of information and its classification, storage, maintenance, support and recovery, mainly in the office that the Association has established in Villavicencio city, considering that in the headquarters in Cumaribo and Inírida the information is collected firsthand. Now it also has personnel in charge of the management of its own information and that related to the execution of the Project activities.

The information generated during the development of the Project is recorded, stored in appropriate media and available (Information System: digital information and physical documents are available in the MEDIAMOS office and in the ACATISEMA headquarters).

The public information generated in the development of the Project is exposed on the web page of the VCS project database: http://www.vcsprojectdatabase.org/#/project_details/1566.

o *Task T1.2.3.2: Office equipment endowment*

As support for the administrative management of ACATISEMA, the REDD+ Project RIU-SM has provided equipment endowment in the offices of the Association: furniture, computers, printers, etc.

Illustration 33. Office equipment at the headquarters of *Cumaribo* (left) and *Inírida* (right)

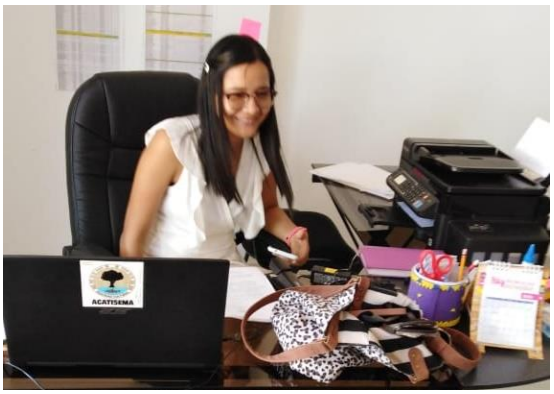
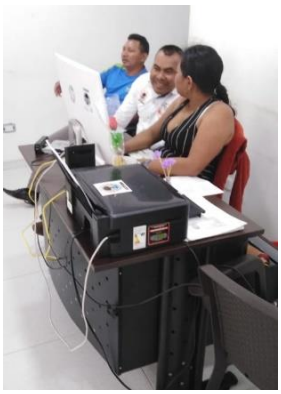
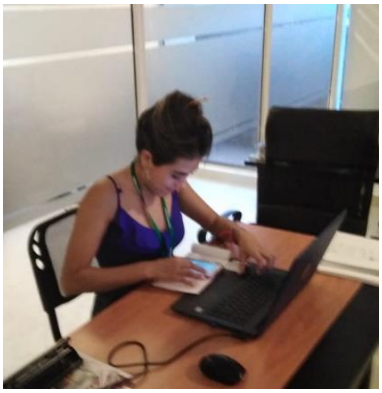



Illustration 34. Office equipment at the *Villavicencio* headquarters

Task T1.2.4: Execution of the established measures to implement the transport system

Fluvial equipment for the ACATISEMA headquarters in Cumaribo and Inírida were acquired to provide adequate transportation to member of Coordinator Committee, Fiscal Observer, *Cabildos*, authorities, Project Co-Director and Zonal Coordinators, in their need to be in better contact with the communities.

o *Task T1.2.4.1: Boats to strengthen Governance in the RIU-SM*

- Fluvial transport equipment for the headquarters of the Association in Cumaribo and Inírida was provided, according to Annex 4.2.2.1 of this Monitoring Report (Contract No. 15, 2018). Thus, 2 fast boats of 8 meters in length, with their respective 75 HP outboard engines were acquired.

The Annex 4.2.2.2 (start minutes of the Contract No. 15, 2018), Annex 4.2.2.3 (supervisory report and certificate of compliance with the Contract No. 15, 2018) and Annex 4.2.2.4 (execution report) of this Monitoring Report, provide more information about the effective execution of this Task.

Illustration 35. Boats for the ACATISEMA headquarters in Cumaribo and Inirida

Illustration 36. Engines for boats of the ACATISEMA headquarters

o *Task T1.2.4.2: Service boats for communities in Zones 4 and 5 (with fluvial equipment)*

To facilitate and assist in the transportation and communication of the indigenous people who inhabit the regions further away in the RIU-SM (especially communities in Zones 4 and 5), service boats with their respective fluvial equipment were provided. In Annex 4.2.3.1 are the reports about the provision of transport service from May to July 2019.

o *Task T1.2.4.3: Service boats for communities in Zones 1 and 3 (with fluvial equipment)*

- 1 boat type “flying” made in fiberglass, 6 engines 15 HP, 2 engines 40 HP and 1 engine 75 HP were delivered to strengthen the transport service in Zone 1 of RIU-SM, according to Annex 4.2.3.2 of this Monitoring Report (Contract No. 37, 2019).

Illustration 37. Boat and engines delivered in Zone 1

- Fluvial transport equipment to provide school transportation service in Zone 3 (2 metal boats of 15 meters in length, with fluvial equipment and fuel) and institutional flags of Acatisema were delivered, according to Annex 4.2.3.3 of this Monitoring Report (Contract No. 18, 2019).

Illustration 38. Boats for school transport and institutional flags delivered in Zone 3

o *Task T1.2.4.7: Neighborhood bridges*

- 3 neighborhood wooden bridges were built to satisfy the urgent need of improve the way that is frequently transited in traditional roads and crosses of ancestral territory over *Watuliba*, *Yatuy* and *Marumaru* streams, of Sector 2 *Aiwa Cuna Tsepajivo*, according to Annex 4.2.4.1a of this Monitoring Report (Contract No. 22, 2018). The construction of these bridges allows better access to health services, education and local markets, contributing to the improvement of the socioeconomic conditions of the indigenous communities of this Sector.

  The Annex 4.2.4.1b (start minutes of the Contract No. 22, 2018), Annex 4.2.4.1c (liquidation minutes of the Contract No. 22, 2018), Annex 4.2.4.1d (certificate of compliance with the Contract No. 22,

2018) and Annex 4.2.4.1e (execution report) of this Monitoring Report, provide more information about the effective execution of this Task.

Illustration 39. Neighborhood bridges built on the *Watuliba*, *Yatuy* and *Marumaru* streams

- 21 neighborhood wooden bridges were built in the Sectors *1- Caño Cavasi*, *2- Aiwa-Cuna Tsepajivo*, *3a- Bajo Rio Vichada 1*, *3b- Bajo Rio Vichada 2*, and *4- Atana Pirariami*, according to Annex 4.2.4.2a of this Monitoring Report (Contract No. 25, 2019).

Table 7. Bridges built on Zones 1, 2 and 3 (Sector *Atana Pirariami*)

Zone	Sector	Creek / Community
1	*1- Caño Cavasi*	*Arikiana* creek, *El Retiro* community
		Cavasi creek, *Macocoba* community
		Juwata creek, *Ocupamo* community
	2- Aiwa-Cuna Tsepajivo	*Makanale* creek, *Tsawaliwali* community
		Waukusia creek, *Simeria* community
		Yakojale creek, *Brisas* community
		Maniare creek, *Maniare* community
		Cajaro creek, *Cajaro* community
		Cajaro 2 creek, *Cajaro* community
2	*3a- Bajo Rio Vichada 1*	*Amue Chenebo* creek, *Amue Chenebo* community
		Checa Morichal creek, *Checa* community
		Sire creek, *Trinidad* community
	3b- Bajo Rio Vichada 2	*Palometa* creek, *Palometa* community
		Gualiba creek, *Santa Cecilia* community
		Siviare creek, *Lejanía* community
3	*4- Atana Pirariami*	*Niña* creek, *Cochibo* community
		Morichal creek, *Cochibo* community
		Cochibo creek, *Atana* community
		Agua Blanca creek, *Atana* community
		Raudal creek, *Atana* community
		Mure creek, *Atana* community

The Annex 4.2.4.2b (start minutes of the Contract No. 25, 2019), Annex 4.2.4.2c (liquidation minutes of the Contract No. 25, 2019), Annex 4.2.4.2d (supervisory report and certificate of compliance with the Contract No. 25, 2019) and Annex 4.2.4.2e (execution report) of this Monitoring Report, provide more information about the effective execution of this Task.

Illustration 40. Bridges built on *Cavasi*, *Cajaro*, *Amue Chenebo*, and *Niña* creeks

- 5 pedestrian bridges were built and neighborhood roads were maintained as support to people in the Sectors *1- Caño Cavasi* (*Galilea*, *Corocito*, *San Juan de Dios*, and *Nuevo Horizonte* communities) and Sector *2- Aiwa-Cuna Tsepajivo* (*Mangal Yopalito*, *Kirey Central*, *Kirey Loma*, *Guayabetal*, *Karraba*, *Palmita*, *Capturama*, *Nuevo Camino*, and *Miraflores* communities), according to Annex 4.2.4.3 of this Monitoring Report (Contract No. 35, 2019).

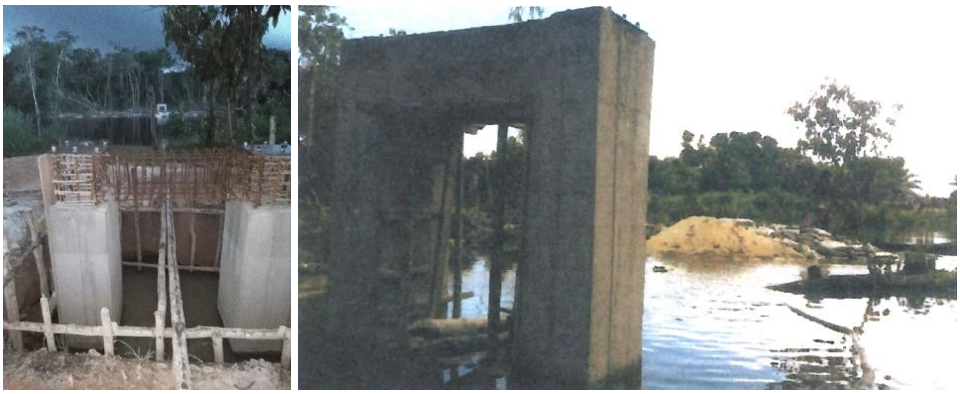
Illustration 41. Pedestrian bridge in Kirey Central and maintenance in road towards Corocito

It should be noted that the construction of these pedestrian bridges in wood (for which large amounts of this input were not required) corresponds to the attention of a need that the indigenous communities of the RIU-SM identified as important to carry out (Annexes 1.2 to 1.8 of this Monitoring Report:

minutes of Zonal Meetings of November 2017, lists of needs and proposals), obeying their autonomy and to the proper right, enshrined in Colombian laws, to proceed according to their uses and customs.

- The construction of a hanging pedestrian bridge is being carried out in Caño Dume, Sector Bajo Río Vichada 1, according to Annex 4.2.4.4 of this Monitoring Report (Contract No. 10, 2019), where the supervisory report with certificate of compliance and the partial execution report are presented.

Illustration 42. Construction of hanging pedestrian bridge in Caño Dume



o *Task T1.2.4.8: Neighborhood roads*

- The improvement of the ancestral path "Caracol pass" that communicates to Sector 1- *Caño Cavasi* with the Cumaribo municipality was made, according to Annex 4.2.5.1 of this Monitoring Report (Contract No. 11, 2019)

Illustration 43. Improvement of the ancestral path "Caracol pass"

- The improvement of the ancestral path "Santa Marta pass" that communicates towards Sector 1-*Caño Cavasi* was made, according to Annex 4.2.5.2 of this Monitoring Report (Contract No. 16, 2019).

Illustration 44. Improvement of the ancestral path " Santa Marta pass"

o *Task T1.2.4.9: Road towards Cumariana, embankment, and bridge*

The improvement of the road from Cumaribo municipality towards *Cumariana* community was made, including construction of embankment and bridges (some ones large and others as box culverts), for facilitate the transportation towards this community, where the XV General Assembly of ACATISEMA was made, according to Annex 4.2.6.1 of this Monitoring Report (Contract No.4, 2019).

The Annex 4.2.6.2 (start minutes of the Contract No. 4, 2019), Annex 4.2.6.3 (liquidation minutes of the Contract No. 4, 2019), Annex 4.2.6.4 (supervisory report and certificate of compliance with the Contract No. 4, 2019) and Annex 4.2.6.5 (execution report) of this Monitoring Report, provide more information about the effective execution of this Task.

Illustration 45. Improvements made in the road from Cumaribo towards Cumariana

Task T1.2.5: Supervision of the execution of the established measures to implement the communication, information, and transport systems, definition of contingency measures (if it is necessary), and report of informs.

- In the contracts executed by ACATISEMA, and through which several of the Tasks are accomplished, there are reports of supervision of the same and certificates of compliance of the contractor, which shows that supervision is being carried out about the execution of the measures established for implementation of communication, information and transport systems.
- The Fiscal Observer of ACATISEMA, in accordance with its statutory responsibility, verifies if the Project Activities and Tasks are being fulfilled in the measures, times and scope that they are defined, and presents reports for 2018 and 2019 about the degree of development in which they are found (Annexes 3.4 and 3.5 of this Monitoring Report).

Task T1.2.6: Systematization and divulgation of results about the implementation of the communication, information, and transport systems

- The members of the *Cabildos* Board, Coordinator Committee, the Captains, the indigenous leaders of the RIU-SM and the direct beneficiaries know the results of the implementation of communication, information and transport systems.
- Periodically meetings and workshops are held to socialize the progress in the REDD+ Project RIU-SM Activities, in such a way that the indigenous authorities of the Coordinator Committee, *Cabildos*, Captains, leaders and other inhabitants of the communities know the events that have occurred, the state of development of the Tasks and benefits achieved (Annexes 1.22 to 1.26 of this Monitoring Report: Zonal Meetings for socialization of the implementation of REDD+ Project RIU-SM Activities and budget execution, and Annex 4.2.1 of this Monitoring Report: minutes of socialization meetings in 2018).
- By the end of 2019, copies of the bulletin were printed and delivered to leaders (for its distribution in RIU-SM communities), with which seeks to disseminate the results and benefits of the implementation of the Project Activities during 2018 & 2019 in the RIU-SM. This bulletin contains general elements of the Project, its objective, the problem to be solved, and the developments that have been achieved and that, precisely, are described in more detail in this Monitoring Report (on all its Section 3.1.1). In Annex 4.2.7 is this bulletin.

- **ACTIVITY A1.3**: Design and establish a system of governance for development and sustainability of ACATISEMA Association.

This Activity is in permanent execution and aims to strengthen the government and the organization of the Association, also seeking to enhance the ancestral customs, traditions and culture of the indigenous peoples of the RIU-SM.

Task T1.3.1: Management special affairs

o *Task T1.3.1.1: Transport for management*

Project provided transportation, food and all conditions for that the indigenous individuals that arrived to meetings of the indigenous authorities of the RIU-SM participated and discussed issues about the progress in the implementation of REDD+ Project RIU-SM. These meetings carried out in Sector 1 *Caño Cavasi* (Annex 4.3.1.1 of this Monitoring Report: documents related to the execution of Contract No. 1, 2018), Sector 3a *Bajo Río Vichada 1* (Annex 4.3.1.2 of this Monitoring Report: documents related to the execution of Contract No. 2, 2018) and Sector 2 *Aiwa Cuna Tsepajivo* (Annex 4.3.1.3 of this Monitoring Report: documents related to the execution of Contract No. 3, 2018).

Cabildos, members of the Coordinator Committee and Zonal Coordinators express their support for the REDD+ Project RIU-SM and authorize the Directive Board of ACATISEMA to design and implement the necessary measures for the continuity and strengthening of the Project, taking into account the Strategic Alliance Agreement ACATISEMA-MEDIAMOS. Indigenous authorities of the Reservation affirm that they will continue with a second cycle of the REDD+ Project RIU-SM (Annex 1.1 of this Monitoring Report, page 8).

Illustration 46. Transportation and food for the participants to the meeting in Sector 3a

o *Task T1.3.1.2: Autochthonous games; Task T1.3.1.4: "El Bocón" festival; and Task T1.3.1.6: Matavén Cup*

Project provided the logistics required to carry out cultural and sporting events, such as the "First Sports Cup Selva Matavén" and the First Cultural Meeting and Siren "*El Bocón*" in Sector 6 *Matavén Fruta* of the RIU-SM (Annex 4.3.2 of this Monitoring Report: documents related to the execution of Contract No. 6, 2018). These events are also constituted as elements to enhance the ancestral customs, traditions and culture of the indigenous peoples of the RIU-SM. The performance of these activities was requested by the same indigenous people, which can be seen in the lists of needs and proposals in Annexes 1.7 and 1.8 of this Monitoring Report (inventory of proposals and description).

The actions and services provided were the following:

- Delivery of 240 sports uniforms alluding to the “First Sports Cup Selva Matavén”.
- Award for the first places in different modalities in the development of the “First Sports Cup Selva Matavén”.
- Awards for the first, second and third places in the modalities: blowgun, drawing of *El Bocón*, the mat, race of the morrocoy, the traditional stove, fishing of *El Bocón*, artisanal exhibition, siren of *El Bocón*, allusive song to *El Bocón*, traditional dances, grated of the bitter cassava and the typical dish of the “First Cultural Meeting and Sirena *El Bocón*”.
- Service of fluvial transport for the delegations and technical-logistic staff of the “First Cultural Meeting and Sirena *El Bocón*”.

Delegations from 251 communities from all Sectors of the RIU-SM attended these events.

Illustration 47. Sport team participating, traditional costumes


Project provided the logistics required to carry out other cultural and sporting events, such as the “First Meeting of Indigenous Games” and the “Second Sports Cup Selva Matavén” in the *Laguna Checa* community of Sector 3a *Bajo Río Vichada 1* of the RIU-SM (Annex 4.3.3 of this Monitoring Report: documents related to the execution of contract No. 20, 2018). These events were attended by 200 indigenous people.

The actions and services provided were the following:

- Delivery of sports equipment kits: 2 soccer balls No. 5, 2 futsal nets and trophies for the first and second places.
- Awards for the first and second places in the modalities: target shooting with bow and arrow, blowgun, rafting, sport fishing, men's soccer and female futsal.
- Service of professionals in performing arts "*llanera* musical grouping" (it includes transport).
- Service of professionals in performing arts "singer of popular genre" (it includes transport).
- Service of fluvial transport for the delegations and participants.

- Service of feeding for participants (for three days).

Illustration 48. Some of indigenous games (rafting, target shooting with arrow)

o *Task T1.3.1.3: Traditional dances and handicrafts*

Logistical services were provided for the development of the activities of the “First Cultural and Crafts Meeting of ‘*La Mochila*’” carried out in the *Cumariana* community of Sector 2 *Aiwa Cuna Tsepajivo* of the RIU-SM (Annex 4.3.4 of this Monitoring Report: documents related to the execution of Contract No. 10, 2018).

The actions and services provided were the following:

- Delivery of sports equipment kits.
- Award for the first and second places in the modalities better stand of handicrafts, target shooting with bow and arrow, reign and futsal.
- Logistics operations: adaptation of cultural scene, stage and lighting.
- Service of professionals in performing arts "*llanera* musical grouping" (it includes transport base group).
- Service of professionals in performing arts "singer of popular genre" (it includes transport).
- Service of feeding for participants.
- Service of lights and rhythmic audio (includes installation and operator).

Illustration 49. Sample of crafts, traditional costumes and musical group

o *Task T1.3.1.7: Support to activity of cultural leaders*

Project provides support in transportation, food and other logistics for leaders of various communities to carry out meetings and cultural activities, such as:

- Meetings of authorities in communities *Matsuldani* (March 12), *Raya* and *Wereto* (April 11 - 12), *Macocoba* (April 12), in the ACATISEMA headquarters in Cumaribo (April 12) and in *Caño Cajaro* community (April 18).
- Workshop with leaders of *Sirakusa* community.
- Inter-school event in *Los Ángeles*.
- Children's Day celebration.
- Cultural event of women in *Yuri*, *Cumaral*, and *Caño Bocón* communities.
- Sports event for women in *Kirey Loma* community.
- Mother's Day celebration in *Raya*, *Kirey* and *Boponé* schools.
- 2 training of spiritual leaders in Sector 1 *Caño Cavasi*.

Support has also been provided for other needs, such as:

- Financial support for traditional rituals.
- Support for religious events in *Tamue Chenebo*, *Guayaquil* and *San Agustín* communities.
- Support for transportation to *Puerto Gaitán* for Technical Education procedures.
- Strengthening of traditional medicine of the *Piaroa* people.
- Commission for procedures with the *Registraduría Nacional* (National Registry).
- Support to transfer of sick patients.
- Materials to improve the churches of *Morachalito* and *Curicagua* communities.

o *Task T1.3.1.8: Support to step home in Cumaribo*

Support has been provided to offer lodging to indigenous people who arrive, for whatever reason, and do not have any place to stay in the Cumaribo municipality. For this, basic facilities have been built so that they can place hammocks to sleep and be momentarily in Cumaribo municipality.

Task T1.3.2: Management of normative and regulatory aspects of ACATISEMA

Logistical support, transportation and food have been provided for the realization of meetings of Joint Commission, Coordinator Committee and *Cabildos* Board (see Annexes 1.10 - 1.13, 1.15 - 1.16, 1.17 - 1.21 of this Monitoring Report), where topics related to ACATISEMA are discussed and they make decisions in order to improve the organization.

Also, with resources from the REDD+ Project RIU-SM, Zonal Meetings were held in the Indigenous Reservation and the XV General Assembly of ACATISEMA on September 3-5, 2019. This is the most important event for the governance of the RIU-SM, since it is the largest meeting for the election of the authorities that will administer the Indigenous Reservation and the Association, in this case, from the year 2020 to the year 2022, in addition it is the space to make transcendental decisions for the future of indigenous communities. Among others aspects, in this assembly the following was decided "*The indigenous authorities of the Reservation ratify their decision to continue carry out the REDD+ Project RIU-SM*". The documentation related to the Zonal Meetings and the General Assembly are available at the ACATISEMA offices for any consultation.

Illustration 50. XV General Assembly of ACATISEMA


Task T1.3.3: Support for the revision of Life Plans

Logistic and organizational support has been provided to the communities of the RIU-SM for the revision and formulation of Life Plans of the 6 ethnic groups of the RIU-SM. Some steps to work related

to these ethnic groups were developed (Annex 4.3.5 of this Monitoring Report: minutes and repor of the meeting for revision and formulation of the Life Plans of the 6 ethnic groups).

Task T1.3.4: Management of boundaries

Logistical support has been provided for the identification of places where the intervention of the *Agencia Nacional de Tierras* (National Land Agency) is necessary to resolve issues where the boundaries of the Indigenous Reservation are not clear or there is apparently invasion by foreign people in the RIU-SM. For example, negotiations are being carried out with property owners in order to recognize that they are within the territory of the RIU-SM, be evicted.

Task T1.3.5.1: Design, planning and execution of measures related to ACATISEMA headquarters

The ACATISEMA headquarters are improving.

- In the Cumaribo municipality an office was leased in 2018 for the operation of the Association's headquarters, while the works of the Center of Indigenous Environmental Thought of the *Selva Matavén* were being carried out, where the office is now located (see also ACATISEMA Reserve 5 - RA5 and Annex 4.8.5 of this Monitoring Report: documents related to the execution of Contract No. 11, 2018).
- In Inírida city an office was acquired to establish the ACATISEMA headquarters in that place. Renovation works to improve its infrastructure are finished already (see Annex 4.3.6 of this Monitoring Report: documents related to the execution of Contract No. 37, 2018).
- In Villavicencio city (Meta department) there is another leased office, due to the need to have better options than those available in Cumaribo and Inírida, such as greater coverage and quality of banking services, better media, closest contact with contractors and providers of services that can be taken to the Resguardo, among other aspects.

Illustration 51. ACATISEMA´s headquarters in Cumaribo (left) and Inírida (right)


- In Cumariana community a multifunctional sports center was built, which will be used for sports practices and for holding important meetings of the indigenous authorities of the RIU-SM, such as the recent XV General Assembly of ACATISEMA. In the Annex 4.3.7 are the reports about this construction.

Illustration 52. Multifunctional sports center built in Cumariana community


- Provision of Rimax brand chairs for the administrative headquarters of ACATISEMA in the municipality of Cumaribo, according to Annex 4.3.8.1 (Contract No. 32, 2019), Annex 4.3.8.2 (liquidation minutes of the Contract No. 32, 2019), Annex 4.3.8.3 (supervisory report and certificate of compliance with the Contract No. 32, 2019) and Annex 4.3.8.4 (execution report) of this Monitoring Report, provide more information about the effective execution of this Task.

- The construction of rural organizational headquarters in Sectors *1- Caño Cavasi*, *2- Aiwa Cuna Tsepajivo*, *3a- Bajo Río Vichada 1*, *4- Atana Pirariami*, and *9- Sejalito San Benito* and the traditional medicine training centers of Sectors *3a- Bajo Río Vichada 1* and *Bajo Río Vichada 2*.
- Progress is being made to provide sound amplifiers and accessories for the administrative headquarters of ACATISEMA and Sectors *1- Caño Cavasi*, *2- Aiwa Cuna Tsepajivo*, *3a- Bajo Río Vichada 1*, *4- Atana Pirariami*, and *9- Sejalito San Benito*.
- Zinc sheets, outboard engines, and office implements were provided to support the headquarters of the Sector 15 Giro (see Annex 4.3.9 of this Monitoring Report).

Task T1.3.5.2: Supervision of the execution of the established measures related to ACATISEMA headquarters

o *Task T1.3.5.2.1: Air transport to carry out the supervision of the headquarters*

- In the works that ACATISEMA hires, and by which improvements are made in physical infrastructures, there are reports of supervision of the same, compliance certificates of contractor,

and intervention contracts, which evidences that supervision is being carried out to the execution of the established measures related to the ACATISEMA headquarters. To carry out these supervision and audit, air transport services were provided to travel between the distinct Association headquarters.

- The Fiscal Observer of ACATISEMA, in accordance with its statutory responsibility, verifies if the Project Activities and Tasks are being fulfilled in the measures, times and scope that they are defined, and presents reports for 2018 and 2019 about the degree of development in which they are found (Annexes 3.4 and 3.5 of this Monitoring Report).

Task T1.3.6.1: Design and planning of the measures related to remuneration of authorities, indigenous guard, and Family Agrifood Production Units System - FAPUS activities, and

Task T1.3.6.2: Execution of the established measures related to remuneration of authorities, indigenous guard, and FAPUS activities

In the 5 Zonal Meetings held in November 2017, participants proposed that the indigenous authorities, the members of the management bodies of ACATISEMA (Coordinator Committee, *Cabildos* Board), the members of the indigenous guard, and the Captains receive remuneration for the time of dedication and the services they provide to the Association and the REDD+ Project RIU-SM (Annexes 1.2 to 1.8 of this Monitoring Report: minutes of Zonal Meetings of November 2017, lists of needs and proposals). Thus, these proposals were included in the budget for 2018 & 2019 (Annexes 1.9a and 1.9b of this Monitoring Report), in order to develop them.

In this sense, economic remunerations have been granted in compensation for the dedication of time and the work made for the Project, the Association and the Indigenous Reservation, and by the positions held by some RIU-SM leaders and others who support administrative tasks, such as General Coordinator, General Secretary, Finance Coordinator, members of the Coordinator Committee, Fiscal Observer, accountants, legal adviser, secretaries, administrative support professionals, auxiliaries of general services, SENA practitioner, indigenous adviser and *Cabildos* of 16 sectors.

Annex 4.3.10 of this Monitoring Report presents the list of indigenous individuals that are member of the *Cabildos* Board and Coordinator Committee. Annexes 4.1.4a and 4.1.4b of this Monitoring Report present the list of indigenous guards for 2018 & 2019, and Annex 4.4.4 of this Monitoring Report presents the list of Captains of the communities.

Task T1.3.6.3: Supervision of the execution of the established measures related to remuneration of authorities, indigenous guard, and FAPUS activities

- The Fiscal Observer of ACATISEMA, in accordance with its statutory responsibility, verifies if the Project Activities and Tasks are being fulfilled in the measures, times and scope that they are defined, and presents reports for 2018 and 2019 about the degree of development in which they are found (Annexes 3.4 and 3.5 of this Monitoring Report).

Task T1.3.7.1: Design and planning of the measures to provide economic support to students

In the 5 Zonal Meetings held in November 2017, the community representatives proposed to provide economic support to students that are members of the indigenous communities of the RIU-SM (Annexes 1.2 to 1.8 of this Monitoring Report: minutes of Zonal Meetings of November 2017, lists of needs and proposals). Thus, these proposals were included in the budget for 2018 & 2019 (Annexes 1.9a and 1.9b of this Monitoring Report), in order to develop them (see "*Task T2.2.4.1: Design and planning of the measures to develop training programs*"). In each community the Captains guide the young people (who qualify to develop their higher education studies), receive the documentation, evaluate it and manage the procedures so that the support can be effective.

Task T1.3.7.2: Supervision of the execution of the established measures to provide economic support to students

See Tasks "*Task T2.2.4.2.20 Professional programs*", "*Task T2.2.4.2.21 Educational bachelor programs*", "*Task T2.2.4.2.22 Programs at the technical, technological, and professional level*", "*Task T2.2.4.2.23 Educational bachelor programs (for teachers)*", and "*T2.2.4.3: Supervision of the execution of the established measures to develop training programs*". The Captains of the communities and the members of the Coordinator Committee in charge of the area of Education (3 indigenous individuals) also supervise the actions to offer Higher Education and obtain the expected results. Captains are responsible for carrying out this task properly.

Task T1.3.8.1: Design and planning of the measures to offer transport services in RIU-SM

In the 5 Zonal Meetings held in November 2017, the community representatives expressed, among other aspects, their transportation needs and presented their proposals to determine how to develop improvements in this aspect (Annexes 1.2 to 1.8 of this Monitoring Report: minutes of Zonal Meetings of November 2017, lists of needs and proposals). Thus, these needs and proposals were reflected in the budget for 2018 & 2019 (Annexes 1.9a and 1.9b of this Monitoring Report), in order to satisfy and develop them (it is related to "*Task T1.2.1: Review and adjustment of design and planning of communication, information and transport systems*"). A fluvial transport service is currently being offered for Zones 4 and 5, which periodically travels from different indigenous communities over *Amanavén* creek to Inírida city, reaching *Manajuare*, one of the most remote communities of Sector 16 *Morocoto Buenavista Manajuare* (Annex 4.2.3.1 of this Monitoring Report: reports about fluvial transport activity for indigenous people). In Zones 1 and 3 also is implemented a transportation service (Annexes 4.2.3.2 and 4.2.3.3 of this Monitoring Report).

Task T1.3.8.2: Supervision of the execution of the established measures to offer transport services in RIU-SM

See "*Task T1.2.5: Supervision of the execution of the established measures to implement the communication, information, and transport systems, definition of contingency measures, if it is necessary, and report of informs*" and "*Task T1.2.6: Systematization and divulgation of results about the implementation of the communication, information, and transport systems*".

Task T1.3.9: Perform internal financial audit

In ACATISEMA, financial audit activities are carried out, and the work of the Fiscal Observer choosen for this purpose. Reports are presented for 2018 and 2019 about the degree of development in which Project Activities are found (Annexes 3.4 and 3.5 of this Monitoring Report). The documents derived from this audit and the accounting documents are in the offices of the Association. MEDIAMOS also supports this task through a specialized accounting professional.

Compliance with Product 1: Through the execution of Activities A1.1, A1.2 and A1.3, and their respective Tasks, in accordance with the Matrix of Logic Structure (MLS), the compliance with the indicators, means of verification and assumptions for 2018 & 2019 is as follows:

Product 1: Measures to reduce the vulnerability of the RIU-SM generated by external factors, designed and implemented.		
Indicators	**Means of Verification**	**Assumptions**
1)265 Captains, 6 zonal coordinators and 300 members of the indigenous guard applied environmental knowledge in the surveillance, control y monitoring of the RIU-SM. *This indicator has been achieved, although not at the same level:* - *The 6 zonal coordinators are at the highest level.* - *The members of Coordinator Committee and the Cabildos Board are with a minor level (the 17 Cabildos change annually).* - *The 302 Captains with a lower level.* - *There are a well number of teachers, students, women, youth people and other members of the Indigenous Reservation (not less than 150) who have reached a good level in the application of environmental knowledge.* - *There are 300 indigenous guards to carry out the surveillance, control and monitoring of the RIU-SM, who receive*	1)Reports about results, monitoring and evaluation of the surveillance and control of the RIU-SM. - *Surveillance routes and maps of these routes are updated, and templates are fulfilled and processed (Annexes 4.1.2 and 4.1.9 of this Monitoring Report).* - *Indigenous guard is organized with the several elements that it requires (Annex 4.1.1, 4.1.2, 4.1.3, 4.1.5, 4.1.6, 4.1.7, 4.1.8, of this Monitoring Report).* 2)Reports about results, monitoring and evaluation of communication and information system of the RIU-SM. - *Presentation of results is made in meetings (Cabildos Board, Coordinator Committee, Zonal Meetings, communities - Annex 1 and Annex 4.2.1 of this Monitoring Report).*	• External actors support the implementation of Project through an appropriate institutional coordination. *It has been achieved. Agreements are being signed with other entities to support the development of Project Activities, for example, with FEDECACAO to implement the cocoa cultivation and marketing production project (Annex*

Product 1: Measures to reduce the vulnerability of the RIU-SM generated by external factors, designed and implemented.		
Indicators	**Means of Verification**	**Assumptions**
training, endowment, fluvial equipment, food and control stations. 2)A communication and information system for 5 zones of the RIU-SM has been established and applied. *It has been achieved as following:* - *The information system is implemented in 100% and the communication system in 60%.* - *The information system consists in the generation, collection, analysis, processing, storage and recovery of data related to the Project Activities in relation to the Indigenous Reservation. This information is in the offices of ACATISEMA and MEDIAMOS, digitally and physically.* - *The communication system has improved by the implementation of actions that increase the frequency of information exchange between communities, through the transport of people (with river equipment provided), adaptation of traditional roads (with bridges), meetings and delivery of informative material.* - *Cultural and sporting events also contribute to communication and to share and reinforce their ancestral customs.* 3)17 members of the Coordinator Committee, 17 *Cabildos*, 6 zonal coordinators and 265 Captains of ACATISEMA apply knowledge in the statutory and organizational aspects. *This indicator is 100% accomplished. The meetings of Cabildos Board, Coordinator Committee, Zonal Coordinators and the Zonal Meetings held during the Project implementation, showed the competence of the members of ACATISEMA and Captains of the RIU-*	- *Web page (http://selvamatavenredd.org).* - *Also, the information of ACATISEMA is organized in its headquarters.* 3)Reports about results, monitoring and evaluation of the established governance system. - *They have been realized; minutes of meetings and workshops (Annex 1 and Annex 4.2.1 of this Monitoring Report).* - *ACATISEMA members and Captains support the implementation of Project Activities.* - *ACATISEMA executes budget items.* - *ACATISEMA improves its administrative organization.* - *Formulation of the Life Plans of the 6 ethnic groups (Annex 4.3.5 of this Monitoring Report).* - *ACATISEMA improves its offices.* 4)List of participants in the several events. *It is 100% accomplished. There are lists of assistants to different events in the RIU-SM (Annex 1 and Annex 4.2.1 of this Monitoring Report).* 5)Minutes of meetings and events. *It is 100% accomplished. There are the minutes of several events held in the RIU-SM (meetings, workshops) (Annex 1 and Annex 4.2.1 of this Monitoring Report).*	*4.6.1.1k of this Monitoring Report).* • External actors do not interfere with the stability of the ACATISEMA governance. *It has been achieved. Some situations of interference have been overcome by the authorities of the RIU-SM and ACATISEMA. The governmental structure of the country tends to respect indigenous authority.*

Product 1: Measures to reduce the vulnerability of the RIU-SM generated by external factors, designed and implemented.		
Indicators	**Means of Verification**	**Assumptions**
SM in the application of knowledge in these aspects.	6)Audiovisual records. *It has been achieved. The database of audiovisual records is in the Project offices, duly documented, in digital format and, due their size, cannot be attached to this report.*	

Conclusion about compliance with Product 1: The Project Activities and Tasks have been satisfactorily carried out (the surveillance and control of the territory, the information, communication, and transport systems and the governance actions). The indicators show an adequate compliance of this Product. The related assumptions are also fulfilled, as well as the strengthening of the training about the application of "environmental knowledge" and the control, surveillance and monitoring of the RIU-SM. It is emphasized that the communication system is being reinforced.

In the same way, as the aspects of Product 1 were presented, now the Product 2, its Activities and its Tasks will be presented as following.

PRODUCT 2: Sustainable production system implemented

- **ACTIVITY A2.1**: Establish and develop a Family Agri-food Production Units System - FAPUS.

This activity aims to guarantee the production of food for food security, and that it continues to implement in land lots/"*conucos*" already used. It corresponds to an action of the Strategic Element 4 of the Sustainable Management Plan for Land and Forest.

In Annex 4.1 of PDD the "Sustainable Management Plan for Land and Forest" was explained:

> "*Strategic Element 4: Implement actions for food security of communities in Heterogeneous Agricultural Areas (HAA) y Grasslands (known in the Indigenous Reserve as "conucos") in areas of Savannah and in some areas of natural regeneration. These shares can be agro-forestry and silvopastoral systems, which provide food (plant and animal) and wood products from plantations with native species in combination with agricultural crops or livestock systems. These systems can be a source of small timber for building houses, fences, barns and other facilities that are required by the RIU-SM, so that they can replace those from secondary forests and ensure that these forests can be transformed to primary forests*".

Task T2.1.1: Review and adjustment of the design and planning of the Family Agrifood Production Units System - FAPUS (endowment, crops, minor species, silvopastoral system, orchards, pisciculture, *plátano*, cassava)

There is a survey format for the collection of information on the implementation of the Family Agri-food Production Units System - FAPUS (Annex 4.4.1 of this Monitoring Report).

Maps have been updated where the lots/"*conucos*" of Family Agrifood Production Units System - FAPUS- can be identified (Annex 4.4.2 of this Monitoring Report), land spaces that the inhabitants of the RIU-SM used for their crops in 2018 & 2019 (as it has been updated in previous years), in order to provide more accurate information about the areas that are being used for food production for indigenous communities.

Task T2.1.2: Execution of the established measures to develop the FAPUS

During this Monitoring Period, information about the type and amount of food produced by the communities of RIU-SM has been collected, by Sector and Zone. The Captains of the communities are consulted about the production of food and have expressed that indigenous people are implementing the Sustainable Management Plan for Land and Forest, making good use of land for crops.

In the food production survey, the Captains reported an estimation of the production in crops made by some families in the communities of RIU-SM. Based on this data (according indigenous census 2018 in the RIU-SM), **the determination of an estimation of food production for the total families** in the surveyed communities was possible.

The production of food for 2018 is as follows:

Table 8. Estimated food production in sample of 248 communities of the RIU-SM for 2018

Crops / Products	Quantity (tons.)	%
Cassava	3,229.3	62.0%
Plátano	948.9	18.2%
Corn	440.8	8.5%
Sugar cane	200.4	3.8%
Yam	106.0	2.0%
Sweet potato	70.2	1.3%
Chili pepper	36.1	0.7%
Tavena	24.3	0.5%
Caimarón	21.1	0.4%
Chontaduro	15.8	0.3%
Mapuey	15.3	0.3%
Madura verde	8.1	0.2%
Ahuyama	5.9	0.1%
Rice	2.9	0.1%
Cocoa	2.5	0.05%
Avocado	0.8	0.02%
Others	77.6	1.5%
Subtotal crops	**5,205.9**	**100%**

Fruits	Quantity (tons.)	%
Pineapple	414.6	82.9%
Guama	19.8	4.0%
Papaya	19.7	3.9%
Watermelon	24.2	4.8%
Orange	8.0	1.6%
Lulo	4.3	0.9%
Copo azul	2.7	0.5%
Merey	2.5	0.5%
Temare	1.7	0.3%
Passion fruit	1.4	0.3%
Cashew	0.7	0.1%
Lemon	0.3	0.1%
Subtotal fruits	**499.9**	**100%**

TOTAL GENERAL	**5,705.8 tons.**	

- For 2018, estimated food production in crops was 5,205.9 tons. in several products, and in fruits was 499.9 ton. in the sample of 248 communities. So, total estimated food production was 5,705.8 tons. (**annual average of 23 tons/community**).
- If the value of the average per community is inferred to the 265 communities of the RIU-SM, there would be approximately a production of **6,096.9** tons. in 2018 in all the Indigenous Reservation.

In Annex 4.4.3a of this Monitoring Report is the database with complete information about the food production in each surveyed community in 2018.

The production of food for 2019 is as follows:

Table 9. Estimated food production in sample of 210 communities of the RIU-SM for 2019

Crops / Products	Quantity (tons.)	%
Cassava	4,031.2	78.6%
Plátano	595.5	11.6%
Corn	224.9	4.4%
Sugar cane	96.0	1.9%
Sweet potato	50.3	1.0%
Chili pepper	47.1	0.9%

Fruits	Quantity (tons.)	%
Pineapple	142.5	61.4%
Lulo	63.3	27.3%
Guama	6.0	2.6%
Mango	5.4	2.3%
Papaya	4.7	2.0%
Merey	2.7	1.2%

Crops / Products	Quantity (tons.)	%
Yam	27.9	0.5%
Tavena	12.7	0.2%
Ahuyama	12.1	0.2%
Cocoa	9.4	0.2%
Caimarón	8.9	0.2%
Chontaduro	8.0	0.2%
Madura Verde	2.3	0.0%
Tupiro	1.3	0.0%
Subtotal crops	**5,127.8**	**100%**

Fruits	Quantity (tons.)	%
Guava	2.7	1.2%
Watermelon	2.7	1.2%
Lemon	1.3	0.6%
Cashew	0.7	0.3%
Subtotal fruits	**231.9**	**100%**

TOTAL GENERAL	**5,359.7 tons.**	

- For 2019, estimated food production in crops was 5,127.8 tons. in several products, and in fruits was 231.9 ton. in the sample of 210 communities. So, total estimated food production was 5,359.7 tons. (**annual average of 25.5 tons/community**).
- If the value of the average per community is inferred to the 265 communities of the RIU-SM, there would be approximately a production of **6,763.4** tons. in 2019 in all the Indigenous Reservation.

In Annex 4.4.3b of this Monitoring Report is the database with complete information about the food production in each surveyed community in 2019.

Actions are also being taken to strengthen the production of cassava (*mañoco*), corn, *plátano*, chili pepper, yam, cocoa, sugar cane, fruits and pisciculture, many of which would be associated with the projects developed in productive chains (see *Activity A2.3: Manage resources for project design and establishment of production chains*).

o *Task T2.1.2.1 Local authority (economic support to Captains)*

The Captains of the RIU-SM are responsible for organizing and ensuring the correct execution of the Sustainable Management Plan for Land and Forest. To achieve this goal, the implementation of the Family Agrifood Production Units System -FAPUS- is carried out and quarterly financial support for all the Captains of the RIU-SM is given. Annexes 4.4.4a and 4.4.4b of this Monitoring Report contains a list of the Captains of communities of the RIU-SM, who are economically supported. The Captains also received special and particular socialization of Project results and training in workshops held in the months of May and June 2019 (see *Task T2.2.4.2.15 Training for the Captains* and Annex 4.5.6 of this Monitoring Report).

o *Task T2.1.2.2 Cassava graters*

Cassava graters have been delivered to all indigenous communities in every Sector, to improve the production processes that are carried out to obtain derivative-products from this tuber. It corresponds

to an action to satisfy a generalized need throughout the RIU-SM, with what the processing of this main source of food is supported, especially for women who are responsible for processing cassava.

In the first phase 350 cassava graters were delivered, and in the second phase another 100 graters were delivered (2018). In the third phase 125 (2019). The following table shows the distribution of the number of graters delivered to the communities by each Sector of the RIU-SM.

Table 10. Distribution of the amount of cassava graters delivered in the RIU-SM, by Sectors

Zone		Sector		Quantity phase 1	Quantity phase 2	Quantity phase 3	Total quantity
1	*Media Río Vichada*	1	*Caño Cavasi*	51	26	52	129
		2	*Aiwa Cuna Tsepajivo*	58	5	14	77
			Total Zone 1	**109**	**31**	**66**	**206**
2	*Baja Río Vichada*	3a	*Bajo Río Vichada 1*	66	15	17	98
		3b	*Bajo Río Vichada 2*	69	0	27	96
			Total Zone 2	**135**	**15**	**44**	**194**
3	*Río Orinoco*	4	*Atana Pirariami*	18	7	15	40
		5	*Caño Zama*	6	3	0	9
		6	*Matavén Fruta*	11	5	0	16
		7	*Berrocal - Ajota*	10	4	0	14
			Total Zone 3	**45**	**19**	**15**	**79**
4	*Baja Río Guaviare I*	8	*Laguna Negra y Cacao*	6	5	0	11
		9	*Sejalito - San Benito*	5	5	0	10
		10	*Laguna Anguila - La Macarena*	16	12	0	28
		11	*Barranquito - Laguna Colorada*	8	4	0	12
			Total Zone 4	**35**	**26**	**0**	**61**
5	*Baja Río Guaviare II*	12	*Caño Bocón*	2	0	0	2
		13	*Cumaral*	2	0	0	2
		14	*Yuri*	2	0	0	2
		15	*Giro*	4	2	0	6
		16	*Morocoto - Buenavista - Manajuare*	16	7	0	23
			Total Zone 5	**26**	**9**	**0**	**35**
			Total RIU-SM	**350**	**100**	**125**	**575**

In Annex 4.4.5.4 of this Monitoring Report the detailed list of the number of cassava graters delivered in every communities of the RIU-SM can be consulted.

Other elements that were included with the graters are listed below:

Table 11. Items delivered as part of the kit s of cassava graters

Description	Unity	Quantity phase 1	Quantity phase 2	Quantity phase 3	Total quantity
Cassava grater	Grater	350	100	125	575
Gasoline	Gallon	2,100	500	250	2,850
Lubricant for 2T engine	0.25 gallon	350	200	125	675
Plastic cup with capacity for 2 liters	Cup	700	200	125	1025

Description	Unity	Quantity phase 1	Quantity phase 2	Quantity phase 3	Total quantity
Medium plastic tub to collect the product	Tub	700	200	250	1150
Large plastic tub for 110 liter with lid	Tub	700	200	250	1150
Institutional cap as an element of protection	Cap	2,000	200		2,200
Conventional *Rula* #24	*Rula*	350	200		550
Conventional *Rula* #18	*Rula*	350			350

Some photographs of cassava graters delivered in different Sectors are illustrated as following:

Illustration 53. Cassava graters delivered in Sectors 1 *Caño Cavasi* and 3a *Bajo Río Vichada 1*

Illustration 54. Cassava graters delivered in Sectors 4 *Atana Pirariami* and 8 *L. Negra y Cacao*

Documents in Annex 4.4.5.1 (about the Contract No. 5, 2018, for the acquisition of the cassava graters - Phase 1), documents in Annex 4.4.5.2 of this Monitoring Report (about the Contract No. 31, 2018, for the acquisition of the cassava graters - Phase 2) and documents in Annex 4.4.5.3 of this Monitoring Report (about the Contract No. 7, 2019, for the acquisition of the cassava graters - Phase 3) provide more information about the effective execution of this Task. There are contracts to purchase of graters, start minutes, liquidation minutes, supervisory reports, certificates of compliance with the Contracts,

and execution reports submitted by the contractors, which includes photographs and proof of delivery of graters and other elements to the beneficiaries.

o *Task T2.1.2.3 Farm machinery*

With Project economic resources, agricultural machinery was acquired (as a pilot process) to strengthen the food sustainability of the indigenous reservation. The following are the delivered equipment:

Table 12. Farm machinery delivered

Description	Quantity
Tractor type MF 291: 105 HP, engine 1104A-14T / perlcins, 4 cylinders, transmission 12 * 4.	1
Land harrow MONTANA of 20 discs	1
Polisher T336RB MONTANA 22 discs	1
Agricultural trailer IDEAGRO LT 501 Series	1
Machine to apply lime and fertilizer AGROSHELL	1
Trencher INAMEC 21 -2	1
Front loader shovel - National Industrial	1
Hole maker M50/18 "	1
Corn Seeder MONTANA 4 lines	1
Gasoline - gallons	600
Fat - *caneca*	2
Hydraulic Oil - gallon	20
Valve for transmissions	20
Tractor filter kit	1
Air hose with couplings - meters	20
Manual pump for tank	1
Tractor basic tool kit	1

In Annex 4.4.6 of this Monitoring Report the supervisory report and certificate of compliance with the Contract No. 3, 2019 about the farm machinery delivered for the RIU-SM can be consulted.

Illustration 55. Farm machinery delivered to support the food sustainability in the RIU-SM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o *Task T2.1.2.4: Cookware*

Cookware ("*menaje*" in local language) was provided, with which the aim is to support indigenous women, as heads of household, in their food preparation task, with elements that can contribute to the improvement of health and life quality of the family members. Each of the kits delivered had the following elements:

Table 13. Items delivered as part of the 1000 kits of cookware

Description	Quantity / Kit	Total Quantity (2018)	Total Quantity (2019)	TOTAL
Aluminum pot 40 x 30 cm with handles	1	600	400	1,000
Pot #30 with handles	1	600	400	1,000
Molten Cauldron #30	1	600	400	1,000
Aluminum platter #45	1	600	400	1,000
Plastic bucket x 10 liters	2	1,200	800	2,000
Plastic plate for dry - Melamine	5	3,000	2,000	5,000
Deep dish - Melamine	5	3,000	2,000	5,000
Plastic cup x 10 ounces	5	3,000	2,000	5,000
Metal spoon for dining room	9	5,400	3,600	9,000
Plastic jug x 3,5 liters	1	600	400	1,000

Annex 4.4.7.1 (Contract No. 35, 2018) of this Monitoring Report and its related documents, and the Annex 4.4.7.2 (Contract No. 1, 2019) of this Monitoring Report and its related documents, offer more information about the effective execution of this Task.

Illustration 56. Cookware delivered to families of the RIU-SM

Task T2.1.3: Supervision of the execution of the established measures to develop the FAPUS

- In the contracts executed by ACATISEMA, and through which several of the Tasks are accomplished, there are reports of supervision of the same and certificates of compliance of the contractor, which shows that supervision is being carried out about the execution of the measures established for implementation of FAPUS.
- The Fiscal Observer of ACATISEMA, in accordance with its statutory responsibility, verifies if the Project Activities and Tasks are being fulfilled in the measures, times and scope that they are defined, and presents reports for 2018 and 2019 about the degree of development in which they are found (Annexes 3.4 and 3.5 of this Monitoring Report).

Task T2.1.4: Systematization and divulgation of results about the implementation of the FAPUS

- The members of the *Cabildos* Board, Coordinator Committee, the Captains, the indigenous leaders of the RIU-SM and the direct beneficiaries know the results of the implementation of FAPUS.
- Periodically meetings and workshops are held to socialize the progress in the REDD+ Project RIU-SM Activities, in such a way that the indigenous authorities of the Coordinator Committee, *Cabildos*, Captains, leaders and other inhabitants of the communities know the events that have occurred, the state of development of the Tasks and benefits achieved (Annexes 1.22 to 1.26 of this Monitoring Report: Zonal Meetings for socialization of the implementation of REDD+ Project RIU-SM Activities and budget execution, and Annex 4.2.1 of this Monitoring Report: minutes of socialization meetings in 2018).
- By the end of 2019, copies of the bulletin were printed and delivered to leaders (for its distribution in RIU-SM communities), with which seeks to disseminate the results and benefits of the implementation of the Project Activities during 2018 & 2019 in the RIU-SM. This bulletin contains general elements of the Project, its objective, the problem to be solved, and the developments that have been achieved and that, precisely, are described in more detail in this Monitoring Report (on all its Section 3.1.1). In Annex 4.2.7 is this bulletin.

Task T2.1.5: Design and implementation of the indigenous self-census to update the social and economic characterization of the RIU-SM population

In order to link the people of the Indigenous Reservation with the plans and events directed by the Colombian Government and other institutions related to the protection of natural resources and indigenous communities, a self-census was carried out based on the guidelines established by the *Ministerio del Interior* (Ministry of Interior) to update the social and economic characterization of the RIU-SM population, financed with the economic resources of the Project RIU-SM. This allowed providing the updated information required by the *Ministerio del Interior* to recognize people as potential beneficiaries. This census is very important because of it depends that the persons of the Indigenous Reservation are registered in the official institutional databases and can access the Government's programs.

Performing the self-census was a Task that the RIU-SM authorities had pending for many years. This task had not been fulfilled due to factors such as the high costs that they had to incur in order to survey the inhabitants (with different languages, customs and dynamics), the great extension of the territory, the distance between the communities and the difficult roads.

Annex 4.4.8 of this Monitoring Report offers more information about the effective execution of this Task. There is the Contract No. 14, 2018 (Annex 4.4.8.1), the start minutes (Annex 4.4.8.2), the certificate of compliance with the Contract (Annex 4.4.8.3) and the execution report (Annex 4.4.8.4) presented by the contractor, where it describes how it performed the Task, presents some results and includes photographs.

The self-census also showed that currently the Indigenous Reservation has 15,943 inhabitants, distributed in 3,591 families and in 265 communities. These results are also essential for planning and development of different activities in the RIU-SM. The data obtained in the self-census are in Annex 4.4.8.5 of this Monitoring Report.

o *Task T2.1.5.1 Auxiliaries for survey in conducting the census*

For the realization of the self-census, indigenous individuals from the same RIU-SM were linked, who were properly trained to perform this Task and were paid.

Illustration 57. Group of indigenous who collected the self-census data

Illustration 58. Collecting data in Sectors 2 *Aiwa Cuna Tsepajivo* and 4 *Atana Pirariami*

Illustration 59. Collecting data in Sectors 8 *L. Negra y Cacao* and 11 *Barranquito – L. Colorada*

Illustration 60. Collecting data in Sectors 14 Yuri and 15 *Giro*

- **ACTIVITY A2.2**: Design and develop a training and education program plan for the administration and management of natural resources RIU-SM

This activity is being designed, programmed and budgeted taking into account the institutional programs, for example, of SENA and *Jóvenes en Acción* (Youth in Action). Since the Project has a 30-year horizon, the training of future indigenous reservation leaders is essential. This activity focuses mainly on young people (women and men).

Task T2.2.1: Management of special educational aspects

REDD+ Project RIU-SM aims that students acquire the skills to manage the natural resources of the RIU-SM. The design and implementation of the Project will be the practical basis for the design of the university academic programs.

In the 5 Zonal Meetings held in November 2017, the community representatives expressed, among other aspects, their needs in education and presented their proposals to determine how to manage improvements in this aspect and introduce educational programs in the RIU-SM (Annexes 1.2 to 1.8 of this Monitoring Report: minutes of Zonal Meetings of November 2017, lists of needs and proposals). Thus, these needs and proposals were reflected in the budget for 2018 & 2019 (Annexes 1.9a and 1.9b of this Monitoring Report), in order to satisfy and develop them.

Task T2.2.2: Management to provide libraries and educational endowment

o *Task T2.2.2.1 Library endowment*

Basic endowments were delivered in 2018 to the libraries of 7 educational centers: *Los Ángeles* of *Morrocoy* community (Sector 1 *Caño Cavasi*), *Villa Luz* of *Boponé* community (Sector 2 *Aiwa Cuna Tsepajivo*), *Bakatsolowa* of *Raya community* (Sector 3a *Bajo Río Vichada 1*), *Cadanapay* of *Progreso Integral* community (Sector 3b *Bajo Río Vichada 2*), Internship *Kuawai* of *Sarrapia* community (Sector 6 *Matavén Fruta*), Internship *El Sejal* of *El Sejal* community (Sector 9 *Sejalito San Benito*), and Internship *Manajuare* of *Manajuare* community (Sector 16 *Morocoto Buenavista*).

In 2019 basic endowments were delivered to the libraries of 6 educational centers: *Quince de Febrero* of *Kirey Rincón* community, *María Antonia* of *Kirey Central*, *San José de Kulaya* of *Kirey Loma* community, *Simeria* of *Simeria* community, *San Víctor Manuel Yalano* of *Maniare* community and *San Gerónimo* of *Jordán Tamude* community (Sector 2 *Aiwa Cuna Tsepajibo*).

Each kit of basic endowment for each of the libraries consists of:

Table 14. Items delivered as part of the 13 kits for libraries

Description	Total Quantity
Basic Dictionary of the Spanish Language	100
Board game for children - Mesa: Table: length: 70 cm; width: 70 cm; high: 51 cm; Chair: long: 43 cm; width: 37 cm; high 53 cm	130
Smart TV 49": diagonal measure 123 cm; resolution type 4K	13
Rule of 100 cm MDF	7
Portable compass MDF	7
Square 60° MDF	7
Square 45° MDF	7
DVD drive - component video player	13
Erasable portable board of 120 cm x 80 cm, platinum	13
Erasable marker in box x 10 units, black color	100
Parqués: double-sided board game, 6 seats	65
Large wooden chess	65
Didactic Encyclopedia x 5 volumes	35
Globe of 25 cm diameter	7
Atlas *El Mundo y Colombia*	7
Erasable marker kit x 10 units of many colors	35
Paper ream box - letter size sheets	2

Illustration 61. Endowment for libraries in schools

Illustration 62. Delivery of endowment for libraries in 13 schools


Annex 4.5.1.1 (Contract No. 17, 2018) of this Monitoring Report and its related documents, and Annex 4.5.1.2 (Contract No. 24, 2019) of this Monitoring Report and its related documents, offer more information about the effective execution of this Task.

o *Task T2.2.2.2 Student endowment (school kits)*

The provision of school kits represents an investment to children have better tools to study and learn. What is desired is to increase the percentage of children and adolescents who access education and provide them elements to improve the quality of life of the population. 3,000 school kits were given in phase 1 and 2,866 in phase 2, for a total of 5,866 beneficiaries.

Illustration 63. School kits for basic education students


o *Task T2.2.2.3 Sport endowment*

Provision of sports equipment for the strengthening of the RIU-SM educational units. This provision was made with the objective of promoting sports practices within the Indigenous Reservation and to provide options for the use of free time for children and teenagers.

Following sport endowments were delivered:

Table 15. Sports equipment for RIU-SM schools

Description	Quantity
Sports uniforms	1,324
Soccer balls No. 5	88
Soccer balls No. 4	90
Volleyball balls	30
Soccer nets	10
Futsal nets	10
Volleyball nets	10
Whistle kits	40
Card kits for referees	30

This endowment benefited educational institutions in the RIU-SM.

Annex 4.5.2.1 (Contract No. 21, 2018), Annex 4.5.2.2 (Contract No. 5, 2019), and Annex 4.5.2.3 (Contract No. 13, 2019) of this Monitoring Report and its related documents, offer more information about the effective execution of this Task.

Illustration 64. Endowment of sports equipment delivered to RIU-SM schools




Task T2.2.3: Management to build / remodeling of schools

o *Task T2.2.3.1 Classroom (to schools: Boponé, Raya Bakatsolova, Kadanapay, Sarrapia)*

School classrooms were built in 4 educational centers of the RIU-SM: *Boponé* school of *Boponé* community (Sector 2 *Aiwa Cuna Tsepajivo*), *Raya Bakatsolova* school of *Raya* community (Sector 3a *Bajo Río Vichada 1*), *Kadanapay* school of *Progreso Integral* community (Sector 3b *Bajo Río Vichada 2*), and *Sarrapia* school of *Sarrapia* community (Sector 6 *Matavén Fruta*), as a response to an urgent request from the communities, expressed at the Zonal Meetings in November 2017.

Illustration 65. Classroom built in the *Boponé*'s educational center

Illustration 66. Classroom built in the *Raya*'s educational center

Illustration 67. Classroom built in *the Progreso Integral*'s educational center

Illustration 68. Classroom built in the *Sarrapia*'s educational center

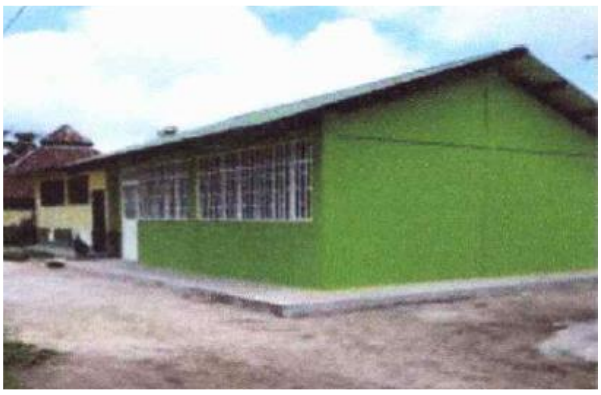


Illustration 69. Children using one of the built classrooms

Annex 4.5.3.1a (Contract No. 8, 2018), Annex 4.5.3.1b (start minutes) Annex 4.5.3.1c (liquidation minutes), Annex 4.5.3.1d (supervision report with the certificate of compliance with the contract) and Annex 4.5.3.1e (photographs of the works carried out) of this Monitoring Report, offer more information about the effective execution of this Task.

Other school rooms were built in 2019 for 4 educational centers of the RIU-SM: *Antonio Nariño* of *Santa Marta* community (Sector 1 *Caño Cavasi*), *San José de Kulaya* of *Kirey Loma* community (Sector 2 *Aiwa Cuna Tsepajivo*), *Soledad Acosta* of *Pirariame* (Sector 4 *Atana Pirariami*), and *José Antono Galán* of *Pueblo Escondido* community (Sector 7 *Berrocal Ajota*).

Community dining room

The constructions of the physical infrastructure of the community dining room for the community of *Manajuare* and a classroom for the community of *Buenavista* (Sector 16 *Morocoto Buenavista Manajuare*) were developed. These constructions are done with the aim of improving the facilities used by children in these communities.

Illustration 70. Physical infrastructure of the dining room in *Manajuare* community

Task T2.2.4.1: Design and planning of the measures to develop training programs

In the 5 Zonal Meetings held in November 2017, the community representatives expressed, among other aspects, their needs in education and presented their proposals about improving the conditions and provision for students in basic education, and to plan who of the young boys graduates of secondary education from the RIU-SM are able to advance to higher education. (Annexes 1.2 to 1.8 of this Monitoring Report). Thus, these needs and proposals were reflected in the budget for 2018 & 2019 (Annexes 1.9a and 1.9b of this Monitoring Report), in order to satisfy and develop them.

Task T2.2.4.2: Execution of the established measures to develop training programs.

o *Task T2.2.4.2.3 Training in pilot agroforestry project*

A pilot agroforestry project with cocoa, *plátano*, corn and forest trees has been defined in the RIU-SM (see Activity 2.3 for more details). During the preparation stage, a series of visits were made by the *Federación Nacional de Cacaoteros* – FEDECACAO (National Federation of Cocoa), an entity that is supporting the implementation of this initiative. During these visits the aspects of the REDD+ Project RIU-SM were socialized and the affair of cooperativism was discussed, as well as the technical details about the cultivation and technological package of cocoa, *plátano*, corn and forest trees, for the participation of indigenous people, so that they received the precise indications on how to execute it, such as selecting lots, drawing plots, understanding the planting model (scale model) and examining the soil.

The following are the minutes of these technical visits of FEDECACAO to implement the pilot agroforestry project with cocoa, *plátano*, corn and forest trees:

- Minutes of technical visit in *Morichal* community on October 24, 2018. 12 indigenous people from the community attended (Annex 4.5.4.1 of this Monitoring Report).
- Minutes of technical visit in *Morocoto* community on October 24, 2018. 12 indigenous people from the community attended (Annex 4.5.4.2 of this Monitoring Report).

- Minutes of technical visit in *Yuri* community on October 24, 2018. 7 indigenous people from the community attended (Annex 4.5.4.3 of this Monitoring Report).
- Minutes of technical visit in *Cumaral* community on October 25, 2018. 18 indigenous people from the community attended (Annex 4.5.4.4 of this Monitoring Report).
- Minutes of technical visit in *Berlin 1* community on October 26, 2018. 24 indigenous people from the community attended (Annex 4.5.4.5 of this Monitoring Report).

In this way, 73 indigenous people were trained in technical aspects of cocoa cultivation.

Illustration 71. Soil review during FEDECACAO visit to *Morichal* community

Illustration 72. Made holes to review the soil profile during the visit to *Morocoto* community

Illustration 73. Families in *Yuri* community responsible for implementing the pilot agroforestry project with cocoa, *plátano*, corn and forest trees

Illustration 74. Meeting with Captain and leaders of *Cumaral* community

Illustration 75. Explanation about the planting model in *Berlin 1* community

o *Task T2.2.4.2.14 Training for the indigenous guard*

The indigenous guards were trained in 2018, as in other years, through workshops held between August 20 and 30, 2018 in which aspects about the REDD+ Project RIU-SM were addressed: climate change, legal regulations, historical review of the Project, logical framework, Products and Activities, specifically, Activity A1.1 regarding the surveillance and control of the territory of the RIU-SM. The minutes of each of these workshops are available, as following:

- Training workshop for 60 indigenous guards in Zones 3, 4 and 5 of the RIU-SM, in the *Laguna Negra* community, from August 20 to 22, 2018 (Annex 4.5.5.1 of this Monitoring Report: minutes, assistance signatures, documents of group work).
- Training workshop for 55 indigenous guards in Zone 2, Sectors 3a and 3b of the RIU-SM, in the *Camonianae* community, from August 24 to 26, 2018 (Annex 4.5.5.2 of this Monitoring Report: minutes, assistance signatures, documents of group work).
- Training workshop for 20 indigenous guards in Zone 1, Sectors 1 and 2 of the RIU-SM, in the *Cumariana* community, from August 28 to 29, 2018 (Annex 4.5.5.3 of this Monitoring Report: minutes, assistance signatures, documents of group work).
- Training workshop for 23 indigenous guards in Zone 1, Sector 1 of the RIU-SM, in the *Mira Luz* community, from August 29 to 30, 2018 (Annex 4.5.5.4 of this Monitoring Report: minutes, assistance signatures, documents of group work).
- Training workshop for 39 indigenous guards in Zone 1, Sector 1 of the RIU-SM, in the *Caracol* community, from March 18 to 20, 2019 (Annex 4.5.5.5 of this Monitoring Report: minutes, assistance signatures, documents of group work).
- Training workshop for 60 indigenous guards in Zone 2, Sector 3a of the RIU-SM, in the *Camunianae* community, from March 22 to 24, 2019 (Annex 4.5.5.6 of this Monitoring Report: minutes, assistance signatures, documents of group work).
- Training workshop for 55 indigenous guards in Zone 2, Sector 9 of the RIU-SM, in the *Sejalito* community, from March 27 to 29, 2019 (Annex 4.5.5.7 of this Monitoring Report: minutes, assistance signatures, documents of group work).

So, in the several minutes, 312 indigenous individuals were trained, including the coordinators of the indigenous guard, who were elected in these same workshops.

A first aid workshop was also held for the members of the indigenous guard. With this training is expected to be of great importance for the community of the RIU-SM, since health services in this territory are scarce and of limited coverage. Indigenous guards have the ability to attend basic situations of accidents or illness, may perform primary care and refer the patient to an institution with greater capacity for medical attention (see Annexes 4.5.5.8 and 4.5.5.9 of this Monitoring Report).

Illustration 76. Indigenous guard in training - *Laguna Negra* and *Camonianae* communities

Illustration 77. Indigenous guard in training - *Cumariana* and *Mira Luz* communities

Illustration 78. First aid workshop to indigenous guard

o *Task T2.2.4.2.15 Training for the Captains*

During 2019 the Captains of the RIU-SM communities participated in workshops of socialization about the Project results and training in governance and execution of some aspectos of Project, between May and June 2019. Details about these workshops are:

- Training workshop for 31 Captains in Zone 1, Sector 1 of the RIU-SM, in the *Puerto Lucía* community, from May 19 to 21, 2019 (Annex 4.5.6.1 of this Monitoring Report: minutes, assistance signatures, documents of group work).
- Training workshop for 38 Captains in Zone 1, Sector 2 of the RIU-SM, in the *Matsuldani* community, from May 22 to 24, 2019 (Annex 4.5.6.2 of this Monitoring Report: minutes, assistance signatures, documents of group work).
- Training workshop for 57 Captains in Zone 1, Sector 2 of the RIU-SM, in the *Urba Morichal* community, from May 25 to 27, 2019 (Annex 4.5.6.3 of this Monitoring Report: minutes, assistance signatures, documents of group work).
- Training workshop for 57 Captains in Zone 2, Sector 3a of the RIU-SM, in the *Wereto* community, from May 28 to 30, 2019 (Annex 4.5.6.4 of this Monitoring Report: minutes, assistance signatures, documents of group work).
- Training workshop for 67 Captains in Zone 4, Sector 8 of the RIU-SM, in the *Laguna Negra* community, from June 07 to 09, 2019 (Annex 4.5.6.5 of this Monitoring Report: minutes, assistance signatures, documents of group work).

So, in the several minutes, 250 Captains were trained.

Illustration 79. Training workshop in *Puerto Lucía* community

o *Educational programs: Task T2.2.4.2.20 Professional programs and Task T2.2.4.2.21 Educational bachelor programs*

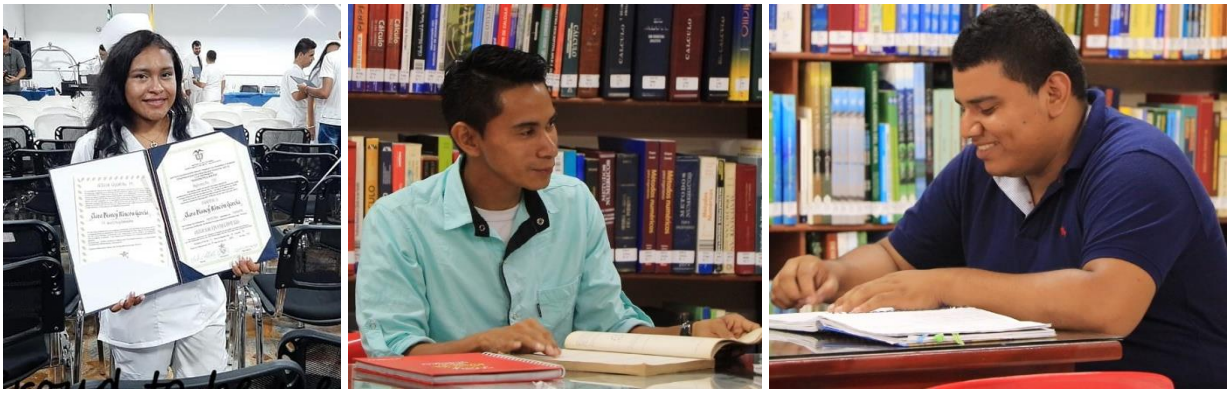
o *Economic support to students: Task T2.2.4.2.22 Programs at the technical, technological, and professional level and Task T2.2.4.2.23 Educational bachelor programs (for teachers)*

During 2018 & 2019, financial support was provided to 121 students belonging to the communities of the RIU-SM, who were previously endorsed by the Captains and *Cabildos* to be beneficiaries. The support consists of the payment of tuition costs for higher education studies and support for maintenance during the study period. These students are developed studies in several educational level and careers, such as technical, technological, professional, postgraduate, educational bachelor's degrees (pedagogy) and complementary training.

This support is essential in the Indigenous Reserve where, according to the census, only 0.59% of the population has a professional career level and 0.06% a technology. These incentives allow a substantial improvement in the quality of life levels of the families of the Indigenous Reserve and encourage the participation of young people in the social processes of the RIU-SM.

What is intended is that, in the same place, students acquire the skills to manage the natural resources of the RIU-SM. The design and implementation of the Project will be the practical basis for the design of university academic programs.

Illustration 80. Youth of the RIU-SM benefit of financial support to study provided by the Project



In Annex 4.5.7 is the list of the 121 students who were supported during 2018 & 2019.

Task T2.2.4.3: Supervision of the execution of the established measures to develop training programs

- The Fiscal Observer of ACATISEMA, in accordance with its statutory responsibility, verifies if the Project Activities and Tasks are being fulfilled in the measures, times and scope that they are defined, and presents reports for 2018 and 2019 about the degree of development in which they are found (Annexes 3.4 and 3.5 of this Monitoring Report).

Task T2.2.4.4: Systematization and divulgation of management to develop training programs.

- The members of the *Cabildos* Board, Coordinator Committee, the Captains, the indigenous leaders of the RIU-SM and the direct beneficiaries know the results of the training programs and about the financial support that is being provided to students of higher education.
- Periodically meetings and workshops are held to socialize the progress in the REDD+ Project RIU-SM Activities, in such a way that the indigenous authorities of the Coordinator Committee, Cabildos, Captains, leaders and other inhabitants of the communities know the events that have occurred, the state of development of the Tasks and benefits achieved (Annexes 1.22 to 1.26 of this Monitoring Report: Zonal Meetings for socialization of the implementation of REDD+ Project RIU-SM Activities and budget execution, and Annex 4.2.1: minutes of socialization meetings in 2018).
- By the end of 2019, copies of the bulletin were printed and delivered to leaders (for its distribution in RIU-SM communities), with which seeks to disseminate the results and benefits of the implementation of the Project Activities during 2018 & 2019 in the RIU-SM. This bulletin contains general elements of the Project, its objective, the problem to be solved, and the developments that have been achieved and that, precisely, are described in more detail in this Monitoring Report (on all its Section 3.1.1). In Annex 4.2.7 is this bulletin.

• **ACTIVITY A2.3**: Manage resources for project design and establishment of production chains.

This activity seeks to complement the FAPUS. A prioritization of the proposals that the indigenous communities have presented for an initial phase is being evaluated.

Task T2.3.1.1: Design and planning of the measures related to development of productive projects.

In the 5 Zonal Meetings held in November 2017, the community representatives expressed, among other aspects, their proposals to determine how to develop productive projects in their territory in a way that allows them to improve their local economic environment (Annexes 1.2 to 1.8 of this Monitoring Report: minutes of Zonal Meetings of November 2017, lists of needs and proposals and budget). Thus, these needs and proposals were reflected in the budget for 2018 & 2019 (Annexes 1.9a and 1.9b of this Monitoring Report), in order to satisfy and develop them.

Task T2.3.1.2: Execution of the established measures related to development of productive projects.

The leaders of the indigenous communities are preparing proposals, with the financial support of the REDD+ Project RIU-SM, to develop productive projects in their communities that allow them to improve the local economic environment. It is wanted that these projects can be developed in productive chains and within the figure of a cooperative. A MEDIAMOS professional is providing direct support in the RIU-SM for the definition of technical proposals in a first instance of evaluation of investment in pilot projects.

During 2018 & 2019, steps were taken to define the productive projects that can begin to be implemented as pilot initiatives in some communities of the RIU-SM, in order to evaluate their development and success. The proposals are as follows:

- Silvopastoral production project.
- Agroforestry project with cocoa, *plátano*, corn, and forest trees.
- Cassava cultivation project to obtain *mañoco*.
- Tourism project.
- *Panelera* cane production project.
- Minor species (hens) production project.
- Crop fish in floating cages (fish farming for food safety).
- Ornamental fish production project.
- Self-sufficient integral community farms (Agrosilvopastoral).
- Training and accompaniment in handcraft processes.
- Lapa zoo-breeder for consumption.

Illustration 81. Production of *mañoco* from cassava is a project that they want to technify


In Annex 4.6.1 of this Monitoring Report "*Informe de gestión realizada en las comunidades del RIU – SM para el apoyo a la implementación de proyectos piloto de cadenas productivas*" (Report of management carried out in the communities of the RIU -SM for the support to the implementation of pilot projects of productive chains) for 2018 & 2019, more details are presented about the definition of productive projects and the actions carried out, such as, for example, meetings with *Federación Nacional de Cacaoteros* – FEDECACAO (National Federation of Cocoa) and *Fondo Nacional de Turismo* – FONTUR (National Tourism Fund), request to the *Ministerio de Comercio, Industria y*

Turismo (Ministry of Commerce, Industry and Tourism), technical files of the proposed projects and socialization meetings.

o *Task T2.3.1.2.1 Silvopastoral system*

- A meat and milk production line is being implemented to complement the FAPUS and improve food production, also in response to requests presented in the 5 Zonal Meetings held in November 2017, in order to provide beef for food for indigenous people. In a first phase, 839 heifers and 82 bulls were delivered (Annex 4.6.2.1 of this Monitoring Report: Contract No. 7, 2018 - Phase 1), in a second phase 235 heifers and 58 bulls were delivered (Annex 4.6.2.2 of this Monitoring Report: Contract No. 30, 2018 - Phase 2) and in a third phase 124 heifers and 102 bulls were delivered (Annex 4.6.2.3 of this Monitoring Report: Contract No. 8, 2019 - Phase 3). The number of animals delivered to the communities for each Sector of RIU-SM is shown below.

Table 16. Distribution of heifers and bulls as part of the silvopastoral system - Phase 1

Sectors of the RIU-SM	Quantity of communities benefited	Quantity of heifers	Quantity of bulls	Total quantity of animals
1 *Caño Cavasi*	32	146	12	158
2 *Aiwa Cuna Tsepajivo*	33	196	20	216
3a *Bajo Río Vichada 1*	46	215	24	239
3b *Bajo Río Vichada 2*	57	282	26	308
Total	**168**	**839**	**82**	**921**

Table 17. Distribution of heifers and bulls as part of the silvopastoral system - Phase 2

Sectors of the RIU-SM	Quantity of communities benefited	Quantity of heifers	Quantity of bulls	Total quantity of animals
1 *Caño Cavasi*	12	41	12	53
2 *Aiwa Cuna Tsepajivo*	11	31	9	40
3a *Bajo Río Vichada 1*	8	25	8	33
3b *Bajo Río Vichada 2*	10	42	10	52
8 *Laguna Negra y Cacao*	4	18	4	22
9 *Sejalito - San Benito*	4	19	4	23
10 *Lag. Anguila - La Macarena*	5	20	3	23
11 *Barranquito - Lag. Colorada*	3	17	3	20
12 *Caño Bocón*	1	5	1	6
13 *Cumaral*	1	4	1	5
14 *Yuri*	1	4	1	5
15 *Giro*	2	9	2	11
Total	**62**	**235**	**58**	**293**

Table 18. Distribution of heifers and bulls as part of the silvopastoral system - Phase 3

Sectors of the RIU-SM	Quantity of communities benefited	Quantity of heifers	Quantity of bulls	Total quantity of animals
1 *Caño Cavasi*	25	15	25	40
2 *Aiwa Cuna Tsepajivo*	21	12	21	33
3a *Bajo Río Vichada 1*	39	32	39	71
3b *Bajo Río Vichada 2*	12	24	2	26
4 *Atana Pirariami*	15	41	15	56
Total	**112**	**124**	**102**	**226**

This silvopastoral system has become an alternative that replaces the consumption of bushmeat, helping to conserve the wildlife of the Selva de Matavén. It is expected that, in the medium term, indigenous communities will consolidate a sustainable silvopastoral system, taking advantage of the large areas of savannas that the Indigenous Reserve has, a condition that allows pasture rotation processes to avoid causing negative impacts on the forest ecosystem.

- Barbed wire to support the silvopastoral system of indigenous communities with an agricultural vocation was delivered in Sectors 1 *Caño Cavasi*, 2 *Aiwa Cuna Tsepajivo*, 3a *Bajo Río Vichada 1* and 3b *Bajo Río Vichada 2*. This input is useful for the construction of fences. The Annex 4.6.2.4 of this Monitoring Report (Contract No. 33, 2019) offer more information.

Illustration 82. Barbed wire delivered in RIU-SM

o *Task T2.3.1.2.2 Pilot agroforestry project with cocoa, plátano, corn and forest trees*

In "*Task T2.2.4.2.3 Pilot agroforestry project with cocoa, plátano, corn and forest trees*" a reference was made to the technical visits that were performed by FEDECACAO to the communities that are implementing it, in which technician aspects were discussed (Annex 4.5.4 of this Monitoring Report). Also, the socialization of this project with these communities was made (Annex 4.6.1.1b1 of this Monitoring Report).

This project is carrying out in 10 communities in Zones 4 and 5 of the RIU-SM, because they have the ideal climatic and environmental conditions for it. These communities have had cocoa crops in previous years and in the highlands of the Guaviare river basin and the *Amanavén* creek. In each community 10 families are in charge of the cultivation and production in 1 hectare of land (each one), in this way 100 families are cultivating 100 hectares. About this project the "*Convenio de Asociación No. 001 de 2019 entre ACATISEMA, MEDIAMOS F&M S.A.S. y FEDECACAO para el establecimiento de 100 has. de cacao bajo sistemas agroforestales en el RIU-SM*" (Association Agreement No. 001, 2019, between ACATISEMA, MEDIAMOS F&M S.A.S. and FEDECACAO for the establishment of 100 hectares. of cocoa under agroforestry systems in the RIU-SM) was signed (Annex 4.6.1.1k of this Monitoring Report).

100,000 cocoa trees have been planted, with 100,000 trees of *plátano* and corn, and 4,000 forest trees for shadow. This is a concrete example of a productive project that is already running.

Illustration 83. Cocoa seedlings for planting

o *Task T2.3.1.2.7 Crafts*

Participation in artisanal fairs nationwide is sponsored by the REDD+ Project RIU-SM, to offer the products made by the people of the Indigenous Reservation.

Illustration 84. Participation of artisans of the RIU-SM in "Expoartesano". Medellin, 2018


o *Task T2.3.1.2.11 Tourism*

According Annex 4.6.1.1b2 of this Monitoring Report, socialization meetings were carried out for community tourism proposal in:

- Meeting in *Miraluz* community, on December 6, 2018, with 11 participants.
- Meeting in *Palmarito* community, on December 6, 2018, with 7 participants.
- Meeting in *Cumaral* community, on December 7, 2018, with 11 participants.
- Meeting in *Morichal* community, on December 7, 2018, with 8 participants.
- Meeting in *Morocoto* community, on December 7, 2018, with 10 participants.
- Meeting in *Yuri* community, on December 7, 2018, with 10 participants.
- Meeting in *Berlin 1* community, on December 8, 2018, with 8 participants.
- Meeting in *Caño Bocón* community, on December 8, 2018, with 12 participants.
- Meeting in *San Luis de la Rompida* community, on December 8, 2018, with 1 participant.
- Meeting in *Sejalito 1* community, on December 8, 2018, with 6 participants.
- Meeting in *Barranco Colorado* community, on December 10, 2018, with 9 participants.
- Meeting in *La Urbana* community, on December 11, 2018, with 12 participants.

As mentioned in the minutes, meetings of socialization of the proposal to develop the community tourism project were attended by 101 participants.

Illustration 85. Meeting of socialization of the proposal for tourism project in *Miraluz* community

Illustration 86. Meeting of socialization of the proposal for tourism project in *Palmarito* community

o *Task T2.3.1.2.16 Dressmaking*

20 sewing machines and other dressmaking tools were provided for the economic and microenterprise strengthening of the indigenous women of the RIU-SM, responding to a need posed by the communities. The implements and materials were the following:

Table 19. List of delivered dressmaking tools

Item	Quantity
Sewing machines with pedal furniture	20
Acrylic rulers kit	20
Thread 120 gauge, black / white, 2,000 yards	80
Golden tip needle	20
Hand needle	80
Dressmaking meter	80

Item	Quantity
Sewing machine oil	20
Polishing scissors	20
Scissors 7.5	80
Family Reel Box	20
Pins	80
Unicolor Dacron	80
Stamped Dacron	80
Dacron pictures	80

Additionally, 40-hour training was provided in the handling of sewing machines and dressmaking and the daily logistics (training room, transportation and food) necessary for the participation of 80 RIU-SM people who benefited.

Illustration 87. Training for handling of sewing machines and dressmaking


Annex 4.6.3.1 (start minutes of Association Agreement No. 37), Annex 4.6.3.2 (supervision report with the certificate of compliance with the Association Agreement) and Annex 4.6.3.3 (execution report presented by the Associated, with photographs) of this Monitoring Report, offer more information about the effective execution of this Task.

Task T2.3.1.3: Supervision of the execution of the established measures related to development of productive projects.

Indigenous people want productive projects to be executed through agreements with institutions that have the particular experience for each type of project (for example, FEDECACAO). As part of the execution of these agreements, a supervision component will be stipulated to ensure that these projects are effectively developed by the indigenous communities and the expected results are obtained. Also, a MEDIAMOS professional is directly supporting and supervising in the RIU-SM the indigenous people who are preparing their proposals.

Task T2.3.1.4: Systematization and divulgation of results about the management to develop productive projects.

- The members of the *Cabildos* Board, Coordinator Committee, the Captains, the indigenous leaders of the RIU-SM and the direct beneficiaries know the results of the management to develop productive projects.
- Periodically meetings and workshops are held to socialize the progress in the REDD+ Project RIU-SM Activities, in such a way that the indigenous authorities of the Coordinator Committee, *Cabildos*, Captains, leaders and other inhabitants of the communities know the events that have occurred, the state of development of the Tasks and benefits achieved (Annexes 1.22 to 1.26 of this Monitoring Report: Zonal Meetings for socialization of the implementation of REDD+ Project RIU-SM Activities and budget execution, and Annex 4.2.1 of this Monitoring Report: minutes of socialization meetings in 2018).
- By the end of 2019, copies of the bulletin were printed and delivered to leaders (for its distribution in RIU-SM communities), with which seeks to disseminate the results and benefits of the implementation of the Project Activities during 2018 & 2019 in the RIU-SM. This bulletin contains general elements of the Project, its objective, the problem to be solved, and the developments that have been achieved and that, precisely, are described in more detail in this Monitoring Report (on all its Section 3.1.1). In Annex 4.2.7 is this bulletin.

Task T2.3.2.1: Design and planning of the measures related to development of commercialization and cooperativism projects.

A cooperativism training was carried out in the *El Coco* community (Km 2, El Coco village, along the Inírida river) from April 4 to 6, 2019, with the participation of 48 indigenous representatives of the communities that will develop the pilot agroforestry productive project with cocoa, plátano, corn and forest trees (Annex 4.6.4.1 of this Monitoring Report: minutes of training workshop).

Illustration 88. Cooperativism training in RIU-SM

The 48 indigenous representatives of the communities that participated in the cooperativism training were established as the founding partners of the COOMATAVÉN Cooperative (Annex 4.6.4.2 of this Monitoring Report: minutes of the creation of the cooperative and Annex 4.6.4.3 of this Monitoring Report: legal identification document of the cooperative).

In accordance with the above, regarding the execution of the Activities and tasks of Product 2, the compliance assessment is now presented.

Compliance with Product 2: Through the execution of Activities A2.1, A2.2 and A2.3, and their respective Tasks, in accordance with the Matrix of Logical Structure (MLS), compliance with the indicators, means of verification and assumptions are as follows:

Product 2: Sustainable production system implemented.		
Indicators	**Means of Verification**	**Assumptions**
1)A Family Agrifood Production Units System - FAPUS has been established to produce at least 4,000 tons of agricultural food / year. *It has been achieved. Indigenous people of RIU-SM communities apply the Sustainable Management Plan for Land and Forest, whereby an average of 6,097 tons of food production was the estimated in RIU-SM in 2018 and 6,763 tons in 2019.* 2)800 graduated high school students have started their training and educational programs for the integral-sustainable management of the forests and lands of the RIU-SM. *The purpose of linking progressively students to higher education, for example , to "Jóvenes en Acción" (Youth in Action) Program, has not been achieved due to that the*	1)Progress reports about the results of the establishment of the Family Agrifood Production Units System (FAPUS). *Reports and information processed about the results of the implementation of FAPUS in all years of implementation of Activity A2.1 are in following Project documents:* - *Annexes of PDD: 25.1.14 (2013), 25.2.06 (2014), 25.3.07 (2015).* - *Annex 8.3 of Monitoring Report 2016-2017.* - *Activity 2.1 of this Monitoring Report.* 2)List and number of indigenous food producers participating in the Family Agrifood Production Units System - FAPUS by Sector and Zone. *The Captains of each community are in charge of implementing the Sustainable Management Plan for Land and Forest. The list of captains is presented in Annex 4.4.4 of this Monitoring Report.* 3)List and quantity of lots/*conucos* and hectares established in the Family Agrifood Production Units System - FAPUS by Sector and Area.	• The community leaders, through the statutory instances of their organization, resolve the internal conflicts that hinder the development of the Project and maintain a willingness to jointly and concerted work. *It was achieved (the experience has been achieved in this regard in RIU-SM).* • The unity of the local communities and their disposition to

Product 2: Sustainable production system implemented.		
Indicators	**Means of Verification**	**Assumptions**
Ministerio del Interior - MinInterior (Ministry of Interior) had not completed the process of registering data of indigenous people who have graduate education secondary to the "Sistema de Información Indígena de Colombia" - SIIC (Colombian System of indigenous Information) but until the end of 2019. With the data already registered, in 2020 the steps are being advanced to link the people of indigenous reservation to the government plans that can provide benefits. *Meanwhile, the REDD+ Project RIU-SM is supporting and subsidizing 121 students in higher education, as it is explained in the Tasks T2.2.4.2.20 Professional programs, T2.2.4.2.21 Educational bachelor programs*, *T2.2.4.2.22 Programs at the technical, technological, and professional level* and *T2.2.4.2.23 Educational bachelor programs (for teachers)", adjusting to current conditions and needs, according to the programs defined in the training plan (Activity A2.2).* 3)Representatives of the 265 communities of the 16 Sectors and the 5 Zones apply environmental knowledge in the design of the Project for the participation of 2,500 families in the *Programa Red de Seguridad Alimentaria* -	*Over the years there have been different updated versions of the FAPUS, including kind of cultivated products and amount:* - *Annex 5 of PDD (years 2013, 2014, 2015).* - *Annex 8.1 of Monitoring Report (years 2016 and 2017).* - *Annex 4.4.2 of this Monitoring Report, where maps of FAPUS show the* lots/*conucos.* 4)Total agricultural products harvested by Sector and Area. *The details regarding agricultural products harvested and quantity, broken down by Zones and Sectors, in all the years of implementation of the Activity A2.1 is in the following Project documents, where tables with cultivated products and quantities are presented:* - *Annexes 25.1.14 (2013), 25.2.06 (2014), 25.3.07 (2015) of PDD.* - *Annex 8.3 of Monitoring Report 2016-2017.* - *Annexs 4.4.3a and 4.4.3b of this Monitoring Report.* 5)List of graduated high school students in the training and educational programs. *It has not been achieved yet, due to the reasons explained (in the column "Indicators" of this table). This program is in the process of formalities. In 2020 the steps are being advanced to link the people of indigenous reservation to the government plans in educational programs.* *However, there are 121 students who receive financial support in Higher Education (Annex 4.5.7 of this Monitoring Report).* 6)List of the representatives of the 265 communities that participate in the design of the Project for the participation of 2,500 families in the *Programa Red de Seguridad Alimentaria* - RESA (Food Safety Network Program) of the	joint and concerted work is maintained. *It has been achieved The Directives of ACATISEMA, leaders and communities are integrated, as is evidenced with held meetings (Annex 1 and Annex 4.2.1 of this Monitoring Report).*

Product 2: Sustainable production system implemented.		
Indicators	**Means of Verification**	**Assumptions**
RESA (Food Safety Network Program). *It had not been achieved. Likewise, to link the communities and families to the national programs, like RESA, first the data of the self-census needed being registered in the "Sistema de Información Indígena de Colombia" - SIIC (Colombian System of indigenous Information). This indicator will also be revised and adjusted. In 2020 the steps are being advanced to link the people of indigenous reservation to the government plans that can provide benefits.* NOTE: an indicator about the establishment of projects in productive chains will be studied and defined, once the formalized project documents are available. For now, a pilot agroforestry project with 100,000 cocoa trees, 100,000 plátano trees, corn and 4,000 forest trees for shadow is in implementation.	*Departamento para la Prosperidad Social* - DPS (Department for Social Prosperity). *It has not been achieved yet, due to the reasons explained (in the column "Indicators" of this table).* 7)List and number of beneficiary families registered in the *Programa Red de Seguridad Alimentaria* - RESA (Food Safety Network Program). *It has not been achieved yet, due to the reasons explained (in the column "Indicators" of this table). In 2020 the steps are being advanced to link the people of indigenous reservation to the government plans in food safety.* 8)Minutes of meetings and events. *The minutes of meetings and workshops of socialization and training are presented in Annex 1 and in Annex 4.2.1 of this Monitoring Report.* 9)Audiovisual records. *It has* been *achieved. The database of audiovisual records is in the Project offices, duly documented, in digital format and, due their size, cannot be attached to this report*.	

Conclusion about compliance with Product 2: The main indicator of this Product is the implementation of a Family Agrifood Production Units System - FAPUS, which has been satisfactorily achieved, particularly in the estimated average production of 12,860 tons of food for 2018 & 2019 (6,430 per year), exceeding the goal of 4,000 tons per year that had been considered as an indicator for this Product.

About the other two indicators:

- Regarding the number of students who should have started their training and educational programs, that was conceived and defined on the basis that they could participate in the *Jóvenes en Acción* (Youth in Action) Program, which had not been achieved because the requirement to have the updated data of population of the entire Indigenous Reservation registered in the SIIC had not been

completed, self-census that was carried out in accordance with the requirements and formats of the *Ministerio del Interior* (Ministry of Interior) and that was already presented in its offices. Upon completion of the self-census data registration process, the resumption of management has been carried out to include high school graduates who could not enter higher education (technical, technological and professional programs) and opt for *Jóvenes en Acción* (Youth in Action) Program (in coordination with the *Servicio Nacional de Aprendizaje* - SENA (Learning National Service), with national coverage. The Project has provided a budget item for this program (Annexes 1.9a and 1.9b of this Monitoring Report: Budget 2018-2019), although the goal will be reviewed and adjusted according to the new conditions.

- The other indicator related to the design of the Project is the participation of 2,500 families in the *Programa Red de Seguridad Alimentaria* - RESA (Food Safety Network Program), which had not achieved because the process to record self-census data in the SIIC still had not completed, as it was mentioned above. Now, since the registration process is completed, the corresponding formalities have been resumed. The objective will also be revised and adjusted according to the new conditions. Participation in this Program is to complement the FAPUS, despite the fact that the objective of food production for the RIU-SM population has been achieved, as explained with respect to indicator 1.
- On the other hand, satisfactory progress is being made in the development of productive projects, as can be seen with the evidences presented about the Project Activity A2.3 and its specific tasks.

The assumptions of Product 2 have been satisfactorily fulfilled. Therefore, it can be concluded that this Product 2 is being fulfilled in its essential aspects: family agri-food production is being appliying (FAPUS), educational programs are in developmenta and the productive projects are carrying out. The management for participation in the *Jóvenes en Acción* and RESA programs will continue, whose objectives will be reviewed and adjusted, as complementary measures. Likewise, an indicator about the establishment of productive chains will be studied and defined.

Finally, as the aspects of Products 1 and 2 were presented, now the Product 3, its Activities and Tasks will be presented as following.

PRODUCT 3: A mechanism for valuation and compensation for environmental services generated in the RIU-SM, validated and verified.

- **ACTIVITY A3.1**: Validate a REDD+ Project with international standards.

Task T3.1.1: Review and adjustment of the REDD+ Project RIU-SM design complying with international standards.

Task T3.1.2: Implementation of required adjustments according to review of the design of the REDD+ Project RIU-SM (baseline, boundaries, stocks of aboveground and belowground carbon, GIS, calculations, quantity to reduced emissions, etc.).

Task T3.1.3: Execution of validation process according to review and adjustment of the design of the REDD+ Project RIU-SM.

These Tasks were accomplished when the Project validation was carried out with ICONTEC.

REDD+ Project RIU-SM Validation

The REDD+ Project RIU-SM achieved to complete its validation process in 2017. It is registered under ID VCSPD1566 (it can be consulted at http://www.vcsprojectdatabase.org/#/home with code 1566), and at APX- VCS Registry (available at https://vcsregistry2.apx.com/myModule/rpt/myrpt.asp?r=111 with the code VCSR1235).

To carry out the validation process, the validating and verifying entity was the *Instituto Colombiano de Normas Técnicas y Certificación* - ICONTEC (Colombian Institute of Technical Standards and Certification), which, in its capacity as Validation/Verification Body – VVB accredited by the VCS Program, issued the Validation & Verification Report of the REDD+ Project RIU-SM on December 5, 2016, based on which it certified that the Project meets the requirements of the VCS-AFOLU standards and requested its registration as a VCS Project.

In the same affair, on December 6, 2016, ICONTEC issued the “VCS VALIDATION DEED OF REPRESENTATION” certificate by which it declares and certifies that it has validated the fulfillment, by the REDD+ Project RIU-SM, of the requirements of the VCS Program, as it is set in the VCS standards.

The documentation related to the validation of the REDD+ Project RIU-SM can be found in the following Annexes of this Monitoring Report:

Annex 4.7.1.1: VCS Project Design Document of the REDD+ Project RIU-SM (PDD).

Annex 4.7.1.2: Validation & Verification Report (first) issued by ICONTEC.

Annex 4.7.1.3: VCS Validation Deed of Representation issued by ICONTEC.

Annex 4.7.1.5: VCS Project Accuracy Review Report issued by VCSA (now VERRA).

Annex 4.7.1.6: Registration Deed of Representation issued by Project proponents.

- **ACTIVITY A3.2**: Verify the Project and to registry the units of forest compensation for avoided deforestation.

Task T3.2.1.1: Planning of verification process of the REDD+ Project RIU-SM.

Task T3.2.1.2: Execution of verification process of the REDD+ Project RIU-SM.

REDD+ Project RIU-SM Verification, that involves the previous Tasks:

The Project has verified twice its reduced emissions

- On the **first** occasion, the verifying entity was the *Instituto Colombiano de Normas Técnicas y Certificación* - ICONTEC (Colombian Institute of Technical Standards and Certification), which, in its capacity as Validation/Verification Body accredited by the VCS Program, issued the Validation & Verification Report of the REDD+ Project RIU-SM (for 2013 & 2014-2015) on December 5, 2016, based on which it verified the reduction of 13,238,074 tons of CO_2e and 2,525,184 tons of CO_2e as buffer.

  In the same affair, on December 6, 2016, ICONTEC issued the "VCS VERIFICATION DEED OF REPRESENTATION" certificate by which it declares and certifies that it has verified the Reductions generated by the Project in accordance with the VCS standards, in 2013 & 2014-2015.

  The documentation related to the **first verification** of the REDD+ Project RIU-SM can be found in the following Annexes of this Monitoring Report:

  Annex 4.7.1.1: VCS Project Design Document of the REDD+ Project RIU-SM (PDD) (including Monitoring for 2013 & 2014-2015).

  Annex 4.7.1.2: Validation & Verification Report issued by ICONTEC.

  Annex 4.7.1.4: VCS Verification Deed of Representation issued by ICONTEC.

  Annex 4.7.1.7: Issuance deed of Representation by Project proponents.

Illustration 89. ICONTEC team and REDD+ Project RIU-SM technician team in field verification


- On the **second** occasion, the verifying entity was the EPIC Sustainability Services Pvt. Ltd (Indian body), which also, in its capacity as Validation/Verification Body accredited by the VCS Program, issued the Verification Report of the REDD+ Project RIU-SM (for Monitoring Period 2016-2017) on November 19, 2018, based on which it verified the reduction of 7,584,460 tons of CO_2e and 1.179.685 tons of CO_2e as a buffer for the mentioned period. Likewise, on November 20, 2018, EPIC issued the "VCS VERIFICATION DEED OF REPRESENTATION" certificate by which it declares and certifies that it has verified the Reductions generated by the Project in accordance with the VCS standards, in Monitoring Period 2016-2017.

  The documentation related to the second verification of the REDD+ Project RIU-SM can be found in the following Annexes of this Monitoring Report:

  Annex 4.7.2.1: Monitoring Report 2016-2017of the REDD+ Project RIU-SM.

  Annex 4.7.2.2: Verification Report 2016-2017 issued by EPIC.

  Annex 4.7.2.3: VCS Verification Deed of Representation issued by EPIC.

  Annex 4.7.2.4: VCS Project Accuracy Review Report issued by VERRA.

  Annex 4.7.2.5: Communication via email informing that findings were closed, send by VERRA.

  Annex 4.7.2.6: Issuance deed of Representation by Project proponents.

Illustration 90. EPIC team and REDD+ Project RIU-SM technician team in field verification

Task T3.2.1.3: Systematization and divulgation of results about the verification process of the REDD+ Project.

- Members of the *Cabildos* Board, Coordinator Committee, Captains and indigenous leaders of RIU-SM know the results of the several verification processes, through Project results socialization meetings (Annex 1 of this Monitoring Report).

Task T3.2.2.1: Commercialization (planning, execution, supervision, systematization, divulgation) of carbon credits issued by REDD+ Project RIU-SM, according to opportunities and conditions of market and customer requirements.

Actions aimed at the commercialization of the VCUs are being fulfilled, which has allowed us to have the resources to execute the budget for 2018 and 2019. ACATISEMA directives have knowledge of the information about the marketing processes

Compliance with Product 3: Through the execution of Activities A3.1, A3.2 and A3.3 and their respective Tasks, in accordance with the Matrix of Logical Structure (MLS), compliance with the indicators, means of verification and assumptions are as follows:

Product 3: A mechanism for valuation and compensation for environmental services generated in the RIU-SM, validated and verified.		
Indicators	**Means of Verification**	**Assumptions**
1)A mechanism for valuation and compensation for environmental services has been designed and validated, according with international standards. *It has been achieved. REDD+ Project RIU-SM achieved its validation in 2016.* 2)Project has been verified and forest compensation units by contribute avoiding deforestation have been registered. *It has been achieved. The REDD+ Project RIU-SM has completed two verification of results processes: the first for 2013 & 2014-2015; the*	1)Project Design Document (PDD). *Project Design Document (PDD) and its annexes is available in Project offices. PDD also can be accessed in the next web link: http://www.vcsprojectdatabase.org/services/publicViewServices/downloadDocumentById/28154.* 2)Report of established monitoring system. *The monitoring system established is part of PDD, Section 4.3 "Monitoring Plan" (page 265). Based on this monitoring system, results have already been verified twice (Annexes 4.7.1.2 and 4.7.2.2 of this Monitoring Report -for 2013 & 2014-2015 and 2016-2017-).* 3)Reports about the results of the validation of REDD+ Project. *There is the JOINT VALIDATION & VERIFICATION REPORT issued by ICONTEC (Annex 4.7.1.2 of this Monitoring Report), whereby it certifies that the REDD+ Project RIU-SM has met all the requirements for this type of initiatives. It is also available in the following web link: https://www.vcsprojectdatabase.org/services/publicViewServices/downloadDocumentById/27786.* 4)Reporting of results of monitoring, verification and registration of forest compensation units.	• The strategic partnership between ACATISEMA and MEDIAMOS F&M S.A.S. is maintained and strengthened. *It has been achieved. The execution of the Project Activities supports and strengthens the continuation with the Strategic Alliance between ACATISEMA and MEDIAMOS.*

Product 3: A mechanism for valuation and compensation for environmental services generated in the RIU-SM, validated and verified.		
Indicators	**Means of Verification**	**Assumptions**
second for 2016-2017. Now, the third verification of results for 2018 & 2019 is in process. 3)The compensation for environmental services for avoided deforestation has been managed. *The compensations received by the environmental services provided by preventing deforestation and contributing to the conservation of the RIU-SM forests are being invested in benefits to the indigenous peoples of the RIU-SM, through the budgetary execution of the REDD+ Project RIU-SM.*	*There is the JOINT VALIDATION & VERIFICATION REPORT for 2013 & 2014-2015, issued by ICONTEC (Annex 4.7.1.2 of this Monitoring Report), whereby it verifies the results achieved by implementation of the REDD+ Project RIU-SM in 2013 & 2014-2015. It is also available in the following web link: https://www.vcsprojectdatabase.org/services/publicViewServices/downloadDocumentById/27786.* *There is the VERIFICATION REPORT for Monitoring Period 2016-2017, issued by EPIC Sustainability Services Pvt. Ltd (Annex 4.7.2.2 of this Monitoring Report), whereby it verifies the results achieved by implementation of the REDD+ Project RIU-SM in 2016-2017. It is also available in the following web link: https://www.vcsprojectdatabase.org/services/publicViewServices/downloadDocumentById/35182.* *Registration of the REDD+ Project RIU-SM has been achieved with APX VCS Registry. It can be consulted in the following web link: https://vcsregistry2.apx.com/myModule/rpt/myrpt.asp?r=111, with code VCSR1235.* 5)Minutes of meetings and events. *The minutes of meetings and workshops of socialization and training are presented in Annex 1 and in Annex 4.2.1 of this Monitoring Report.* 6)Audiovisual records. *It has been achieved. The database of audiovisual records is in the Project offices, duly documented, in digital format and, due their size, cannot be attached to this report*.	

Conclusion about compliance with Product 3: All Activities and Tasks related to Product 3 have been successfully implemented. There is the REDD+ Project RIU-SM for compensation for environmental services, duly validated and certified with international standards, that generates resources for the RIU-SM.

COMPLIANCE WITH THE OBJECTIVES OF THE PROJECT

Based on the level of compliance with Products 1, 2 and 3, which has been examined above, the level of compliance or achievement of the Specific Objective and the Development Objective is now examined.

Specific Objective: Develop a participative process to achieve the establishment of an integrated management system of forests and lands of the RIU-SM, to ensure its sustainability and mitigate threats to their conservation.		
Indicators	**Means of Verification**	**Assumptions**
1)Sustainable Integrated Management System of Forest and Land of RIU-SM established through the direct involvement of 265 communities of the Reservation, based on its sectorial and zonal organization (1,465,786 hectares of primary forest, 11,329 hectares of secondary forest; 30,707 hectares of heterogeneous agricultural areas and pastures, 318,314 hectares of savannah). *Sustainable Management Plan for Land and Forest have been designed, established and it is in development in the RIU-SM by communities.*	1)Progress reports about establishment of Sustainable Integrated Management System of Forest and Land of RIU-SM. *The Zonal Coordinators report that the communities are making good use of the land, reusing many spaces to avoid deforestation. In several reunions held in 2018 & 2019 attendees manifest how they develop the Project Activities (Annex 1 and Annex 4.2.1 of this Monitoring Report).*	• Captains, members of *Cabildos* Board and Coordination Committee and Zonal Coordinators undertake and participate in the development of the Project. *It has been achieved. In several meeting minutes, the indigenous authorities express their support for the REDD+ RIU-SM Project.*
2)At least 80% of the Captains, 20% of women and 25% of young of the Indigenous Reservation have participated to establish the Sustainable Management Plan for Land and Forest of the RIU-SM. *This indicator has been met very satisfactorily. In the implementation of the different activities of the Project, the communities of the RIU-SM, its leaders, women, young people, the elderly and the directives of the Association are being involved.*	2)List of communities and Captains that participate. *There are lists of Captains by community (Annex 4.4.4 of this Monitoring Report).*	
3)The Coordinator Committee, the *Cabildos* Board and Zonal Coordinators of ACATISEMA have increased their capacity for management and organization of governance and for management and conservation of forests and lands in the Indigenous Reservation. *The Association has improved its administrative practices and achieved the benefits provided by REDD+ Project RIU-*	3)Reports about the results of surveillance, control and monitoring. *In the 7 training workshops for the indigenous guard, developed in 2018 & 2019, spaces were allocated for them to work in groups and comment, among other things, about how the surveillance task was being developed. (Annex 4.5.5 of this Monitoring Report).* 4)Management Reports of Coordinator Committee,	• National institutional support for the development of the Project is maintained. *It was achieved. National commitments and policies to promote actions and initiatives for climate change mitigation are maintained.*

Specific Objective: Develop a participative process to achieve the establishment of an integrated management system of forests and lands of the RIU-SM, to ensure its sustainability and mitigate threats to their conservation.		
Indicators	**Means of Verification**	**Assumptions**
SM economic resources. The logistics have been reinforced so ACATISEMA implements the activities more autonomously. 4)Sustainable food production for food security of the inhabitants of the RIU-SM has increased by at least 1,500 tons. *The proposed goal of producing 4,000 tons of food has been achieved. 6,097 tons in 2018 and 6,763 tons in 2019 have been achieved.* 5)The 265 communities of the 17 sectors and 5 zones have improved their communication ways. *The information system is implemented in 100% and the communication system in a 60%. The information system consists of the generation, collection, analysis, processing, storage and recovery of data related to the REDD+ Project RIU-SM Activities, and concerning the Indigenous Reservation. This information is in the offices of ACATISEMA and MEDIAMOS, digitally and physically. The communication system has been improved by implementing actions that increase the frequency of information exchange between communities, through the transportation of people, meetings and informative material.* 6)There shall be no intimidating events for the people of the Indigenous Reservation. *It has been achieved. Although some external sectors intend to intervene in the Project to weaken the Association, especially in the period of election of mayors, governors and municipal councils and departmental assemblies. However, ACATISEMA defense measures have*	*Cabildos* Board and Zonal Coordinators. *In several reunions held in 2018 & 2019 indigenous leaders presents information about their management in the development of the Project Activities and ACATISEMA affairs (Annex 1 of this Monitoring Report).* 5)Reports about food production by Sector and Zone. *See results of implementation of tasks T2.1.2 and T2.1.3. There is information about results of implementation of FAPUS, amount of food produced, products (cassava, plátano, corn, sugar-cane). In Annex 4.4.3 of this Monitoring Report is the database with complete information about the food production.* 6)Reports about the results and evaluation of the communication system. *The corresponding reports about the results, among others, of the communication system have been presented at different meetings. See results of Activity A1.2, Annex 1, and Annex 4.2.1 of this Monitoring Report.* 7)Reports about the management of REDD+ Project RIU-SM. *Minutes of meetings of Joint Commission, Coordinator Committee, Cabildos Board and*	• The autonomy of indigenous peoples is respected in accordance with the legal framework. *It has been achieved so far. ACATISEMA strengthens its governance and executes actions autonomously.*

Specific Objective: Develop a participative process to achieve the establishment of an integrated management system of forests and lands of the RIU-SM, to ensure its sustainability and mitigate threats to their conservation.		
Indicators	**Means of Verification**	**Assumptions**
been taken, especially denying the false rumors.	*Zonal Coordinators (Annex 1 of this Monitoring Report).*	
7)At least 80% of users express satisfaction about participating in the project. *In several reunions (see Table 1) presentation, discussion and evaluation of results have been done during 2018 & 2019. Indigenous people continue willing to attend these meetings and to work to reach the Project Objectives due to benefits it is providing.* *At the Cabildos Board meetings held in January 2019, the participants, Indigenous authorities among others, had a space to give their opinion about the execution of the Activities and the benefits granted with the resources of the REDD+ Project RIU-SM, the same in the Zonal Meetings to socialization of budget execution held in February 2019.* *In general, the opinions were of acceptance and thanks, noting that there are elements to improve. At the XV General Assembly of ACATISEMA the indigenous authorities expressed their approval with the Project and ratified its continuation*	8)Records of meetings and events. *It has been accomplished in 100%. See minutes of meetings (Annex 1, and Annex 4.2.1 of this Monitoring Report).* *The minutes of the XV General Assembly of ACATISEMA is in the Association's offices for any consultation.* 9)Audiovisual records. *It has been achieved. The database of audiovisual records is in the Project offices, duly documented, in digital format and, due their size, cannot be attached to this report*.	

Conclusion about compliance of Specific Objective: As can be seen, the indicators and the corresponding assumptions have been satisfactorily accomplished. Therefore, during the course of the Project (up to this period), this Specific Objective has been satisfactorily achieved.

Development Objective: Contribute to sustainable environmental development of the Colombian Orinoco region through conservation and restoration of forest habitats and their eco-systemic services as a factor for the sustainability of the territory, local communities, climate and biodiversity.		
Indicators	**Means of Verification**	**Assumptions**
1)For 2018 forests and lands of the RIU-SM are managed sustainably with a plan that meets national and international standards,	1)Annual reports about progress and partial results of the Sustainable	• Governmental changes do not affect the

Development Objective: Contribute to sustainable environmental development of the Colombian Orinoco region through conservation and restoration of forest habitats and their eco-systemic services as a factor for the sustainability of the territory, local communities, climate and biodiversity.		
Indicators	**Means of Verification**	**Assumptions**
ensuring the conservation of forest biomass and soil carbon, at least 1.1 million hectares. *It has been achieved. The Sustainable Integrated Management System of Forest and Land is implemented as part of the REDD+ Project RIU-SM actions, in an area of 1,636,423 hectares of natural forests.* 2)For 2018 deforestation and degradation in the RIU-SM has been stopped, at least 90% compared to the deforestation of the period from 2001 to 2011. *According to deforested areas projected for 2018 for PA and LB vs. and the real deforestation, this was stopped for 2018 in 87.95% and for 2019 in 89.68%.* *It is expected to continue achieving the goal in the following years.* 3)For 2018 the 265 communities of the RIU-SM produce 7,000 tons of agricultural food needed for food security. *The proposed goal of producing 4,000 tons of food has been achieved. In this Monitoring Period have been achieved.* *For 2018 the food production was 6,097 tons and for 2019 it was 6,763 tons. It is expected to continue achieving this goal in the following years.* 4)For 2018 at least 1,200 RIU-SM young people (between 15 - 26 years old) have completed and have been certified in technical	Integrated Management System of Forest and Land of the RIU-SM. *There are POA and Project Progress Report for 2018 & 2019 (Annex 2 of this Monitoring Report).* 2)Annual monitoring reports of deforestation and degradation. *There is analysis of deforestation by Monitoring Periods 2013 & 2014-2015, 2016-2017 (already verified) and 2018 & 2019 (current) in these Project documents:* - *PDD, Section 7.1.1 Monitoring results of deforested areas for 2013 & 2014-2015.* - *Monitoring Report 2016-2017, Section 4 "Quantification of GHG emission reductions and removals".* - *Monitoring Report of current 2018 & 2019, Section 5 "Quantification of GHG emission reductions and removals".* 3)Reports about annual amounts of agricultural food produced by Sector and Zone. *The reports and information processed about the results of the implementation of FAPUS are explained according the execution of Activity A2.1 and Annexes 4.4.3a and 4.4.3b of this Monitoring Report.* 4)List and number of participants trained in the development of the Project, by sector and area. *Lists of attendance at meetings and workshops in minutes (Annex 1, and*	development of the Project. *It has been achieved so far.* • The key strategy of development of environmental sustainability projects in Colombia continues, as defined by the *Consejo Nacional de Política Económica y Social* (National Council of Economic and Social Policy) through the document CONPES 3700 (2011). *It has been achieved so far.* • The institutional and legal framework about indigenous communities is respected. *It has been achieved so far.*

Development Objective: Contribute to sustainable environmental development of the Colombian Orinoco region through conservation and restoration of forest habitats and their eco-systemic services as a factor for the sustainability of the territory, local communities, climate and biodiversity.		
Indicators	**Means of Verification**	**Assumptions**
and technological programs related to the sustainable management plan. *According to the results analyzed for Product 2 (indicator 2), this goal should be revised and adjusted according to the current conditions.* 5)For the year 2020 the sustainable management of land and forests in the Colombian Orinoco has spread to at least 2 million hectares. *It is expected that this goal will be achieved based on the different programs that are being promoted for the Colombian Orinoco region (CONPES 3797 of 2014) (CNP, 2014).*	*Annex 4.2.1 of this Monitoring Report).* 5)List and number of students enrolled and certified in technical and technological programs related to the Sustainable Integrated Management System of Forest and Land of the RIU-SM and reports of academic results. *A list of young people who are being paid tuition for studies and who are receiving economic support from the REDD+ Project RIU-SM is presented (Annex 4.5.7 of this Monitoring Report).* 6)Records of meetings, seminars and events in the development of the Project. *It has been accomplished. See minutes of meetings (Annex 1, and Annex 4.2.1 of this Monitoring Report).* 7)Audiovisual records media. *It has been achieved. The database of audiovisual records is in the Project offices, duly documented, in digital format and, due their size, cannot be attached to this report*.	

Conclusion about compliance of Development Objective: As can be seen, based on the compliance of the indicators to date (2018 & 2019), it can be concluded that the development objective is being satisfactorily met so far. Indicator 4 will be reviewed and adjusted according to current conditions.

Based on these analyses of compliance of Products and Objectives (according to Matrix of Logic Structure - PDD, page 45), supported on the execution of Activities and Tasks, it can be concluded that the implementation status of the REDD+ Project RIU-SM is highly satisfactory after 7 years of execution (2013 to 2019) and of great benefit for the communities of the RIU-SM.

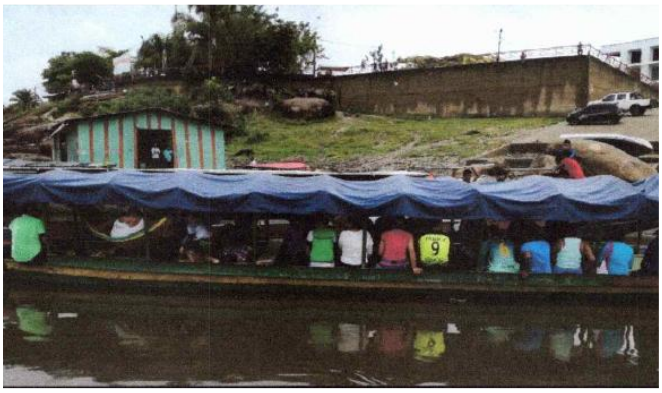
The budget contains additional activities to the previous ones referring to specific aspects of special needs in the Indigenous Reservation, that are not considered in the Matrix of Logical Structure. These activities refer to aspects such as health, drinking water, basic sanitation, construction and improvement of housing, attention to the special population and issues of domestic calamity. Following are the developments achieved in relation to the ACATISEMA Reserves.

EXECUTION OF ACATISEMA RESERVES

- **RA1: Program of health care**

- REDD+ Project RIU-SM provided logistic services in air and land transportation and food for the development of meetings of the traditional indigenous authorities of ACATISEMA for the creation of their own *Institución Prestadora de Servicios de Salud* - IPS (Institution Providing of Health Services) of the RIU-SM (Annex 4.8.1.1 of this Monitoring Report: documents about Contract No. 4, 2018).

Illustration 91. Transport of participants to the meeting to create IPS in the RIU-SM



- This task included that REDD+ Project RIU-SM provided logistic services to carry out the socialization and feedback of the *Sistema Indígena de Salud Propio Intercultural* - SISPI (Intercultural Own Health Indigenous System, according to Decree 1953 of 2014) with the authorities and traditional doctors of sectors 1, 2, 3a and 3b of the RIU-SM (Annex 4.8.1.2 of this Monitoring Report: documents about the Contract No. 36, 2018). This socialization of the Indigenous System of Intercultural Health responds to a struggle for the vindication of the rights of indigenous peoples and for the recognition of their own health systems. The SISPI seeks that by their own health system the knowledge of indigenous peoples and the persons who have been traditionally part of these systems, such as traditional doctors, knowledgeable people, shamans and midwives, be recognized, and to articulate aspects of traditional medicine of native people with the western medicine.

Illustration 92. Logistics to hold the SISPI socialization meeting

- Construction of 6 health posts for indigenous communities *Santa Marta* (Sector 1 *Caño Cavasi*), *Raya - Raya Bakatsolowa* School (Sector 3a *Bajo Río Vichada 1*), *Progreso Integral - Cadanapay* School (Sector 3b *Bajo Río Vichada 2*), *Sarrapia* (Sector 6 *Matavén Fruta*), *Santa Isabel* (Sector 10 *Laguna Anguilla La Macarena*) and *Manajuare* (Sector 16 *Morocoto – Buenavista- Manajuare*) of the RIU-SM (Annex 4.8.1.3 of this Monitoring Report: documents about Contract No. 23, 2018).

  The construction of these points of attention in health has been an initiative that aims to provide better health care to the communities of RIU-SM. These points are part of the projection that ACATISEMA has for the creation of the own IPS, within a larger goal that is the implementation of the SISPI.

Illustration 93. Points of attention in health for communities in RIU-SM

- *Toldillos* and *chinchorros* kits were provided for the improvement of the quality of life and prevention of vector-borne diseases -VBD in all Sectors of the RIU-SM. It was developed in two phases: Annex 4.8.1.4 contains the documentation about Contract No. 2, 2019 (phase I) and Annex 4.8.1.5

corresponds to Contract No. 21, 2019 (phase II). The following table shows the data of the quantities of units delivered:

Table 20. *Toldillos* and *chinchorros* kits delivered in RIU-SM

Description	Quantity (phase I)	Quantity (phase II)	Quantity total
Toldillo 1,40 m x 1,90 m	2,500	1,500	4,000
Chinchorro - Hammocks	2,500	1,500	4,000
Semi-thermal blanket	2,500	1,500	4,000
Medium towel	2,500	1,500	4,000
Institutional *tula* (bag)	2,500	1,500	4,000

Illustration 94. Delivery of *Toldillos* and *chinchorros* kits

- Dental prostheses were provided to strengthen the rehabilitation, promotion, prevention and oral hygiene habits of indigenous women from Sectors 1 *Caño Cavasi*, 2 *Aiwa Cuna Tsepajivo* and 3a *Bajo Río Vichada 1* of the RIU-SM. Annex 4.8.1.6 contains the documentation related to Contract No. 15, 2019.

Illustration 95. Attention in oral health (dental prostheses)

- **RA2: Program of drinking water and basic sanitation**

- Construction of deep wells with photovoltaic pumping equipment and drinking water treatment plants.

  In phase 1, 6 deep wells were built for the indigenous communities *Caño Fistol* and *Sejalito* Internship (Sector 9 *Sejalito - San Benito*), *San Rafael* (Sector 10 *Laguna Anguila - La Macarena*), *Puerto Esperanza* (Sector 11 *Barranquito - Laguna Colorada*), *Cumaral* and *Manajuare* (Sector 16 *Morocoto - Buenavista - Manajuare*) of the RIU-SM (Annex 4.8.2.1 of this Monitoring Report: documents about Contract No. 18, 2018).

  In phase 2, 6 deep wells were built for the indigenous communities *Boponé* (Sector 2 *Aiwa Cuna Tsepajivo*), *Berlin Uno* and *La Macarena* (Sector 10 *Laguna Anguila La Macarena*), *Mapisiare* (Sector 11 *Barranquito Laguna Colorada*), *Caño Bocón* (Sector 12 *Caño Bocón*), *Yuri* (Sector 14 *Yuri*) and *Giro* (Sector 15 *Giro*) of the RIU-SM (Annex 4.8.2.2 of this Monitoring Report: documents about Contract No. 28, 2018).

  In phase 3, 10 deep wells were built for the indigenous communities *Corocito*, *Miralejo*, and *Morrocoy* (Sector 1 *Caño Cavasi*) *Kirey Rincón* and *El Regreso* (Sector 2 *Aiwa Cuna Tsepajivo*), *Chenebo*, *Ukunaesito*, and *Laguna Checa* (Sector 3a *Bajo Río Vichada 1*), *Santa Inés* and *San Juan* (Sector 3b *Bajo Río Vichada 2*) of the RIU-SM (Annex 4.8.2.3 of this Monitoring Report: documents about Contract No. 12, 2019).

  The construction of these deep wells has had a notable impact on the improvement of the quality of life of the Indigenous communities. These deep wells allow for better quality water when preparing food and, consequently, drastically reduce the community's chances of contracting diseases such as diarrhea.

Illustration 96. Deep well with photovoltaic pumping equipment and drinking water treatment plant

- **RA3: Program of housing construction and improvement**

- Material was provided to install adequate roofs in houses (4,200 sheets of zinc), in order to provide improvement of the quality of homes in the communities of Sectors 1 *Caño Cavasi*, 2 *Aiwa Cuna Tsepajivo*, 3a *Bajo Río Vichada 1* and 3b *Bajo Río Vichada 2*, of the RIU-SM. Transportation was provided and this investment was socialized (Annex 4.8.3.1 of this Monitoring Report: documents about Contract No. 26, 2018).
- Other 4,000 sheets of zinc were provided for the improvement of organizational conditions and support for community rooms in Sectors of Zones 3, 4 and 5 of the RIU-SM (Annex 4.8.3.2 of this Monitoring Report: documents about the Contract No. 34, 2018).
- Other 1,360 sheets of zinc were provided for the improvement of organizational conditions and support for community rooms in Sector 15 Giro of Zone 5 of the RIU-SM (Annex 4.8.3.3 of this Monitoring Report: documents about the Contract No. 39, 2019).

Illustration 97. Sheets of zinc to improve the quality of roofs in homes in RIU-SM

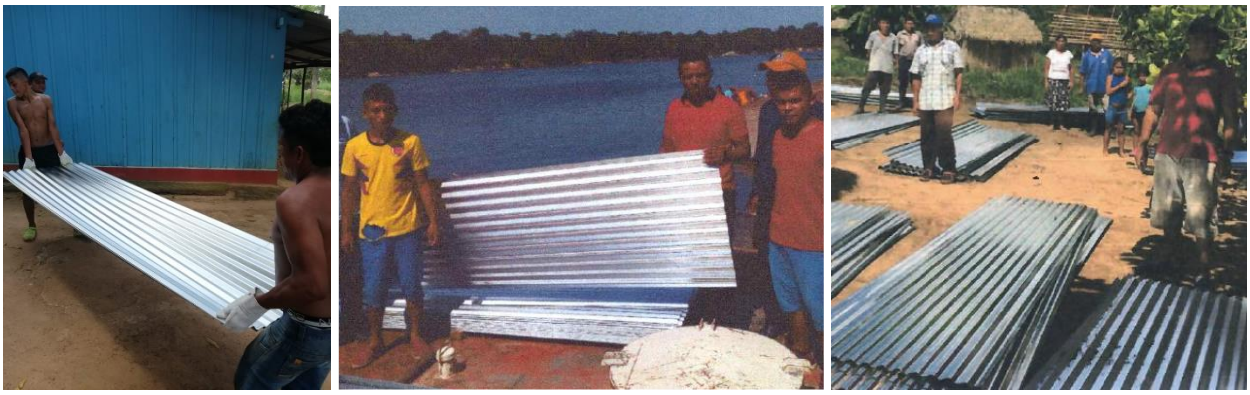


Illustration 98. Logistics for the socialization meeting

- **RA4: Program of attention to special population**

- Food and victuals were provided to support the population of 792 older adults in Sectors of the RIU-SM.

  The Annex 4.8.4.1 of this Monitoring Report presents documents about the Contract No. 29, 2018 (contract, start minutes, liquidation minutes, supervision report, certificate of compliance, the report with the delivery lists and list of the number of indigenous people who received supplies, by community).

  Each package of food and victuals consisted of:

Table 21. Contents of each package of food and victuals delivered to older adults

Description	Quantity per package	Total quantity
Roasted and ground coffee x 250 g	3	6,600
Square *panela* x 375 g	10	22,000
White Piled Rice; presentation: bag x 450 g	10	22,000
Soda cracker x 3 blocks	2	4,400
Salt x 1,000 g	4	8,800
Edible vegetable oil x 1,000 mL	2	4,400
Precooked cornmeal, bag presentation x 500 g	2	4,400
Pasta noodle x 250 g	2	4,400
Sardine in tomato sauce, canned presentation of 425 g	2	4,400
Sausage type Vienna x 150 g	2	4,400
Big sausage x 450 g	2	4,400
Soap paste for washing	2	4,400
Toothpaste paste x 60 g 45 mL	2	4,400
Bath soap	2	4,400

Table 22. Number of older adults who received food and victuals, by Sector

Sector		Number of adults supported
1	*Caño Cavasi*	102
2	*Aiwa Cuna Tsepajivo*	14
3a	*Bajo Río Vichada 1*	134
3b	*Bajo Río Vichada 2*	212
4	*Atana Pirariami*	18
5	*Caño Zama*	12
6	*Matavén Fruta*	34
7	*Berrocal - Ajota*	47
8	*Laguna Negra y Cacao*	31
9	*Sejalito - San Benito*	39
10	*Lag. Anguila - La Macarena*	39
11	*Barranquito - Lag. Colorada*	27
12	*Caño Bocón*	10
13	*Cumaral*	11
14	*Yuri*	6
15	*Giro*	7
16	*Morocoto - Buenavista - Manajuare*	49

Sector	Number of adults supported
Total	**792**

- Provision of sports uniforms, food packages and personal hygiene kits for strengthening actions aimed at the elderly and disabled population were delivered in the RIU-SM (Annex 4.8.4.2 of this Monitoring Report: documents about the Contract No. 23, 2019). The items delivered are described below:

Table 23. Sports uniforms, food packages and personal hygiene kits delivered

Description	Quantity per package	Total quantity
Coffe x 250 g	5	1,600
Panela x 350 g	40	12,800
Edible vegetable oil x 3,000 cm^3	3	960
White rice x 400 g	24	7,680
Salt x 1,000 g	5	1,600
Powdered milk x 380 g	5	1,600
Pasta for soup x 250 g noodel	24	7,680
Yellow precooked cornmeal x 500 g	24	7,680
Wheat flour x 500 g	24	7,680
Sugar chocolate x 500 g	5	1,600
Bar soap paste x 300 g	5	1,600
Toothpaste paste x 75 mL	5	1,600
Bar soap paste x 120 g - bath soap	5	1,600
Toilet paper	12	3,840
Unisex polo shirt, long sleeve in cotton, with embroidered ACATISEMA institutional logo	1	320
Long pants - cotton unisex sweatshirt, with embroidered ACATISEMA institutional logo	1	320
Shorts with embroidered ACATISEMA institutional logo	1	320
Sneaker - athletic	1	320

Illustration 99. Delivery of supplies to elderly population of the RIU-SM

- **RA5: Center of Indigenous Environmental Thought of the Selva Matavén**

- The physical infrastructure of the ACATISEMA Center of Indigenous Environmental Thought of the *Selva Matavén* was built in the municipality of Cumaribo, also providing equipment (Annex 4.8.5 of this Monitoring Report: documents about Contract No: 11, 2018). It seeks to facilitate the socialization of partners and, in general, the governance of ACATISEMA.

Illustration 100. Physical infrastructure built for the ACATISEMA Center of Indigenous Environmental Thought of the *Selva Matavén* in the municipality of Cumaribo

- In the months of April and August, 2018, January, February and June, 2019, a series of meetings on the socialization (with *Cabildos* Board, Coordinator Committee, Zonal Coordinators, Captains and other leaders) about the budget execution were held according to the REDD+ Project RIU-SM Activities. In these meetings, representatives of the ACATISEMA administrative staff gave a report on the actions carried out in the framework of the achievement of the products, activities and tasks, presenting the advances and benefits achieved, as well as the monetary investment made as a result of the compensations obtained by the commercialization of the emissions avoided by the Project.

- **RA6: Aspects of domestic calamity**

- The damages to the territory of RIU-SM caused by the floods were due to the winter wave that, according to the indigenous tradition, occurs more or less every 10 years, what has happened precisely in the years 2017 and 2018. This phenomenon has been decreed as an emergency, affected the indigenous people who inhabit Zones 3, 4 and 5 of the RIU-SM, mainly indigenous people who are seated on river banks and were affected by the loss of their crops and homes, particularly on the Sectors 1 *Caño Cavasi*, 2 *Aiwa Cuna* and 3b *Bajo Río Vichada 2* on the Vichada river, 6 *Matavén Fruta* on the Orinoco river, 10 *Laguna Anguilla - La Macarena*, 11 *Barranquito - Laguna Colorada*, 13 *Cumaral* and 15 *Giro* on the Guaviare river.

So, 1,052 kits of food and victuals were delivered. This is why the Contract No: 32, 2018, was signed in order to provide food and victuals to support the population affected by the winter wave. In total 1,052 supports were provided.

Illustration 101. Affectation to housing in Sector 6 *Matavén Fruta*

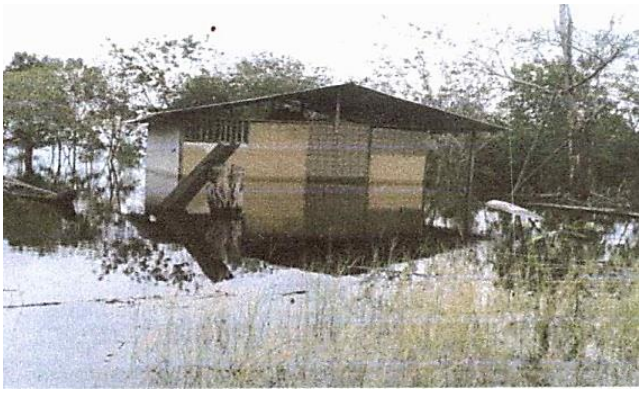


Illustration 102. Affectation to crops in the *Sarrapia* community

Table 24. Number of victims of the winter wave that received aid, by Sector

Sectors		Amount supports
3a	*Bajo Río Vichada 1*	1
4	*Atana Pirariami*	46
5	*Caño Zama*	36
6	*Matavén Fruta*	139
7	*Berrocal - Ajota*	146
8	*Laguna Negra y Cacao*	75
9	*Sejalito - San Benito*	96
10	*Lag. Anguila - La Macarena*	131
11	*Barranquito - Lag. Colorada*	60
12	*Caño Bocón*	14
13	*Cumaral*	50
14	*Yuri*	28
15	*Giro*	22
16	*Morocoto - Buenavista - Manajuare*	208
	Total	**1.052**

Those affected by these events have been helped with exclusive economic resources of the REDD+ Project RIU-SM, since none of these needs or calamities has had government support or public resources of any kind.

Annex 4.8.6 of this Monitoring Report contains the documents about the Contract No: 32, 2018, among which is a file with the list of the number of indigenous people who received aid, by community.

Illustration 103. Logistics to provide aid for the indigenous people affected

Illustration 104. Delivery of aid to affected

- Materials and supplies were provided to support to people affected by the disaster suffered by the *Puerto Lucía* community of Sector 1 *Caño Cavasi* of the RIU-SM (Annex 4.8.6.2 of this Monitorin Report).

Illustration 105. Materials and supplies delivered to *Puerto Lucía* community

3.1.2 Continuity of the Project Activities that commenced prior to this Monitoring Period

In the implementation process of the REDD+ Project RIU-SM for 2018 & 2019, the same Objetives and 3 Products were considered to be achieved, consistent with the Matrix of Logic Structure – MLS

(in PDD, Section 1.8, page 54), and the same 8 Activities, determined prior to this monitoring period, continued to develop on a larger scale, with the purpose to mitigate threats to conservation, protection and recovery of natural resources of indigenous reservation, to ensure its sustainability, and to avoid deforestation of forest of the *Selva de Matavén*.

Also, according to the most priority needs identified by the indigenous people and their development proposals (see Zonal Meetings in November, 2017), a part of budget was assigned to finance and implement additional actions, called ACATISEMA Reserves (as it was seen previously), with which Project seeks to provide benefits for communities of the RIU-SM, representing results sensitive to the population and contributing to the general well-being, which, consequently, means greater support and continuity of the Project Activities.

3.1.3 Monitoring of leakage and non-permanence risk factors

Leakage Control and Monitoring

The Project design defines an area of forest contiguous to the Project Area (PA) with a series of characteristics similar to the PA (among them) that is intended to surround the PA, called the Leakage Belt (LB), and on which, it is assumed, that there will be displacements of deforestation activities that threaten the PA.

Leakage Belt (LB) borders the Project Area (PA) and it is located in the most accessible and likely to be deforested areas. It is a forest area (in 2011) that surrounds or is in the immediate vicinity of the Project Area (PA) to face "the leakage" related to the displacement caused by the REDD+ Project Activities. It meets the requirements of similarity (Annex 10 of PDD, VMD0007) (see Map 2 Project boundaries PA and LB).

In the REDD+ Project RIU-SM the Leakage Belt (LB) surrounds the Project Area (PA) (which is the innermost area of the RIU-SM) and which is also contained in the RIU-SM. The vast majority of the communities are located within the LB; in this sense the set of communities of the RIU-SM forms a kind of "protective wall" of the PA, surrounding it (see Maps 2 and with PA and LB boundaries, communities and RIU-SM; see map 9 of PDD in page 137 and file “map_of_settlements.pdf”). This arrangement, location and relationship between these spatial elements (PA and LB as forest areas within the RIU-SM, communities and territory) is a strategic element conceived and carried out in the design of the Project to reduce the risks of deforestation generated by external agents; the indigenous guard are people of the reservation located in each of the 5 zones of the RIU-SM who perform the task of control and surveillance, as a specific Project Activity (A1.1, see Matrix of Logical Structure -MLS-) financed by the offsets from the sale of the VCUs generated by the Project.

But since the LB is also within the Indigenous Reservation, this area is also controlled and monitored by the indigenous guard and the RIU-SM's communities (located in areas of the perimeter of the RIU-SM), protected of the interventions by external agents.

This set of aspects: strategic geographical location of PA, LB, communities and the RIU-SM's territory, combined with the operation of Project Activity A1.1, financed by it, constitutes a significant measure of control and monitoring of possible displacements by interventions of external deforestation agents towards the Indigenous Reservation (LB, PA).

The REDD+ Project RIU-SM also has arranged resources for every its 8 Activities, with which seek to avoid external deforestation, now coming from VCUs sales, that also precisely seek to avoid the internal deforestation caused by the indigenous people in their territory (A2.1, A2.3) and to prevent that they migrating to other neighboring territories to perform deforestation practices. These Activities A2.1 and A2.3 seek to promote food production projects and production chains that allow changing the practice of deforestation and burning by other productive activities. This seeks to reduce risks of deforestation by internal agents and the displacement of deforestation activities, both inside the reservation (in LB) and outside the RIU-SM.

Leakage by local agents of deforestation is quantified in the Leakage Belt. The area deforested in the Leakage Belt ($A_{DefLB,i,t}$) is estimated in the same manner as the area deforested in the with-project case in the Project Area ($A_{DefPA,i,t}$) using the procedures presented in Section 5 of this Monitoring Report. Activity shifting leakage within the Leakage Belt ($\Delta C_{LK\text{-}ASU\text{-}LB}$) is then calculated as the with-project emissions in the Leakage Belt ($\Delta CP_{,LB}$) minus the baseline emissions in the Leakage Belt ($\Delta C_{BSL,LK,unplanned}$) (Section 5.3 of this Monitoring Report).

Immigrant leakage is calculated using a series of equations found in the VCS VMD0010 LK-ASU Module. Most of the data for calculating immigrant leakage has been derived for the ex-ante estimates (including $\Delta C_{BSL,LK,unplanned}$; $AVFOR$; $TOTFOR$; $PROTFOR$; $MANFOR$; $PROP_{LB}$; $LBFOR$; C_{OLB}; C_{LB}; $PROP_{CS}$; and $A_{BSL,PA,unplanned,t}$) or gathered in the course of monitoring activity shifting leakage within the Leakage Belt (LB) and deforestation in the Project Area (PA) (including A_{DefPA}; $A_{DefLB,i,t}$; and $\Delta CP_{,LB}$).

The monitoring parameters $MANFOR$, $PROTFOR$, $TOTFOR$ will be sourced from official data, peer reviewed publications or other verifiable sources, such as the *Registro Único Nacional de Áreas Protegidas* – RUNAP (National Unique Registry of Protected Areas) of *Parques Nacionales Naturales de Colombia* (Natural National Parks of Colombia) and IDEAM. These monitoring parameters will be updated on review of current literature according to Monitoring Period and available/updated information.

The leakage monitoring is done according to the monitoring plan in the whole area of the RIU-SM; deforestation is monitored in PA and in LB as an activity planned and defined in the PDD, see:

- Section 2.2 of PDD “Applicability of methodology / 3. LK-ASU, Estimation of emissions from activity shifting for avoided unplanned deforestation - VMD0010” (page 129).
- Sub-step 2.3 of PDD “Monitoring of emissions in the project scenario / **iv** Estimation of project emissions (Project Area - PA and Leakage Belt - LB)” (page 278).
- Section 4 of PDD “Achieved GHG Emission Reductions and Removals” (page 356).

- Section 4.2 of PDD “Data and Parameters Monitored” (page 257) and Section 7.1 of PDD “Data and Parameters Monitored” (page 356). Methods and assumptions of Data and Parameters Monitoring have been developed in Section 5 of this Monitoring Report.
- Section 4.3.1.1 of PDD “Data and parameters” (page 265).
- Section 4.3.1.2 of PDD “Stages or processes of the information management / Sub-step 2.1 Monitoring of deforestation” (page 267).
- Section 7.4 of PDD “Leakage Emissions” (page 381).
- Section 7.1.1 of PDD “Monitoring Plan” (page 364).

Data and Parameters Monitoring for Leakage:

$A_{DefLB,i,t}$	Area of recorded deforestation in the leakage belt in the project case in stratum *i* in year *t*
$A_{DefPA,i,t}$	Area of recorded deforestation in the project area in the project case in stratum *i* in year *t*
$\Delta C_{LK\text{-}AS,\ unplanned}$	Net greenhouse gas emissions due to activity shifting for projects preventing unplanned deforestation
$\Delta C_{LK\text{-}ASU\text{-}LB}$	Net CO_2 emissions due to unplanned deforestation displaced from the project area to the Leakage Belt.
$\Delta C_{LK\text{-}ASU\text{-}OLB}$	Net CO_2 emissions due to unplanned deforestation displaced outside the Leakage Belt.
C_{OLB}	Area-weighted average aboveground tree carbon stock for forests available for unplanned deforestation outside the Leakage Belt
C_{LB}	Area weighted average aboveground tree carbon stock for forests available for unplanned deforestation inside the Leakage Belt
$\Delta C_{BSL,LK,unplanned}$	Net CO_2 emissions in the baseline from unplanned deforestation in the leakage belt
$\Delta CP_{,LB}$	Net greenhouse gas emissions within the leakage belt in the project case
LB	Leakage belt área. Map showing the location and stratification of forests within the leakage belt. (100% forest at the beginning of the project).
P_{LK}	Ratio of the area of the leakage belt to the total area of RRD
RRL	Geographical boundaries of the reference region to locate deforestation

$MANFOR$	Total area of forests under active management nationally
$PROTFOR$	Official data, peer reviewed publications and other verifiable sources
$TOTFOR$	Total available national forest area
$PROP_{IMM}$	Estimated proportion of baseline deforestation caused by immigrating population

$PROP_{LB}$	Area of forest available in the Leakage Belt for unplanned deforestation as a proportion of the total national forest area available for unplanned deforestation
$PROP_{CS}$	The proportional difference in carbon stocks between areas of forest available for unplanned deforestation both inside and outside the Leakage Belt
$PROP_{RES}$	Estimated proportion of baseline deforestation caused by population that has been resident for ≥5 years
Leakage Belt Forest Cover Monitoring Map	Map evidencing the stratification and location of the forest in the Leakage Belt at the beginning of each verification period. It has to be evidenced if there are deforested areas.
Leakage Belt Forest Cover Benchmark Map	Map showing the location of forest land within the leakage belt area at the beginning of each Monitoring Period. Only applicable where leakage is to be monitored in a leakage belt.

Control and Monitoring of Non-Permanence Risk Factors

The REDD+ Project RIU-SM has completely applied the VCS AFOLU Non-Permanence Risk Tool (version 4, dated September 19, 2019) and updated the Non-Permanent Risk Report (Annex 5 of this Monitoring Report).

Based on that VCS AFOLU Non-Permanence Risk Tool, 3 types of risks (internal, external and natural) and 11 classes of risk factors (4 classes of internal risks; 3 classes of external risks; 4 classes of natural risks) were identified, including its scores:

Table 25. Types of risks, factors and rating in REDD+ Project RIU-SM according VCS AFOLU Non-Permanence Risk Tool

Type of risk	Class	Risk factors related to	Risk Rating
Internal Risk Factors	1	Project Management	-2
	2	Financial Viability	2
	3	Opportunity Cost	-2
	4	Project Longevity	0
	Total Internal risk (not less than zero)		**0**
External Risk Factors	5	Land Tenure and Resource Access/Impacts	0
	6	Community Engagement	-5
	7	Political Risk	0
	Total External risk factors (not less than zero)		**0**
Natural Risk Factors	8	Fire	1
	9	Pest and Disease outbreaks	0
	10	Extreme Weather	2
	11	Geological Risk	0
	Total Natural risk factors		**3**
	Overall Risk Rating		**10**

The risk rating calculated for this Monitoring Period is:

Total Risk Assessment	**10%**

For this Monitoring Period:

Total Risk Assessment	**10%**
Net change in the project's carbon stocks: $\Delta C_{BSL,unplanned} - \Delta C_P$ (or ΔC_{WPS}, see values in Table 56 of this Monitoring Report)	(2018) 4,023,937 (2019) 6,169,239 10,193,176
TOTAL NUMBER OF CREDITS TO BE DEPOSITED IN THE AFOLU POOLED BUFFER ACCOUNT	1,019,318

Adaptive Management Plan

This valuation of Non-Permanence Risk is subject to periodic considerations. The review of verification reports and the evaluation of the behavior of the Project following the VCS guide, likewise, mitigation measures are identified:

According to category *f)* of risk class 1 (internal risk factors related to project management), the requirement to prepare and execute an Adaptive Management Plan is specified in Section 4.3.3 of PDD “Mitigation Measures and Monitoring actions”, page 280. In that section how the plan was developed is explained:

> *Based on the assumptions presented in the Matrix of Logic Structure … which is at the level of objectives and products, it proceeds to the assessment of risk associated with each respective assumption and the submission of appropriate mitigation measures. The methodology published by the International Tropical Timber Organization in its "Manual for Project Formulation" applies …, Part 3: Description of project interventions, Assumptions, Risks and Sustainability, pages 58-59.*
>
> *According to this methodology, an assumption is a condition that must exist for the project can be successfully developed and it must be formulated with a positive statement of what is expected to happen. Risk is the probability that an assumption is not met.*
>
> *Based on the project design for some risks identified, mitigation measures through project management were arranged; risk factors of Non-permanence and mitigation measures* [were] *presented in* Annex 23 of PDD and, in particular for this Monitoring Period, in Annex 5 are the details about how the Non-Permanence Risk were conducted.

In this way, the Adaptive Management Plan is then systematized in the PDD’s table from page 281 to page 308, which specifies the level of risk associated with an assumption, the corresponding mitigation measures (evidence) and the respective monitoring actions, also indicating to which specific Project Activity is related. In Section 4.3.4 of PDD "Monitoring and documentation of mitigation measures. Adaptive Management Plan" (page 309) this plan is more specified.

Therefore, the different Non-Permanence Risk Factors considered in the VCS AFOLU Non-Permanence Risk Tool, with their respective mitigation measures and monitoring actions, are

contained in this Adaptive Management Plan; however, the plan also contains other mitigation measures and monitoring actions related to other types of risks associated with the assumptions of the Matrix of Logical Structure, as can be seen in the table that was indicated in the PDD.

The following Table presents the monitoring actions corresponding to the mitigation measures that were applied and the tasks of the Project Activities that contain those monitoring actions.

All the tasks indicated in this Table were executed and, therefore, the respective monitoring actions and corresponding mitigation measures were carried out, as indicated in the table, including the Non-Permanence Risk Factors.

Table 26. Monitoring actions for Mitigation Measures according to identified Risks from Adaptive Management Plan

In the monitoring actions for mitigation measures, the Non-Permanence Risk factors / Mitigation measures, indicated in the "**NPRT / M**" column, have been included (see Annex 5 of this Monitoring Report: Non-Permanence Risk Report).

***MA**: Monitoring action; **Act**: Activities*
***NPRT**: Non-permancence Risk type; **IR**: Internal Risk; **ER**: External Risk; **NR**: Natural Risk; **Cl**: Risk Class; **RF**: Risk Factor; **M**: Mitigation*

MA	Act / Tasks	Monitoring action for Mitigation Measures	Mitigation Measures for Risk	NPRT / M	Evidence
MA1	A1.1 *T1.1.2* *T1.1.3*	• Monitoring the routes of surveillance and control that the indigenous guard travels, ensuring they have the required logistics and resources, that documents prepared for this purpose are filled, that they communicate novelties and that corrective actions are taken.	• Maintain surveillance and control of the territory against any threat of intrusion and violation of rights, particularly through of monthly patrols in each zone of the Indigenous Reservation.	*IR* *Cl:1* *RF:b*	Annex 4.1: - Surveilliance Routes. - Indigenous Guard. - Maps. - Templates. - Early warnings of forest fires. - Results.
			• Control and surveillance permanently through the Indigenous Reservation, according with the relevant plan in each Sector and Zone.	*IR* *Cl:1* *RF:b*	
			• Have in account within the control system planned for the REDD+ Project RIU-SM, the monitoring of forest fires and burns.	*NR* *Cl:8*	
			• Maintain forest patrols by the REDD+ project RIU-SM to prevent intrusions by outside actors into the project area. This activity is an ongoing enforcement and tends the protection of 100% of the carbon stock of the project area.	*IR* *Cl:1* *RF:b*	
MA2	A1.1 *T1.1.2* *T1.1.3*	• Monitoring the actions to improve the capacity of the indigenous guard of RIU-SM, noting that training is provided and that necessary tools are provided to accomplish their work.	• Maintain and strengthen the Indigenous Guard across all sectors and zones; they are responsible for making control patrols. It is an ancient practice in the Indigenous Reservation.	*IR* *Cl:1* *RF:b*	Annex 4.1: - Indigenous Guard. - Regulations. - Endowment. - Logistics. - Provisions. - Maps. - Templates. - Results.

MA	Act / Tasks	Monitoring action for Mitigation Measures	Mitigation Measures for Risk	NPRT / M	Evidence
MA3	A1.1 *T1.1.3 T1.1.5*	• Monitoring the actions of training and socialization carried out in the Indigenous Reservation, noting how often they are made and dissemination, by different means, of agreements, managements, activities and Project results (benefits), and the degree of assimilation, by participants to events, of issues of governance, rights and duties as indigenous communities, organizational structure and application of the ACATISEMA Statutes.	• Strengthen the community capacities in management of controlled burnings in the framework of the REDD+ project RIU-SM activities, as well as the implementation of awareness and environmental education programs in schools within the scope of the project. The organization at community level will be also essential to prevent the impacts of these burnings.	*NR Cl:8*	- Annexes 4.2.1, 4.5.6: Minutes of meetings and training / socialization workshops with indigenous leaders and community members. - Annex 4.5.5: Minutes of training workshops to Indigenous Guard. - Annexes 1.10 - 1.16, 1.17 – 1.26: Minutes of meetings with *Cabildos* Board, Coordinator Committee, Project Co-director, Zonal Coordinators and Zonal Meetings. - Minutes of meetings include themes and content. - Annex 1.2.2.1 of PDD:
	A1.2 *T.1.2.2 T1.2.3*		• Train and inform all members of ACATISEMA on the rights and duties of indigenous peoples established in the legal norms, through semiannual workshops in each area Indigenous Reservation.	*ER Cl:5 RF:b M:f*	
			• Maintain ongoing communication and information with communities about the development of the negotiations and implementation of project activities through newsletters, workshops and meetings of socialization. • Strengthen education in ethical values and their application in project management, through zonal workshops.		
			• Maintain continuous and permanent manner, the training of indigenous Zonal Coordinators and Co-director, considering that this group of Indigenous people will taking increasing responsibility in management of project. Workshops and internships were conducted in 2018. • Strengthen technical and administrative training for Project Co-Director, Zonal Coordinators and the Directive Board of ACATISEMA, through workshops in 2018.		
			• Spread widely among communities about the benefits of the project, publishing a booklet and posters in which these benefits are illustrated.	*ER Cl:6 M:c*	
	A1.3 *T1.3.1 T1.3.2*		• Intensify the dissemination of the Agreement, so that all communities clearly aware of the points agreed between ACATISEMA and MEDIAMOS. New edition and publication of the Agreement and Articles of ACATISEMA be made.	*ER Cl:6 RF:a*	
			• Train and educate communities about their rights and duties on Indigenous Reservation in the constitutional, legal framework of the country, developing several workshops in	*ER Cl:5 RF:b*	

MA	Act / Tasks	Monitoring action for Mitigation Measures	Mitigation Measures for Risk	NPRT / M	Evidence
			each area during 2018 & 2019 and about land ownership and use of their resources through a communication material in 2018 & 2019. • Consolidate these rights and duties by applying ACATISEMA Statutes in the constitutional and legal framework.	*ER Cl:5 RF:b*	Strategic Alliance Agreement ACATISEMA-MEDIAMOS is permanently consulted.
			• Strengthen ACATISEMA governance through unity and compliance with its Statutes.		
			• Train Captains, *Cabildos* Board, Directive Board of ACATISEMA, Coordinator Committee and Zonal Coordinators on good governance practices and relationships, through workshops in 2018 & 2019.		
			• Expand and intensify the dissemination and socialization among communities on efforts made and progress through meetings, workshops and communication material.	*ER Cl:6 RF:a*	
MA4	A1.1 *T1.1.5* A1.2 *T.1.2.6* A2.1 *T.2.1.4* A2.2 *T.2.2.4.4* A2.3 *T.2.3.2.4*	• Monitoring the work done by the Zonal Coordinators related to inform constantly in its area of influence on the degree of development of the Project.	• Maintain permanently communication and consultation with indigenous communities through the Zonal Coordinators, at least two workshops per year (one by semester) also be made, that allows interaction between the various indigenous communities.	*ER Cl:6 RF:a, b*	- Annexes 1.12, 1.20, 1.22 – 1.26: Reports of Zonal Coordinators in minutes of socialization workshops.
MA5	A1.1 *T1.1.3*	• Monitoring the consultations that are made about the information that is available from the institutions, saving it in a database.	• Keeping track of early warnings issued by the IDEAM on areas that are susceptible to forest fires and act accordingly.	*NR Cl:8*	- Annex 4.1.10: Information collected on fire risks warnings

MA	Act / Tasks	Monitoring action for Mitigation Measures	Mitigation Measures for Risk	NPRT / M	Evidence
MA6	A1.2 *T1.2.2* *T1.2.3* A1.3 *T1.3.5.1* *T1.3.5.2*	• Monitor the ongoing operation of headquarters provided for the development of the Project, with the presence of members of the management team, especially those offices of ACATISEMA in the cities of Cumaribo and Inírida, noting that they have the physical and technical resources and that preserve the conditions that facilitate travel to those places.	• Maintain the administrative and technical offices of the REDD+ Project RIU-SM, which are located less than 3 hours traveling from the Project Area. ACATISEMA has strengthened its offices in the territory of the RIU-SM (Cumaribo and Inírida).	*IR* *Cl:1* *RF:d*	- Annex 4.8.5: Headquarters of ACATISEMA in Cumaribo. - Annex 4.3.6: Headquarters of ACATISEMA in Inírida.
MA7	A1.2 *T1.2.2* *T1.2.3* A1.3 *T1.3.1* *T1.3.2* *T1.3.3*	• Monitoring the spaces where different government bodies of ACATISEMA actively involved, noting determinations about actions carried out by the Association in an attempt to fulfill its objective.	• Keep ACATISEMA unit to preserve their rights, through consultations and dialogues in meetings of Indigenous Authorities in 2018 & 2019.	*ER* *Cl:5* *RF:b*	- Annexes 1.12, 1.16, 1.17, 1.18, 1.20, 4.5.6: Minutes of meetings of Indigenous Authorities in RIU-SM (*Cabildos* Board and Coordinator Committee).
MA8	A1.2 *T1.2.3* *T1.2.4*	• Monitoring the management made by the administrative team of REDD+ Project RIU-SM relating to the identification of institutional plans led by the Government, its characteristics, its influence on the Project, its preparation and presentation of proposals for inclusion.	• Management the inclusion of Project in plans that are developed at the national, departmental and municipal levels, related to the protection of natural resources and indigenous communities. • Participate in the Colombian Strategy EICDGB and Development Plan of the country, as it is for the low-carbon development, promoting the REDD+ Project RIU-SM will constitute a pilot plan to region and country in control and reducing deforestation and forest degradation.	*ER* *Cl:7* *M:f*	*External Risk Class 7: "Political Risk"; f) Mitigation:* *- Colombia has implemented REDD+ Readiness when it defined the ENREDD+*

MA	Act / Tasks	Monitoring action for Mitigation Measures	Mitigation Measures for Risk	NPRT / M	Evidence
MA9	A1.2 *T1.2.3* *T1.2.4*	• Monitoring the actions made to participate in events of interest to the Project, showing the progress and observing, collecting and putting into practice the lessons learned that can potentiate the development of Project.".	• Present to local, regional and national entities and authorities (including the MADS as Designated National Authority - DNA) the project results, showing compliance with the goals of controlling deforestation and benefits to communities and biodiversity in the area where is located the Indigenous Reservation, achieved through the implementation of Project Activities. • Response to the rights of petition requesting information on the execution of the Project.		*Strategy, now EICDGB.* - *Colombia has defined programs and regulatory frameworks (see Section 1.11 of this Monitoring Report).* - *Colombia has established the MADS as DNA under the CDM and has registered several CDM A/R and REDD+ projects.*
MA10	A1.3 *T1.3.1* *T.1.3.2*	• Monitoring the actions and decisions that address in the Zonal Meetings and the General Assembly of the Association, noting that the leaders of the Indigenous Reserve continue to support the continuity of REDD+	• Ratify in the Zonal Assemblies and each Ordinary General Assembly of ACATISEMA the Agreement between the Association and MEDIAMOS to develop the REDD+ Project RIU-SM.	*IR* *Cl:3* *M:f*	- Annex 1.12: Meeting in which the results of Zonal Meetings (nov 2017) were studied and evaluated.

MA	Act / Tasks	Monitoring action for Mitigation Measures	Mitigation Measures for Risk	NPRT / M	Evidence
		Project RIU-SM, and that ACATISEMA is reaffirmed as the only association that has the property and rights to use the land and resources of the RIU-SM.	• Promoting the project is maintained and extended by ACATISEMA for at least another cycle of 30 years. An "Other If" will be established in the Agreement between ACATISEMA and MEDIAMOS formulating this point. • Promote ACATISEMA commitment to keep Project Activities indefinitely as their strategies and Statutes, becoming in the future the only organization with ownership and right to use their land and resources. An "Other If" will be established in the Agreement between ACATISEMA and MEDIAMOS formulating this point.	*IR Cl4 RF:b*	- Annex 1.1: Meeting in which, among other aspects, another Project cycle of 30 years was approved. - XV Ordinary General Assembly of ACATISEMA
MA11	A1.3 *T1.3.2*	• Monitoring the development of the Project, noting that the activities performed and the results obtained correspond with the agreed commitments and schedule established.	• Strictly observe and respect the Strategic Partnership Agreement between ACATISEMA and MEDIAMOS. • Prioritize resources management and strengthening the FAPUS.	*IR Cl4 RF:b*	- Annexes 1.9a and 1.9b: budget of the Project and ACATISEMA Reserves 2018-2019, according to needs and priorities. - See Section 3.1.1 of this Monitoring Report, where the commitments have been accomplished.
MA12	A1.3 *T1.3.2*	• Monitoring the actions of support and proposals which seek to improve ACATISEMA Statutes, noting the interest	• Manage level ACATISEMA reform statutes for better compliance with the legal and institutional framework on indigenous and to better fulfill the goals and objectives of the project framework issues.		- Commission in ACATISEMA is foreseen for the revision

MA	Act / Tasks	Monitoring action for Mitigation Measures	Mitigation Measures for Risk	NPRT / M	Evidence
		that they can producing and the agreement that can be achieved between indigenous leaders.	• Advice and support reform Statutes ACATISEMA to remedy failures or gaps in their participation and coordination mechanisms. A commission that will report to the General Assembly was appointed.		and adjustment of Statutes.
MA13	A1.3 *T1.3.9*	• Making a financial audit, disposing of reports on the dynamics of resource flow, noting that the distribution of incomes contained in the Strategic Alliance Agreement signed between ACATISEMA and MEDIAMOS is fulfilled.	• Manage project resources, mainly financial, maintaining and respecting all mechanisms and measures necessary internal and external control.		- See Section 3.1.1 in "Task T1.3.9: Perform internal financial audit". - Annexes 3.4 and 3.5: Fiscal Observer reports. - Financial documents are in the offices of ACATISEMA and MEDIAMOS. - Annexes 1.10 - 1.13, 1.15, 1.19 – 1.21: meetings in which aspects as financial, budget and distribution of resources were worked.
			• Ensure compliance with the distribution according to the Strategic Alliance Agreement. Revenues from VCUs sales are conservatively estimated. Financial documents are available for audit if required.		
			• Monitor improving social and economic conditions of indigenous peoples of the Indigenous Reservation.	*IR* *Cl:3* *RF:d*	

MA	Act / Tasks	Monitoring action for Mitigation Measures	Mitigation Measures for Risk	NPRT / M	Evidence
MA14	A2.1 *T2.1.3*	• Monitoring the impact that the activities of the Project are generating, evaluating whether defined and agreed benefits are reaching communities in the manner prescribed in the Project design and schedule established.	• Maintain the benefits of the project, which prevents corruption and violence, and contributes to law enforcement and political and social stability of the region and the country.	*IR* *Cl:3* *RF:d*	- Project has provided benefits to indigenous peoples of RIU-SM and to ACATISEMA, which allow the strengthening of the governance. - See Section 3.1.1.
MA15	A2.1 *T2.1.2* *T2.1.3*	• Monitoring the amount of food produced by indigenous people for self-consumption, noting how enough is and whether it meets the established plans.	• Keep food production activities through FAPUS.		- Annex 4.4.3: Information collected about the execution of FAPUS and food production.
MA16	A1.2 *T1.2.2* A2.1 *T2.1.2* A2.2 *T2.2.1* *T2.2.2* *T2.2.3* *T2.2.4* A2.3 *T2.3.1* A3.2 *T3.2.2*	• Monitoring the management that the administrative and marketing staff of the Project makes to obtain the resources, both investment returns by selling VCUS, and support of partner institutions to properly develop activities, noting cash flow and its sufficiency with respect to required funds and evaluating the magnitude of the impact generated in indigenous communities.	• Maintain and strengthen the efforts that allow arriving in a timely manner, indigenous peoples, benefits in education, food, communication, production, health and housing generated by the project.	*IR* *Cl:3* *RF:d*	- Financial information is in Project offices, available for the audit. - Annexes 1.9a and 1.9b: budget of the Project and ACATISEMA Reserves 2018-2019, based on which, benefits were provided.
			• Secure at least 40%-80% of needed funding to cover the total of required flow of expenses before the project reaches breakeven. Details are provided in a cash flow analysis which can be found in the Section 2.5.1.2 of PDD.	*IR* *Cl:2* *RF:g*	
			• Streamline management of resources for the establishment of sub-projects of productive chains already selected.		
			• Ensure the funds and resources to support the development of the Project Activities during the current years of the project cycle.	*IR* *Cl:2* *RF:c*	

MA	Act / Tasks	Monitoring action for Mitigation Measures	Mitigation Measures for Risk	NPRT / M	Evidence
MA17	A1.2 *T1.2.1* *T1.2.2* A2.3 *T2.3.1* *T2.3.2*	• Monitoring the management made to organize some media in the Indigenous Reservation, consulting about the identified needs, approaches to entities that support these initiatives, agreements have been signed, logistics and resources. *This is still in management.*	• Strengthen communication mechanisms by managing a equipment and digital kiosks, putting into operation agreement with the Ministry of TICs.		- Annexes 1.2 - 1.9a: results of Zonal Meetings, include needs and proposals. - Annexes 1.12, 1.20: *Cabildos* Board decides about needs in RIU-SM.
MA18	A1.3 *T1.3.6.2* A3.2 *T3.2.1.2*	• Monitoring the development of the Project activities, the participation and the degree of dedication of suitable professionals and indigenous people (according to their profile and resume) that participate in Project, reviewing periodic reports and products they generate, noting its willingness to continue until the balance point is achieved.	• Ensure the continued participation, in the team, of professionals with at least 5 years of experience in their field, in each subject area of the Project. • Ensure the continued participation of indigenous in the Co-director team and the six zonal coordinators with at least 5 years of experience in knowledge and management of Indigenous Reservation. • Maintain the strategy of the REDD+ project RIU-SM under which it is developed by an interdisciplinary team of professionals in MEDIAMOS with relevant experience in the development and implementation of forestry projects and with indigenous personal of ACATISEMA with great knowledge of the forest and their communities. The alliance between ACATISEMA and MEDIAMOS is the main element in managing the project because they are groups that complement the technical and scientific part and knowledge of the territory.	*IR* *Cl:1* *RF:c* *IR* *Cl:1* *RF:c* *IR* *Cl:1* *RF:e*	- Team of professionals is maintained, with some changes (see YPOs and Section “4.3.1 Organizational structure” of this Monitoring Report). - Co-director and zonal coordinators are maintained (see Annex 1 of this Monitoring Report). - Reports of results in the different areas of work

MA	Act / Tasks	Monitoring action for Mitigation Measures	Mitigation Measures for Risk	NPRT / M	Evidence
MA19	A3.2 *T3.2.1.2*	• Monitoring the management to develop the processes with the VVB (Validation/Verification Body), so as to quantify the VCUs that can be marketed.	• Expedite the process and procedures of the verification, issuance and marketing of VCUs.		- Annexes 4.7.1, 4.7.2: documents about two verification process and issuance.
MA20	A3.2 *T3.2.2.1*	• Monitoring the actions taken with already contacted institutions and others that can be made new alliances, to achieve marketing of VCUs, by reviewing agreements and contracts signed.	• Intensifying business strategy sales of VCUs from validation was reached, to current year, through agreements with specialized agents and direct sales to customers, taking into account that the Government has established the national instrument for transactions of reduced GHG emissions in Colombia according the Decree 926 of 2017.	*IR Cl:2 RF:g*	- Report about marketing of VCUs are in the Project offices, available for the audit. - Public information about transactions (VCUs issued and retired) is in the web page of APX Registry.
MA21	A3.2 *T3.2.1.2*	• Monitoring the procedures to obtain the verification of the REDD+ Project RIU-SM and the issuance of VCUs. *It has been carried out properly for 2013 & 2014-2015 and 2016-2017.* *See execution of Activities and Tasks (Section 3.1.1) and evidences presented.*	• Achieve the verification of the Project about the Completeness check by Registry Administrator and, possibly, the Accuracy review by VCSA.		- Annexes 4.7.1, 4.7.2: documents about two verification process and issuance

Monitoring actions for Mitigation Measures have been executed properly. See execution of Activities and Tasks (Section 3.1.1 of this Monitoring Report) and evidences presented.

3.1.4 Other changes

There was a change in the direction of the ACATISEMA Association. A new Coordinator Committee was elected in the Ordinary General Assembly, held on September 3-5, 2019. (see *Task T1.3.2: Management of normative and regulatory aspects of ACATISEMA* of this Monitoring Report).

3.2 Deviations

3.2.1 Methodology Deviations

There are no methodology deviations in the application of the approved VCS VM0007 REDD-MF Methodology and its Modules.

3.2.2 Project Description Deviations

There are no Project Description Deviations related to REDD+ Project Resguardo Indígena Unificado – Selva de Matavén.

3.3 Grouped Projects

REDD+ Project Resguardo Indígena Unificado – Selva de Matavén is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

VM0007: METHODOLOGY FRAMEWORK (REDD-MF)

Data / Parameter	$\Delta C_{BSL,unplanned}$
Data unit	t CO_2e
Description	Net greenhouse gas emissions in the baseline from unplanned deforestation
Equations	3
Source of data	Module BL-UP
Value applied	Values applied: See Annex 9 of PDD – VM0007 Table 10. Net GHG emissions under the REDD baseline scenario up to year t*

Justification of choice of data or description of measurement methods and procedures applied	See module BL-UP
Purpose of Data	Calculation of baseline emissions
Comments	Without comment

VMD0001: Estimation of carbon stocks in the above- and below ground biomass in live tree and non-tree pools (CP-AB)

Data / Parameter	***CF***
Data unit	t C t d.m.$^{-1}$
Description	Carbon fraction of dry matter
Equations	1, 3, 10, 11
Source of data	Values from the literature: *IPCC 2006, Volume 4 - AFOLU, Chapter 4 – Forest Land, Table 4.3 Carbon Fraction for aboveground forest biomass (p. 4.48)*
Value applied	0.47
Justification of choice of data or description of measurement methods and procedures applied	The default value is 0.47 tonne of C per tonne of biomass (dry weight). This default value is more realistic for herbaceous biomass *(IPCC 2006, Volume 4 - AFOLU, page 6.9)*.
Purpose of Data	Transform biomass to carbon
Comments	Without comment

Data / Parameter	***R***
Data unit	t root d.m. t^{-1} shoot d.m.
Description	Root to shoot ratio appropriate to species or forest type / biome; note that as defined here, root to shoot ratio is applied as belowground biomass per unit area: aboveground biomass per unit area (not on a per stem basis)
Equations	5, Equation to calculate
Source of data	• Yepes A.P., Navarrete D.A., Duque A.J., Phillips J.F., Cabrera K.R., Álvarez, E., García, M.C., Ordoñez, M.F. 2011. *Protocolo para la estimación nacional y subnacional de biomasa - carbono en Colombia - IDEAM. Bogotá D.C., Colombia. 162 p. tabla 14, p. 86* • IPCC 2006, Chapter 4, page 4.49, Table 4.4 “Tropical moist deciduous forest / above-ground biomass >125 tons ha-1”
Value applied	R = 0.24

Justification of choice of data or description of measurement methods and procedures applied	This is a recommended indirect method for estimating carbon in roots biomass, it is the result of review of more than 160 researches in native tropical, temperate and boreal forests (*Cairns et al, 1997)* in Yepes et al, 2011.
Purpose of Data	Estimating carbon in roots biomass according to aboveground biomass
Comments	Guidelines for Conservative Choice of Default Values: 2. Global value is selected from Table 4.4 of the AFOLU Guidelines (IPCC 2006), by choosing a climatic zone and forest type that most closely matches the project circumstances.

VMD0004: Estimation of stocks in the soil organic carbon pool (CP-S)

Data / Parameter	Dep_{sample}
Data unit	cm
Used in equations	1
Description	Depth in cm to which soil sample is collected
Source of data	Yepes, et al., 2011. *Protocolo para la estimación nacional y subnacional de biomasa - carbono en Colombia - IDEAM*, page 93.
Measurement procedures (if any)	Yepes, et al., 2011. *Protocolo para la estimación nacional y subnacional de biomasa - carbono en Colombia - IDEAM*, Section "*1.1.1 Muestreo en campo*", page 92.
Any comment	Without comment

Data / Parameter	F_{LU}
Data unit	Dimensionless
Used in equations	3
Description	Land use factor before or after conversion
Source of data	Stock Change Factors are provided in Tables 5.5, 5.10, and 6.2 of the IPCC 2006 GL Volume 4
Measurement procedures (if any)	It was used according to source of data.
Any comment	Stock Change Factors as defined in IPCC 2006 GL are equal to the carbon stock in the altered condition as a proportion of the reference carbon stock. Stock Change Factors must be selected to reflect the circumstances most closely matching those of the project area and baseline scenario, especially regarding climate and post-conversion land-use, taking into account management practices and carbon inputs.

Data / Parameter	F_{MG}
Data unit	Dimensionless
Used in equations	3
Description	Management factor before or after conversion
Source of data	Stock Change Factors are provided in Tables 5.5, 5.10, and 6.2 of the IPCC 2006 GL Volume 4
Measurement procedures (if any)	It was used according to source of data.
Any comment	Stock Change Factors as defined in IPCC 2006 GL are equal to the carbon stock in the altered condition as a proportion of the reference carbon stock. Stock Change Factors must be selected to reflect the circumstances most closely matching those of the project area and baseline scenario, especially regarding climate and post-conversion land-use, taking into account management practices and carbon inputs.

Data / Parameter	F_{I}
Data unit	Dimensionless
Used in equations	3
Description	Input factor before or after conversion
Source of data	Stock Change Factors are provided in Tables 5.5, 5.10, and 6.2 of the IPCC 2006 GL Volume 4
Measurement procedures (if any)	I was used according to source of data.
Any comment	Stock Change Factors as defined in IPCC 2006 GL are equal to the carbon stock in the altered condition as a proportion of the reference carbon stock. Stock Change Factors must be selected to reflect the circumstances most closely matching those of the project area and baseline scenario, especially regarding climate and post-conversion land-use, taking into account management practices and carbon inputs.

VMD0007: Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation (BL-UP)

Data / Parameter	$A_{RRD,\ unplanned,\ hrp}$
Data unit	ha
Used in equations	3
Description	Total deforested area during the historical reference period (2001 a 2011) in the RRD

Module parameter originals in	Value taken from the satellite images
Any comments	The Landsat images have the adequate resolution and they are a free and available tool to all public.

Data / Parameter	$C_{AB\_tree,i}$
Data unit	t CO_2-e ha^{-1}
Used in equations	12, 13
Description	Carbon stock in aboveground biomass in trees in stratum i
Module parameter originals in	CP-AB
Any comments	Without comment

Data / Parameter	$C_{BB\_tree,i}$
Data unit	t CO_2-e ha^{-1}
Used in equations	12, 13
Description	Carbon stock in belowground biomass in trees in stratum i
Module parameter originals in	CP-AB
Any comments	Without comment

Data / Parameter	$C_{SOC,i}$
Data unit	t CO_2-e ha^{-1}
Used in equations	12
Description	Carbon stock in soil organic carbon in the baseline in stratum i
Module parameter originals in	CP-S
Any comments	Without comment

Data / Parameter	$C_{SOC,PD-BSL,i}$
Data unit	t CO_2-e ha^{-1}
Used in equations	13
Description	Mean post-deforestation stock in soil organic carbon in the post deforestation stratum i
Module parameter originals in	CP-S
Any comments	Without comment

VMD0010: Estimation of emissions from activity shifting for avoided unplanned deforestation (LK-ASU)

Data / Parameter	$\Delta C_{BSL,LK,unplanned}$
Data unit	t CO_2e
Description	Net CO_2 emissions in the baseline from unplanned deforestation in the leakage belt
Equations	1, 6
Source of data	Module BL-UP
Value applied	Module BL-UP Annex 10 of PDD – VMD0007, Table 47
Justification of choice of data or description of measurement methods and procedures applied	See module BL-UP
Purpose of Data	Calculation of leakage emissions
Comments	Without Comment

Data / Parameter	C_{LB}
Data unit	t CO_2-e ha^{-1}
Description	Area weighted average aboveground tree carbon stock for forests available for unplanned deforestation inside the Leakage Belt
Equations	4
Source of data	field calculated: file: “plot _study _fustales.xlsm”, sheet “calculo Yst var Lk”
Value applied	443.8 t CO_2-e/ha
Justification of choice of data or description of measurement methods and procedures applied	Calculate from field measurements using Module CP-AB. As forests in the leakage belt are deforested, the area weighted average will be recalculated at each Monitoring Period.
Purpose of Data	Calculation of leakage emissions
Comments	Without Comment

Data / Parameter	C_{OLB}
Data unit	t CO_2-e ha^{-1}
Description	Area-weighted average aboveground tree carbon stock for forests available for unplanned deforestation outside the Leakage Belt
Equations	4

Source of data	Literature: Average carbon dioxide –e- (tCO_2-e/ha) Philips J.F (2011) *IDEAM estimaciones de carbono en Colombia Tabla 3.1* C B-ht:132.1 tC/ha
Value applied	484.37
Justification of choice of data or description of measurement methods and procedures applied	2. Use numbers derived from peer-reviewed literature that are nationally or at least regionally appropriate The available national forest area and *MANFOR* and *PROTFOR* will change over time. The area-weighted average will be recalculated at least every 5 years.
Purpose of Data	Calculation of leakage emissions
Comments	Without Comment

Data / Parameter	$A_{BSL,PA\text{-}unplanned,t}$
Data unit	ha
Description	Projected area of unplanned baseline deforestation in the project area at time t
Equations	7
Source of data	Module BL-UP
Value applied	Calculated value. Annex 10 of PDD – VCS Module VMD0007, Table 25
Justification of choice of data or description of measurement methods and procedures applied	See Module BL-UP
Purpose of Data	Calculation of leakage emissions
Comments	Without Comment

VMD0015: Methods for monitoring of GHG emissions and removals (M-MON)

Data / Parameter	***Regional Forest / Non-forest Cover Benchmark Map***
Data unit	ha
Description	Map showing the stratification and location of forest and non-forest areas in the Reference Region RRD at the beginning of the accreditation (*Map of spatial limits RRD 2011 – REDD+ Project RIU-SM*)
Source of data	Landsat satellite images.
Justification of choice of data or description of measurement methods and procedures applied	Landsat images have adequate spatial resolution corresponding to 30 meters and an approximate scale of 1:70000, is a tool available to the public.
Any comments	Without Comment
Used in equations	3

Data / Parameter	***Project Forest Cover Benchmark Map***
Data unit	ha
Description	Map showing the stratification and location of forest areas in the Project area at the beginning of the accreditation (100% forested). (*Map of spatial limit PA 2011 – REDD+ project RIU-SM*)
Source of data	Landsat satellite images
Justification of choice of data or description of measurement methods and procedures applied	Landsat images have adequate spatial resolution corresponding to 30 meters and an approximate scale of 1:70000, is a tool available to the public.
Any comments	Without Comment
Used in equations	3, 8

Data / Parameter	***Leakage Belt Forest Cover Benchmark Map***
Data unit	ha
Description	Map that shows the stratification and location of forest in the Leakage belt at the beginning of the accreditation (100% forested). (*Map of spatial limit CF 2011 – REDD+ project RIU-SM*)
Source of data	Landsat satellite images.
Justification of choice of data or description of measurement methods and procedures applied	Landsat images have adequate spatial resolution corresponding to 30 meters and an approximate scale of 1:70000, is a tool available to the public.
Any comments	Without Comment
Used in equations	3

Data / Parameter	A_i
Data unit	ha
Description	Total area of each stratum i. (*Table spatial boundaries, similarity VMD0016.xlsx*)
Source of data	Landsat satellite images.
Justification of choice of data or description of measurement methods and procedures applied	Every time prior to baseline renewal (at a minimum every ten years)
Any comments	Ex-ante because it is assumed that strata area will remain constant.
Used in equations	19

Data / Parameter	$A_{RRD,\ unplanned,\ hrp}$
Data unit	ha
Description	Total deforested area during the term of reference (until 2011) in the RRD. (*deforestation for HRP -2001 to 2011- in RRD*)
Source of data	Value taken from the Landsat satellite images, used by the Deforestation Model
Justification of choice of data or description of measurement methods and procedures applied	Landsat images have adequate spatial resolution corresponding to 30 meters and an approximate scale of 1:70000, is a tool available to the public.
Any comments	Monitored for purpose of baseline revisions.
Used in equations	This parameter is not associated with any VCS equation; see Annex 10 of PDD – VCS Module VMD0007 Section 2.1.3

Data / Parameter	CF
Data unit	t C t d.m.$^{-1}$
Description	Carbon fraction of dry matter
Source of data	Values from the literature: *IPCC 2006, Volume 4 - AFOLU, Chapter 4 – Forest Land, Table 4.3 Carbon Fraction for aboveground forest biomass (p. 4.48)*
Value applied	0.47
Justification of choice of data or description of measurement methods and procedures applied	The default value is 0.47 tonne of C per tonne of biomass (dry weight). This default value is more realistic for herbaceous biomass *(IPCC 2006, Volume 4 - AFOLU, page 6.9)*.
Purpose of Data	Transform biomass to carbon
Comments	Without comment
Equations	19

Data / Parameter	$fj(X,Y)$
Data unit	t.d.m. tree^{-1}
Description	Allometric equation for species j linking measured tree variable(s) to aboveground biomass of living trees, expressed as t.d.m. tree^{-1}
Source of data	*Protocolo para la estimación nacional y subnacional de biomasa - carbono en Colombia - IDEAM* (Yepes, et al., 2011), Equation 12.
Justification of choice of data or description of measurement methods and procedures applied	Equation with sufficient validation, R^2 = 0.932, with national coverage data for the type of tropical rainforest.

Any Comments	It will be valued by the method “Limited Measurements”. Are selected trees at least 30 species of flora composition in the Project Area, with a minimum of 20 cm in diameter and a maximum diameter that represents the greatest present or potentially present trees in the future in the Project Area in the Leakage belt. • Measure DBH, and height to a 10 cm diameter top or to the first branch. • Calculate stem volume from measurements and multiplying by species-specific density to gain biomass of bole. • Apply a biomass expansion factor to estimate total aboveground biomass from stem biomass. For broadleaf tropical trees this factor shall be: – 1.38 for trees 20-40 cm – 1.33 for trees 40-80 cm – 1.25 for trees ≥ 80 cm • Plot all the estimated biomass of all the measured trees along with the curve of biomass against diameter as predicted by the allometric equation. If the estimated biomass of the measured trees is distributed both above and below the curve (as predicted by the allometric equation) the equation may be used. The equation may also be used if the measured individuals have a biomass consistently higher than predicted by the equation. If plotting the biomass of the measured trees indicates a systematic bias to overestimation of biomass (>75% of the trees above the predicted curve) then destructive sampling must be undertaken, or another equation selected.
Used in equations	This parameter is associated with equation 35, but that equation does not apply.

Data / Parameter	***Change in the land use***
Data unit	%
Description	Percentages of the project area that will change the land use after deforestation.
Source of data	Landsat satellite images.
Justification of choice of data or description of measurement methods and procedures applied	To calculate the rate of deforestation
Comments	Without Comment
Used in equations	This does not apply

VMD0016: Module: Methods for stratification of the project area (X-STR)

Data / Parameter	$A_{BSL,i}$ **or** A_i
Data unit	ha
Description	Area of baseline stratum *i*
Equations	1, 6, 8, 12 or 7
Source of data	Own assessment
Value applied	Annex 15 and Annex 10 of PDD, Table 2
Justification of choice of data or description of measurement methods and procedures applied	GIS coverages, ground survey data and/or remote imagery (satellite photographs) as outlined in Chapter 5.
Purpose of Data	Calculation of baseline emissions
Comments	Without Comment

VMD0017: Estimation of uncertainty for REDD+ project activities (X-UNC)

Data / Parameter	$A_{BSL,RRD,unplanned,t}$
Data unit	ha
Description	Projected area of unplanned baseline deforestation in the RRD in year t
Equations	1
Source of data	Module BL-UP
Value applied	13,857 ha/year
Justification of choice of data or description of measurement methods and procedures applied procedures (if any)	See module BL-UP
Purpose of Data	Calculation of uncertainty
Comments	Without Comment

Data / Parameter	$E_{REDD\_BSL\ SS,i,\ pool\#}$
Data unit	t CO_2e
Description	Carbon stock or GHG sources (eg, trees, dead wood, soil organic carbon, emission from fertilizer addition, emission from biomass burning etc.) in the REDD baseline case
Equations	4
Source of data	The terms denoting significant carbon stocks, GHG sources or leakage emissions from baseline modules (*BL-DFW*, *BL-PL*, *BLUP*) used to calculate net emission reductions.

Value applied	Annex 10 of PDD – VCS Module VMD0007, part 4 step 4.2.1
Justification of choice of data or description of measurement methods and procedures applied procedures (if any)	See relevant modules
Purpose of Data	Calculation of uncertainty
Comments	Baseline stocks and sources are estimated *ex ante* for each baseline period

Data / Parameter	$U_{REDD\_BSL,SS,i,pool\#}$
Data unit	%
Description	Percentage uncertainty (expressed as 95% confidence interval as a percentage of the mean where appropriate) for carbon stocks and greenhouse gas sources in the REDD baseline case (1, 2, *n* represent different carbon pools and/or GHG sources)
Equations	4
Source of data	Calculations arising from field measurement data
Value applied	Annex 16 of PDD – VCS Module VMD0017 Table 7
Justification of choice of data or description of measurement methods and procedures applied procedures (if any)	Uncertainty in pools derived from field measurement with 95% confidence interval calculated as the standard error of the averaged plot measurements in each stratum multiplied by the *t* value for the 95% confidence level For emission sources conservative parameters should be used sufficient to allow the uncertainty to be set as zero.
Purpose of Data	Calculation of uncertainty
Comments	Baseline stocks and sources are estimated *ex-ante* for each baseline period

Data / Parameter	$E_{REDD,WPS,SS,i,\ Pool\#}$
Data unit	t CO_2e
Description	Carbon stock or GHG sources (eg, trees, soil organic carbon) in the project case
Equations	10
Source of data	The terms denoting significant carbon stocks, GHG sources or leakage emissions used in calculating net emission reductions, are from the following relevant modules: CP-AB, CP-S, BL-UP, LK-ASU.
Value applied	See Annex 13 of PDD – VCS Module VMD0001 Carbon Stock in each stratum; file “VMD0017.xlsx” sheet “RIU-SM soils”

Justification of choice of data or description of measurement methods and procedures applied procedures (if any)	See relevant modules
Purpose of Data	Calculation of uncertainty
Comments	The *ex-ante* estimation was derived directly from the estimations originating in the relevant modules: *CP-AB*, *CP-S*.

Data / Parameter	$U_{REDD,WPS,SS,i,pool\#}$
Data unit	%
Description	Percentage uncertainty (expressed as 95% confidence interval as a percentage of the mean where appropriate) for carbon stocks and greenhouse gas sources in the project case (1, 2, *n* represent different carbon pools and/or GHG sources)
Equations	10
Source of data	Calculations arising from field measurement data
Value applied	File "VMD0017.xlsx" sheet "RIU-SM soils"
Justification of choice of data or description of measurement methods and procedures applied procedures (if any)	Uncertainty in pools derived from field measurement with 95% confidence interval calculated as the standard error of the averaged plot measurements in each stratum multiplied by the t value for the 95% confidence level. For emission sources conservative parameters should be used sufficient to allow the uncertainty to be set as zero.
Purpose of Data	Calculation of uncertainty
Comments	*Ex-ante* the uncertainty in the project carbon stocks and sources shall be equal to the calculated baseline uncertainty

4.2 Data and Parameters Monitored

4.2.1 Data and Parameters Monitored every ten years for baseline renewal

VMD0001: Estimation of carbon stocks in the above- and below ground biomass in live tree and non-tree pools (CP-AB)

Data / Parameter	A_{sp}
Data unit	Ha
Used in equations	2, 6, 14
Description	Area of sample plots in ha
Source of data	(Yepes, et al., 2011)

Measurement procedures (if any)	50 x 50 meters (0.25 ha) (Yepes et al. IDEAM, 2011. *Protocolo para la estimación nacional y subnacional de biomasa - carbono en Colombia - IDEAM*, Table 9 page 52)
Monitoring frequency	Monitoring must occur at least every ten years for baseline renewal
QA/QC procedures	Permanent consultation and supervision
Purpose of data	Determination of size of plots to realize field work and then calculate aboveground and below biomass
Calculation method	Literature (Yepes et al. IDEAM, 2011)
Any comment	This parameter was known ex-ante.

Data / Parameter	N
Data unit	Dimensionless
Used in equations	4, 8
Description	Number of sample points
Source of data	(Yepes, et al., 2011)
Measurement procedures (if any)	According to Yepes, 2011. (*Protocolo para la estimación nacional y subnacional de biomasa - carbono en Colombia - IDEAM*, page 24)
Monitoring frequency	Monitoring must occur at least every ten years for baseline renewal.
QA/QC procedures	Permanent consultation and supervision
Purpose of data	Determination of number of plots to realize field work and then calculate aboveground and below biomass
Any comment	This parameter was known ex-ante

Data / Parameter	DBH
Data unit	cm
Used in equations	1, 3
Description	Diameter at breast height of a tree in cm
Source of data	Field measurements in sample plots
Measurement procedures (if any)	Typically measured 1.3 m aboveground. Measure all trees above some minimum DBH in the sample plots. The minimum DBH is 10 cm (for humid tropical forests 10 cm is commonly used). Minimum DBH employed in inventories is held constant for the duration of the project
Monitoring frequency	Monitoring will occur every ten years for baseline renewal
QA/QC procedures	Standard quality control / quality assurance (QA/QC) procedures for forest inventory including field data collection and data management will be applied. Use or adaptation of QA/QCs already applied in national forest monitoring, or available from published handbooks, or form the IPCC GPG LULUCF 2003
Purpose of data	To calculate the biomass of the tree

Calculation method	The circumference of the tree at the height of 1.30 cm is measured and then becomes the DBH. Minimum circumference is approx. 31 cm
Any comment	This parameter was known ex-ante.

Data / Parameter	H
Data unit	m
Used in equations	1, 3
Description	Total height of tree
Source of data	Field measurements in sample plots
Measurement procedures (if any)	The heights of the trees were taken, ***but this variable was not taken into account in the allometric equation***
Monitoring frequency	Monitoring may occur at least every ten years for baseline renewal
QA/QC procedures	This does not apply
Purpose of data	This does not apply
Calculation method	This does not apply
Any comment	This parameter was known ex-ante.

VMD0004: Estimation of stocks in the soil organic carbon pool (CP-S)

Data / Parameter	$C_{SOCsample}$
Data unit	g C/100 g soil (fine fraction <2 mm)
Used in equations	1
Description	Soil organic carbon of the sample in g C/100 g soil
Source of data	Field sampling and laboratory determination
Measurement procedures (if any)	For soil carbon determination, an aggregate sample is collected from within a sample plot in the field, thoroughly mixed and sieved through a 2 mm sieve. The prepared sample is analyzed for percent organic carbon using Walkley-Black method. (Annex 14-2 of PDD)
Monitoring frequency	Soil organic carbon is an included pool, monitoring will occur every ten years for baseline renewal
QA/QC procedures	Standard quality control / quality assurance (QA/QC) is determined by following procedures: field data collection is realized according Protocol of IDEAM (Yepes, et al., 2011) and the analysis is made according Walkley-Black method
Any comments	This parameter was known ex-ante.

Data / Parameter	BD_{sample}
Data unit	g cm^{-3}

Used in equations	1
Description	Bulk density of fine (< 2 mm) fraction of mineral soil per unit volume of sample in g cm^{-3}; bulk density equals the oven dry weight of the fine fraction (< 2 mm) of the soil core divided by the core volume
Source of data	Field sampling and laboratory determination
Measurement procedures (if any)	Procedure applied VMD0004
Monitoring frequency	Soil organic carbon is an included pool, monitoring will occur every ten years for baseline renewal
QA/QC procedures:	Standard quality control / quality assurance (QA/QC) procedures for forest inventory including field data collection and data management will be applied. Use or adaptation of QA/QCs already applied in national forest monitoring, or available from published handbooks, or form the IPCC GPG LULUCF 2003
Any comments	This parameter was known ex-ante.

VMD0007: Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation (BL-UP)

Data / Parameter	***Any spatial feature included in the spatial model that is subject to changes over time (Factor Maps)***
Data unit	Depending on the spatial features selected
Used in equations	This does not apply
Description	Factor Maps
Source of data	According to field verification and geographic information systems (SIG)
Measurement procedures (if any)	Update of digital maps
Monitoring frequency	It will be updated each time the baseline renewal (every 10 years)
QA/QC procedures	If secondary information, revision of reliable sources will be made; if primary information will be obtained according to IDEAM protocols.
Any comment	Without comment

Data / Parameter	***Risk Maps***
Data unit	ha
Used in equations	This does not apply
Description	This map shows, for each pixel, the risk for deforestation as a numerical scale (eg: 0 = 1 = minimal risk and the maximum risk)
Source of data	Maps derived factors.

Measurement procedures (if any)	By FOM confirmation process, testing various options (as specified in Section 3.2 of Annex 10 of PDD VCS-Module BL-UP VMD0007) to reach the best FOM.
Monitoring frequency	It will be adjusted every 10 years at baseline renewal
QA/QC procedures:	By FOM model validation.
Any Comments	Without comment

Data / Parameter	***Baseline Deforestation Maps***
Data unit	Depending on the spatial features selected
Used in equations	This does not apply
Description	Maps showing the location of deforested hectares in each year of the baseline period
Source of data	Landsat satellite image.
Measurement procedures (if any)	Update of digital maps
Monitoring frequency	It will be updated each time the baseline renewal (at least every 10 years)
QA/QC procedures	Quality assessment using field GPS points taken in and confronted by the confusion matrix described in the PDD.
Any comment	Without comment

Data / Parameter	AA_U
Data unit	%
Used in equations	Part 2, Section 2.1.4 of Annex 10 of PDD
Description	Evaluation of the accuracy of unplanned deforestation rate (greater than or equal to 90%)
Source of data	*Protocolo de Procesamiento Digital de Imágenes para la Cuantificación de la Deforestación en Colombia, Nivel Nacional Escala Gruesa y Fina - IDEAM* (Cabrera, Galindo, & Vargas, 2011), chapter "Quality assessment Theme, p. 29 ".
Measurement procedures (if any)	Meidinger model (2003) for the sampling design and model Bernal (2004) for assigning weights per stratum is used.
Monitoring frequency	It will be adjusted every 10 years at baseline renewal
QA/QC procedures	The deforestation rate is calculated by the geographic information system therefore quality control is defined by the image processing control, following the rules of Protocol of IDEAM (Cabrera et al. 2011) and field verification.
Any Comment	Without comment

Data / Parameter	$Correct$
Data unit	ha
Used in equations	15
Description	Area correct due to observed change predicted as change
Source of data	Spatial model of deforestation location
Measurement procedures (if any)	Area estimation through spatial intersection of the observed area and projected to start HRP area.
Monitoring frequency	It will be adjusted every 10 years at baseline renewal
QA/QC procedures	By FOM model validation.
Any Comments	This is generated from the intersection of two facts: The first is the deforestation observed through the satellite in the 2005-2011 period. The second is the projected deforestation (modeled) from 2005 to 2011 in the IDRISI software.

Data / Parameter	E_{rrA}
Data unit	ha
Used in equations	15
Description	Area of error due to observed change predicted as persistence.
Source of data	Spatial model of deforestation location
Measurement procedures (If any)	Estimating spatial intersection area by area as observed with the predicted change as persistent area.
Monitoring frequency	It will be adjusted every 10 years at baseline renewal
QA/QC procedures	By FOM model validation.
Any comment	Without comment

Data / Parameter	E_{rrB}
Data unit	ha
Used in equations	15
Description	Area of error due to observed persistence predicted as change.
Source of data	Spatial model of deforestation location
Measurement procedures (If any)	Area estimation through spatial intersection observed as persistent as the predicted change area.
Monitoring frequency	It will be adjusted every 10 years at baseline renewal
QA/QC procedures	By FOM model validation.
Any comment	Without comment

Data / Parameter	FOM

Data unit	Ha
Used in equations	10
Description	Figure of Merit
Source of data	Remote sensing
Measurement procedures (If any)	Testing various options (as specified in Section 3.2 of Annex 10 of PDD VCS-Module BL-UP VMD0007) to reach the best FOM.
Monitoring frequency	It will be adjusted every 10 years at baseline renewal
QA/QC procedures	By FOM model validation.
Any comment	Without comment

Data / Parameter	***LB***
Data unit	ha
Used in equations	6, to calculate P_{LK}
Description	Leakage Belt area. Map showing the location and stratification of forests within the leakage belt. (100% forest at the beginning of the project).
Source of data	Landsat satellite images.
Measurement procedures (If any)	Methodology described in the PD. Following the instructions in the *Protocolo de Procesamiento Digital de Imágenes para la Cuantificación de la Deforestación en Colombia, Nivel Nacional Escala Gruesa y Fina - IDEAM* (Cabrera, Galindo, & Vargas, 2011) and supported by (GOFC-GOLD, 2016).
Quality Assurance / Quality Control	Where leakage belt boundaries have not been derived using GPS on-the-ground measurements quality control shall be carried out. A minimum of 30 locations on the leakage belt boundary, each separated by at least 1 km, shall be visited. If a systematic bias is detected in the original boundaries and/or if >10% of locations differ by >50 m then the entire boundary shall be re-surveyed. According to quality control employed by the *Protocolo de Procesamiento Digital de Imágenes para la Cuantificación de la Deforestación en Colombia, Nivel Nacional Escala Gruesa y Fina – IDEAM* (Cabrera, Galindo, & Vargas, 2011).
Monitoring frequency	It will be updated each time the baseline renewal (at least every 10 years).
QA/QC procedures	Quality assessment using field points GPS taken in and confronted by the confusion matrix described in the PDD.
Any comment	The stratification is based on the official map of Biomes IGAC (2008), available at the national SIGOT.

Data / Parameter	***PA***

Data unit	Ha
Used in equations	1, 2
Description	Unplanned deforestation project area. Map showing the location and stratification of forests within the project area (100% forest at the beginning of the project).
Source of data	Landsat satellite images
Measurement procedures (If any)	Methodology described in the PD. Follow the guidelines of the "*Protocolo de Procesamiento Digital de Imágenes para la Cuantificación de la Deforestación en Colombia, Nivel Nacional Escala Gruesa y Fina - IDEAM* (Cabrera, Galindo, & Vargas, 2011) and supported by (GOFC-GOLD, 2016).
Monitoring frequency	It will be updated each time the baseline renewal (at least every 10 years)
Quality Assurance / Quality Control	Quality assessment using GPS field points taken in and confronted by the confusion matrix described in the PDD.
Any comment	The stratification is based on the official map of Biomes IGAC (2008), available at the national SDI SIG-OT.

Data / Parameter	P_{LK}
Data unit	Dimensionless
Used in equations	6
Description	Ratio of the area of the leakage belt to the total area of RRD
Source of data	Landsat Satellite images.
Measurement procedures (if any)	Calculated from the result of remotely sensed data analysis
Monitoring frequency	It will be updated each time the baseline renewal (at least every 10 years)
Quality Assurance / Quality Control	Through the accuracy assessment.
Any Comments	Monitored at least once every 10 years (when the baseline renewal). It was estimated at time zero, this estimate was used for ex-ante purposes.

Data / Parameter	P_{PA}
Data unit	Dimensionless
Used in equations	5
Description	Ratio of the Project Area to the total area of *RRD*
Source of data	Landsat Satellite images.
Measurement procedures (if any)	Calculated from the result of remotely sensed data analysis

Monitoring frequency	It will be updated each time the baseline renewal (at least every 10 years)
Quality Assurance / Quality Control	Through the accuracy assessment.
Any Comments	Monitored at least once every 10 years (when the baseline renewal). It was estimated at time zero, this estimate was used for ex-ante purposes

Data / Parameter	***RRD***
Data unit	ha
Used in equations	4 (to calculate P_{RRL}), 5 (to calculate P_{PA}), 6 (to calculate P_{LK})
Description	Geographical limit of the reference region to project the rate of deforestation.
Source of data	Landsat satellite images.
Measurement procedures (if any)	Methodology described in the PC. Follow the guidelines of the *Protocolo de Procesamiento Digital de Imágenes para la Cuantificación de la Deforestación en Colombia, Nivel Nacional Escala Gruesa y Fina - IDEAM* (Cabrera, Galindo, & Vargas, 2011) and supported by (GOFC-GOLD, 2016).
Monitoring frequency	It will be adjusted every 10 years at baseline renewal
Quality Assurance / Quality Control	Quality assessment using field GPS points taken in and confronted by the confusion matrix described in the PDD.
Any Comments	100% forest at the beginning of the historical reference period.

Data / Parameter	***RRL***
Data unit	ha
Used in equations	This does not apply
Description	Geographical boundaries of the reference region to locate deforestation.
Source of data	Landsat satellite Images and existing digital maps
Measurement procedures (if any)	Limits generated from geoprocessing methods.
Monitoring frequency	It will be updated each time the baseline renewal (at least every 10 years)
Quality Assurance / Quality Control	Quality assessment using field GPS points taken in and confronted by the confusion matrix described in the PDD.
Any Comments	Without comment

Data / Parameter	***Factor Maps***
Data unit	ha

Used in equations	This does not apply
Description	13 maps used to calibrate the risk model
Source of data	Landsat satellite images, SIGOT and mapping updates during the project
Measurement procedures (If any)	Limits generated from geoprocessing methods
Monitoring frequency	It will be adjusted every 10 years at baseline renewal
QA/QC procedures	IDEAM standards are used for primary information and data from reliable sources such as government and research institutes are used for secondary information
Any comment	Procedure described in Section 3 of Annex 10 of PDD

VMD0015: Methods for monitoring of GHG emissions and removals (M-MON)

Data / Parameter	F_{LU}
Data unit	Dimensionless
Description	Land use factor before or after conversion
Source of data	Stock Change Factors are provided in Tables 5.5, 5.10, and 6.2 of the IPCC 2006 GL Volume 4
Justification of choice of data or description of measurement methods and procedures applied	F_{LU} values for Tropical temperature and Moist/wet regime: A. For different activities to cropland Long term cultivated - 0.48 Paddy rice - 1.10 Perennial/ Tree crop - 1.00 Set aside (<20 yrs.) - 0.82 B. For Land-use conversions to cropland Native forest (non-degraded) - 1 Shifting cultivation (Shortened fallow) - 0.64 Shifting cultivation (Mature fallow) - 0.8 C. For grassland management Default value - 1
Monitoring frequency	It will be adjusted every 10 years at baseline renewal
Any comments	Without comment
Used in equations	16

Data / Parameter	F_{MG}
Data unit	Dimensionless
Description	Management factor before or after conversion.
Source of data	Stock Change Factors are provided in Table 5.5, 5.10, and 6.2 of the IPCC 2006 GL Volume 4.

Justification of choice of data or description of measurement methods and procedures applied	F_{MG} values for Tropical temperature and Moist/wet regime: A. For different activities to cropland Full tillage - 1.00 Reduced - 1.15 No-till - 1.22 B. For Land-use conversions to cropland Managed forest - 1.00 C. For grassland management Nominally manage (non-degraded) - 1 Moderately degraded grassland - 0.97 Severely degraded - 0.7 Improved grassland - 1.17
Monitoring frequency	It will be adjusted every 10 years at baseline renewal
Any comments	Without comment
Used in equations	16

Data / Parameter	F_i
Data unit	Dimensionless
Description	Input factor before or after conversion
Source of data	Stock Change Factors are provided in Table 5.5, 5.10, and 6.2 of the IPCC 2006 GL Volume 4
Justification of choice of data or description of measurement methods and procedures applied	F_i values for Tropical temperature and Moist/wet regime: A. For different activities to cropland Low - 0.92 Medium - 1.00 High without manure - 1.11 High with manure - 1.44 B. For Land-use conversions to cropland Managed forest - 1.00 C. For grassland management Medium (only to improved grassland) - 1 High (only to improved grassland) - 1.11
Monitoring frequency	It will be adjusted every 10 years at baseline renewal
Any comments	Without comment
Used in equations	16

4.2.2 Data and Parameters Monitored annual or biennial, when verification occurs

VM0007: METHODOLOGY FRAMEWORK (REDD-MF)

Data / Parameter	$\Delta C_{WPS\text{-}REDD}$
Data unit	t CO_2e

Description	Net GHG emissions in the REDD project scenario up to year t*
Equations	2
Source of data	See Module M-REDD
Description of measurement methods and procedures to be applied	See Module M-REDD
Frequency of monitoring/recording	See Module M-REDD / It will be monitored when verification occurs (annual or biennial)
QA/QC procedures to be applied	See Module M-REDD
Purpose of data	Calculation of project emissions
Calculation method	See Module M-REDD
Comments	Without comment

Data / Parameter	$\Delta C_{LK\text{-}AS,\ unplanned}$
Data unit	t CO_2e
Description	Net greenhouse gas emissions due to activity shifting for projects preventing unplanned deforestation
Equations	4
Source of data	See Module LK-ASU
Frequency of monitoring	It will be monitored when verification occurs (annual or biennial)
Value applied	Folder "*calculation_tables*", file "*VMD0010.xlsx*", Sheet "*S7 Eq16 CLK-AS,unp Exante*"
Justification of choice of data or description of measurement methods and procedures applied	See Module LK-ASU
Purpose of Data	Calculation of leakage
Comments	Without comment

VMD0007: Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation (BL-UP)

Data / Parameter	***Project Forest Cover Monitoring Map***
Data unit	ha
Used in equations	3

Description	Map evidence stratification and location of the forest in the Project Area at the beginning of each verification period. It shows if there deforested areas within the project area
Source of data:	Obtained from satellite images and field verification of deforested areas if any (GPS)
Measurement procedures (If any):	By using satellite images covering the Project Area it would be determined if there are any variations in the forest stratum identified in the Project Area. In case there are deforested areas it would be verified in field and confirmed by using GPS
Monitoring frequency:	It will be monitored when verification occurs (annual or biennial)
Quality Assurance / Quality Control	Biennial verification of the project surfaces. Also, through the accuracy assessment with field work.
Any comments	Stratification is the same as the one used at the beginning of the term.

Data / Parameter	***Leakage Belt Forest Cover Monitoring Map***
Data unit	ha
Used in equations	3, 8
Description	Map evidencing the stratification and location of the forest in the Leakage Belt at the beginning of each verification period. It has to be evidenced if there are deforested areas.
Source of data	Satellite images and field verification of deforested areas if any (GPS).
Measurement procedures (If any):	By using satellite images covering the Leakage Belt it would be determined if there are any variations in the forest stratum identified in the Leakage Belt. In case there are deforested areas it would be verified in field and confirmed by using GPS.
Monitoring frequency:	It will be monitored when verification occurs (annual or biennial)
Quality Assurance / Quality Control	Biennial verification of the project surfaces. Also, through the accuracy assessment with field work.
Any comments	Stratification is the same as the one used at the beginning of the term.

VMD0010: Estimation of emissions from activity shifting for avoided unplanned deforestation (LK-ASU)

Data / Parameter	***MANFOR***
Data unit	ha
Description	Total area of forests under active management nationally
Equations	2
Source of data	Official data, peer reviewed publications and other verifiable sources

Description of measurement methods and procedures to be applied	According to procedures applied by "*Registro Único de Áreas Protegidas – RUNAP (http://runap.parquesnacionales.gov.co/reportes) - Parques Nacionales Naturales de Colombia - Ministerio de Ambiente y Desarrollo Sostenible*"
Frequency of Monitoring/ recording	It will be monitored when verification occurs (annual or biennial); examination must occur prior to any verification event
QA/QC procedures to be applied	See Section 9.3 of REDD-MF (VM0007)
Purpose of data	Calculation of leakage emissions
Calculation method	It does not apply
Comments	Without comment

Data / Parameter	***PROTFOR***
Data unit	ha
Description	Total area of fully protected forests nationally
Equations	2
Source of data	Official data, peer reviewed publications and other verifiable sources
Description of measurement methods and procedures to be applied	A demonstration is required that areas will be protected against deforestation. Such a demonstration shall include either: 3. Evidence that the government has immediately acted to evict any and all illegal squatters Colombian laws to establish protected forest areas and surveillance *ex-ante*, because it can be assumed that PROTFOR shall remain constant.
Frequency of Monitoring/ recording	It will be monitored when verification occurs (annual or biennial); examination must occur prior to any verification event
QA/QC procedures to be applied	See Section 9.3 of REDD-MF (VM0007)
Purpose of data	Calculation of leakage emissions
Calculation method	According to national data, consulted in the corresponding monitoring period
Comments	Without comment

Data / Parameter	***TOTFOR***
Data unit	ha
Description	Total available national forest area
Equations	2
Source of data	Official data, peer reviewed publications and other verifiable sources

Description of measurement methods and procedures to be applied	Limited to forest areas within 5 km of roads and rivers suitable for conversion to agriculture / livestock According to procedures applied by *Ministerio de Ambiente y Desarrollo Sostenible - IDEAM*" to define total forests in Colombia.
Frequency of Monitoring/ recording	It will be monitored when verification occurs (annual or biennial); examination must occur prior to any verification event
QA/QC procedures to be applied	See Section 9.3 of REDD-MF (VM0007)
Purpose of data	Calculation of leakage emissions
Calculation method	According to national data, consulted in the corresponding monitoring period
Comments	Without comment

Data / Parameter	$\Delta C_{P,LB}$
Data unit	t CO_2-e
Description	Net greenhouse gas emissions within the leakage belt in the project case
Equations	1,6
Source of data	Module M-REDD *(Folder "*calculation_tables*", file "*VMD0015.xlsx*", Sheet "*Eq2 Cp LK Expost*")
Description of measurement methods and procedures to be applied	It was calculated according to the method of the equation 2, Module M-MON (Ex-post)
Frequency of Monitoring/ recording	It will be monitored when verification occurs (annual or biennial)
QA/QC procedures to be applied	See chapter 9.3 of REDD-MF (VM0007)
Purpose of data	Calculation of leakage emissions
Calculation method	VCS Module VMD0015, equation 2
Comments	Without comment

Data / Parameter	$PROP_{IMM}$
Data unit	Proportion
Description	Estimated proportion of baseline deforestation caused by immigrating population
Equations	5, 7, 8

Source of data	The source of data was chosen with priority from higher to lower preference as follows: 1. Official data (government) (DANE 2005) 2. Peer-reviewed published sources 3. Other verifiable sources 4. PRA
Description of measurement methods and procedures to be applied	Estimated as proportion of the area deforested according to the past census (2005) by population that migrated into the Leakage Belt and Project Area according to the past census (2005) (all areas within 2 Km of the boundaries of the project area and the leakage belt shall be considered here).
Frequency of Monitoring/ recording	It will be monitored when verification occurs (annual or biennial); examination must occur prior to any verification event
QA/QC procedures to be applied	See Section 9.3 of REDD-MF (VM0007)
Purpose of data	Calculation of leakage emissions
Calculation method	According to national data (DANE), consulted in the corresponding monitoring period
Any comments	Without comment

Data / Parameter	$PROP_{RES}$
Data unit	Proportion
Description	Estimated proportion of baseline deforestation caused by population that has been resident for ≥5 years
Equations	It does not apply
Source of data	The source of data was chosen with priority from higher to lower preference as follows: 1. Official data (government) (DANE 2005) 2. Peer-reviewed published sources 3. Other verifiable sources 4. PRA
Description of measurement methods and procedures to be applied	Estimated as proportion of the area deforested in the past census (2005) by population resident in the Leakage Belt and Project Area for ≥5 years (all areas within 2 Km of the boundaries of the project area and the leakage belt shall be considered here).
Frequency of Monitoring/ recording	It will be monitored when verification occurs (annual or biennial); examination must occur prior to any verification event
QA/QC procedures to be applied	See Section 9.3 of REDD-MF (VM0007)
Purpose of data	Calculation of leakage emissions.

Calculation method	According to national data (DANE), consulted in the corresponding monitoring period
Any comments	Without comment

Data / Parameter	$A_{DefLB,i,t}$
Data unit	ha
Description	Area of recorded deforestation in the leakage belt in the project case in stratum i in year t
Equations	8
Source of data	Module M-REDD *(Folder "*calculation_tables*", file "*VMD0015.xlsx*", Sheet "*Eq4 CPDefLB,i,t Expost*")
Description of measurement methods and procedures to be applied	See Module M-REDD (VCS M-MON – VMD0015)
Frequency of Monitoring/ recording	See Module M-REDD (VCS M-MON – VMD0015) / Each monitoring executed (annual or biennial)
QA/QC procedures to be applied	See Section 9.3 of REDD-MF (VM0007)
Purpose of data	Calculation of leakage emissions
Calculation method	This data is given by GIS analysis.
Comments	Without comment

Data / Parameter	$A_{DefPA,i,t}$
Data unit	ha
Description	Area of recorded deforestation in the project area in the project case in stratum i in year t
Equations	8
Source of data	Module M-REDD *(Folder "*calculation_tables*", file "*VMD0015.xlsx*", Sheet "*Eq3 CPDefPA,i,t Expost*")
Description of measurement methods and procedures to be applied	See Module M-REDD (VCS M-MON – VMD0015)
Frequency of Monitoring/ recording	See Module M-REDD (VCS M-MON –VMD0015) / Each monitoring executed (annual or biennial)
QA/QC procedures to be applied	See Section 9.3 of REDD-MF (VM0007)
Purpose of data	Calculation of leakage emissions

Calculation method	This data is given by GIS analysis.
Comments	Without comment

Data / Parameter	***Leakage Belt Forest Cover Benchmark Map***
Data unit	This does not apply
Description	Map showing the location of forest land within the leakage belt area at the beginning of each Monitoring Period. Only applicable where leakage is to be monitored in a leakage belt.
Equations	3
Source of data	Module M-REDD (M-MON –VMD0015)
Description of measurement methods and procedures to be applied	See Module M-REDD (M-MON –VMD0015)
Frequency of Monitoring/ recording	See Module M-REDD (M-MON –VMD0015) / Each monitoring executed (annual or biennial)
QA/QC procedures to be applied	See Section 9.3 of REDD-MF (VM0007)
Purpose of data	Calculation of leakage emissions
Calculation method	This does not apply
Comments	Without comment

VMD0015: Methods for monitoring of GHG emissions and removals (M-MON)

Data / Parameter	***Project Forest Cover Monitoring Map***
Data unit	ha
Description	Map evidencing the stratification and location of the forest in the Project area at the beginning of each verification period. It has to be evidenced if within the Project area there are deforested areas.
Source of data	Satellite images and field verification of deforested areas if any (GPS).
Justification of choice of data or description of measurement methods and procedures applied	By using satellite images covering the Project Area it would be determined if there are any variations in the forest stratum identified in the Project Area. In case there are deforested areas it would be verified in field and confirmed by using GPS
Frequency of Monitoring/ recording	It will be monitored when verification occurs (annual or biennial); examination must occur prior to any verification event
Any comments	Without comment
Used in equations	3

Data / Parameter	***Leakage Belt Forest Cover Monitoring Map***
Data unit	ha
Description	Map evidencing the stratification and location of the forest in the Leakage Belt at the beginning of each verification period. It has to be evidenced if there are deforested areas.
Source of data	Satellite images and field verification of deforested areas if any (GPS).
Justification of choice of data or description of measurement methods and procedures applied	By using satellite images covering the Leakage Belt it would be determined if there are any variations in the forest stratum identified in the Leakage Belt. In case there are deforested areas it would be verified in field and confirmed by using GPS
Frequency of Monitoring/ recording	It will be monitored when verification occurs (annual or biennial); examination must occur prior to any verification event
Any comments	Without comment
Used in equations	3, 8

Data / Parameter	$A_{DefPA,\, i,\underline{u},t}$
Data unit	ha
Description	Area of recorded deforestation in the project area in stratum *i* converted to land use *u* at time *t*
Source of data	Remote sensing imagery
Justification of choice of data or description of measurement methods and procedures applied	Preprocessing of satellite images, satellite processing image digital and segmentation to determine the coverage change. According to the standards set by the IDEAM
Frequency of Monitoring/ recording	It will be monitored when verification occurs (annual or biennial); examination must occur prior to any verification event
Any comments	Ex-ante, estimation was made of deforestation in the with-project case.
Used in equations	3

Data / Parameter	$A_{DefLB,\, i,\underline{u},t}$
Data unit	ha
Description	Area of recorded deforestation in the leakage belt in stratum i converted to land use u at time t
Source of data	Remote sensing imagery

Justification of choice of data or description of measurement methods and procedures applied	Preprocessing of satellite images, satellite processing image digital and segmentation to determine the coverage change. According to the standards set by the IDEAM
Frequency of Monitoring/ recording	It will be monitored when verification occurs (annual or biennial); examination must occur prior to any verification event
Comments	Ex-ante, estimation shall be made of deforestation in the leakage belt in the with-project case. The area of deforestation shall be made conservatively equal to: $(\sum_{t=1}^{t}(1 - PROP_{IMM}) * A_{BSL,LK,unplanned,t}) * (1 - PROP_{LPA})$ Where: $PROP_{IMM}$ Estimated proportion of baseline deforestation caused by immigrating population; proportion (Calculated in LK-ASU) $A_{BSL,LK,unplanned,t}$ Project rate of unplanned baseline deforestation in the Leakage Belt Area at year t; ha. yr^{-1} (Output parameter from BL-UP) $PROP_{LPA}$ Estimated proportion of baseline deforestation agents given the opportunity to participate in leakage prevention activities; proportion (proportion shall be conservatively estimated and justifiable. Leakage prevention activities must be planned to fully replace income, product generation and livelihood. Projects have the option ex-ante to conservatively set $PROP_{LPA}$ as equal to 1). t 1, 2, 3 …t years elapsed since the start of the project activity
Used in equations:	4

Data / Parameter	$A_{RRL,\ forest,\ t}$
Data unit	ha
Description	Remaining area of forest in RRL at time t
Source of data	Satellite images.
Justification of choice of data or description of measurement methods and procedures applied	The images used will be compatible with the ones already used in the estimations ex-ante in order to be compared

Frequency of Monitoring/ recording	It will be monitored when verification occurs (annual or biennial); examination must occur prior to any verification event
Any comments	There is no evidence of degraded areas or plots ex-ante within the project area.
Used in equations	This does not apply

VMD0016: Module: Methods for stratification of the project area (X-STR)

Data / Parameter	$A_{WPS,i}$ **or** A_i
Data unit	ha
Description	Area of project stratum *i*
Equations	1, 6, 8, 12 or 7
Source of data	Own assessment
Description of measurement methods and procedures to be applied	GIS coverages and/or remote imagery (satellite photographs) as outlined in Chapter 5.
Frequency of monitoring/recording	At each monitoring event (annual or biennial)
QA/QC procedures to be applied	See Section 9.3 of *REDD-MF* (–VM0007)
Purpose of data	Calculation of project emissions
Calculation method	This data is given by GIS analysis.
Comments	Without comment

4.3 Monitoring Plan

The primary purpose of the Monitoring Plan is the collection of data to verify the level of deforestation within the Project Area and Leakage Belt over time, constantly updating estimates of emissions and the generation of sufficient and timely information to make adjustments to the strategies included in the project information (PDD). The Monitoring Plan, in general, focuses on two main components:

1. Monitoring of the Project Objectives, Products and Activities (according to Matrix of Logical Structure - PDD, page 45) that is carried out through the evaluation and compliance of the same components. (see Section 3.1 of this Monitoring Report).

   This monitoring involves monitoring actions for mitigation measures, monitoring actions and control of leakage factors and monitoring actions and control of Non-Permanence risk factors (Section 3.1.3 of this Monitoring Report).

2. Monitoring of the Data and Parameters described in Section 4.2.2 of this Monitoring Report.

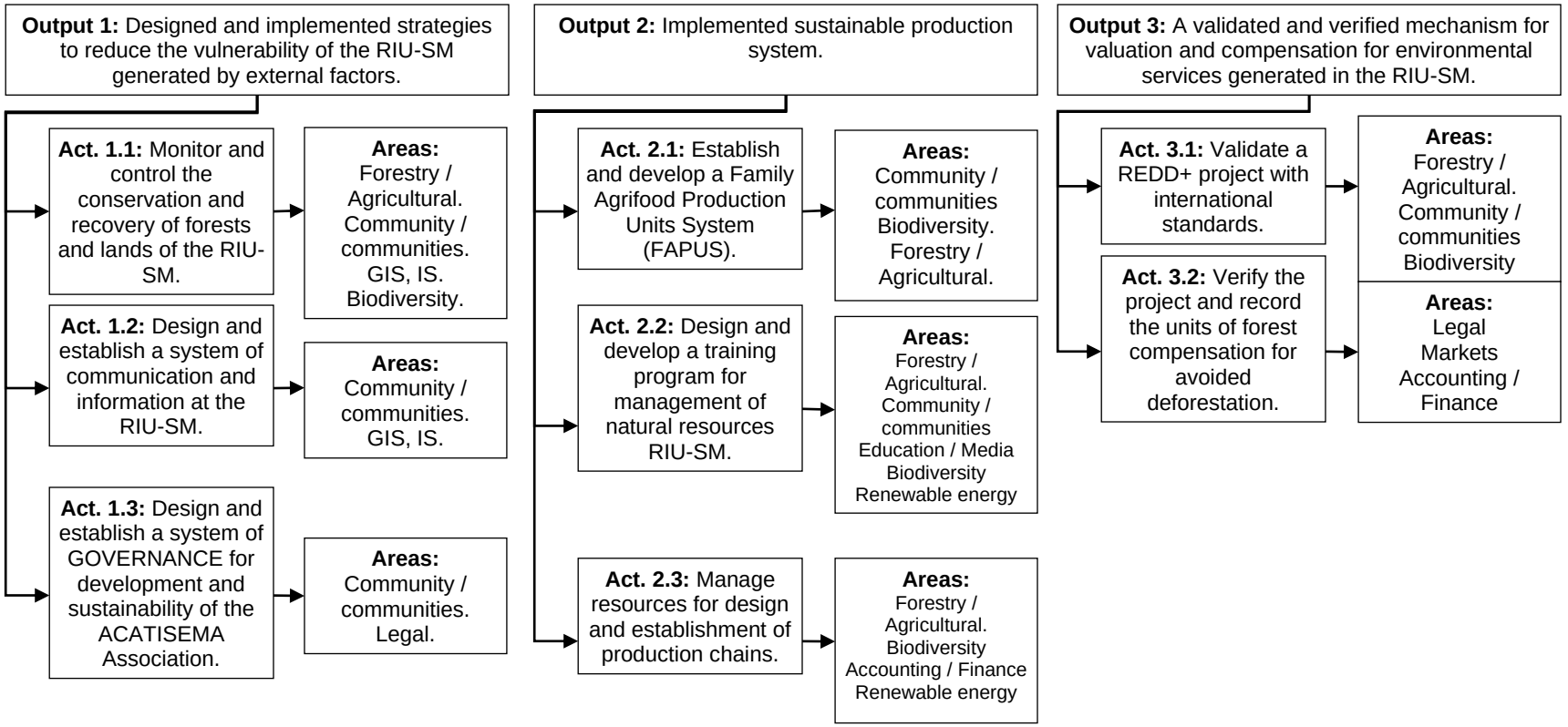
4.3.1 Organizational structure

Therefore, the actions related to the Monitoring Plan in its two components is developed by the interdisciplinary group of experts of the Project, in the following disciplinary areas of MEDIAMOS: forestry / agricultural; community / communities; geographic information system (GIS); information system (IS); education / media; renewable energy; legal; biodiversity; markets; accounting / finance.

This group maintains its coordination and integration with those responsible by ACATISEMA (Project Co-director, Zonal Coordinators) for the planning and execution of actions in the 5 zones of the territory, as explained above (see Annex 1.2.2.2 of PDD: Strategic Alliance Agreement for the Protection, Conservation and Recovery of Natural Forests of the *Resguardo Indígena Unificado - Selva de Matavén* signed between ACATISEMA and MEDIAMOS, Ninth Clause. - Direction and Administration); the directorate and the general coordination is made by Project Director, Project Co-director and by General Coordinator of ACATISEMA.

The following illustration 106 shows the organizational structure for the implementation and monitoring of Project activities by MEDIAMOS.

Illustration 106. Organizational structure for the implementation and monitoring of Project activities



Area	*Responsible*
Forestry / Agricultural	Francisco Quiroga
Administrative / communities	Mónica Barragán, Juan Pablo Muriel
Geographic Information System *(GIS)*	Miguel Idrobo
Information system *(IS)*	Eider Pérez, Paulo Barragán
Education / Media	Gaby Boshell, Claudia Muriel, Sandra Bravo, Gustavo Muriel
Renewable energy	Henry Soto

Area	*Responsible*
Legal	Jorge H. Gómez V.
Biodiversity	Juan Carlos Silva, Luis Alonso Merizalde
Markets	Mónica Barragán, Daniela Quiroga
Accounting / Finance	Sandra Valdivia, accounting assistant

4.3.2 Monitoring and documentation of mitigation measures. Adaptive Management Plan

Mitigation measures presented in the Section 3.1.3 (ADAPTIVE MANAGEMENT PLAN), Table 26 of this Monitoring Report are specifically monitored, documenting learned lessons or corrections necessary and incorporating them in Project decisions on progressive Monitoring Period. Notice how each Project activity has tasks involving the monitoring, evaluation of results, systematization of these results and, finally, its divulgation and socialization. Systematization and evaluation of results imply identify corrective measures gaps and obstacles that may be appearing in the execution of each activity and mitigation measures. In the monitoring tasks of Project activities related to each mitigation measure, formats, records, minutes and reports of monitoring actions for respective mitigation measure are managed. The set of mitigation measures and monitoring processes and documentation are the Adaptive Management Plan of Project.

Annually the Yearly Plans of Operation - YPO are developed, which collected progressively, year after year, the experiences and lessons in the implementation and operation of the Project activities and mitigations measures.

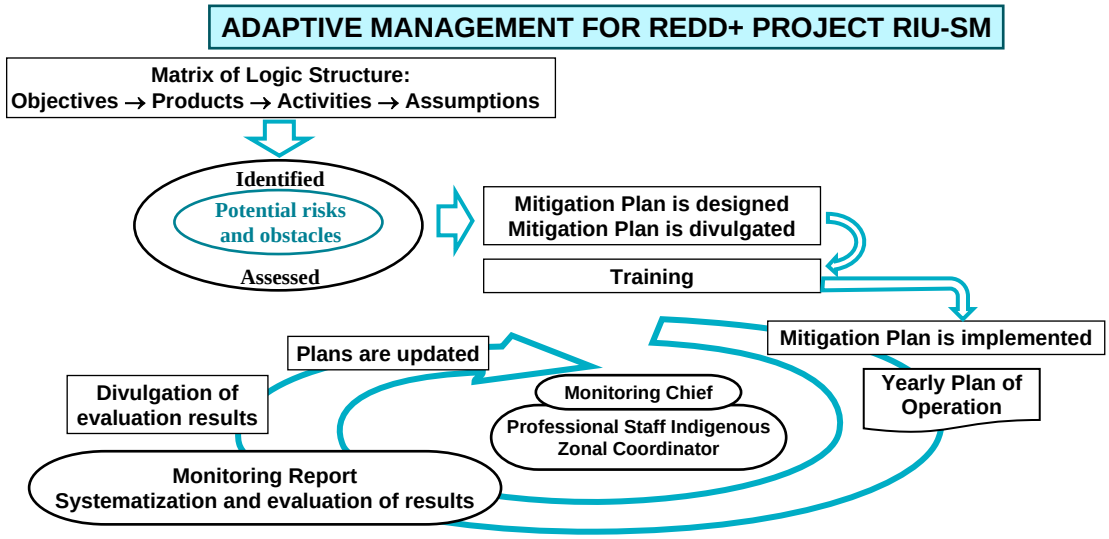
As explained above, it can be stated that Project is based in the premise of the “Adaptive Management”, in this sense every intervention on the territory is sustained in previous information collected in field as a knowledge basis. Based on this knowledge is that Operative Plans and the rest of the necessary instructions for the implementation of the project, the interventions on the territory and the treatment of the social component are defined.

This monitoring process of Project activities and mitigations measures leads to the identification of trends in the different variables and parameters, including those that are necessary and useful to assess compliance with the objectives of the Project and the Adaptive Management Plan; this knowledge, which is generated, leading to the adaptation of the system (plans and instructions).

The information collected in field by the technical staff and Indigenous Zonal Coordinator is systematized at the end of the year, with which the Monitoring Report is presented for the next period to the interdisciplinary group to analyze it and elaborate the Operative Plan of the following period, identifying additionally which manuals of instructions or protocols should be updated or adapted to the occurring changes.

Following, the information flow in the framework of the adaptive management of the project is presented:

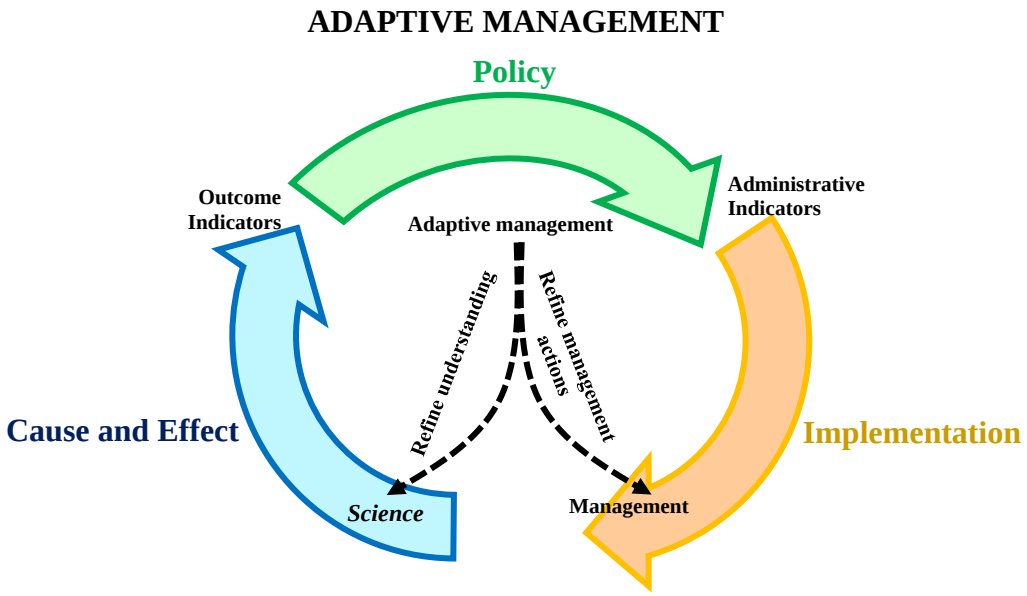
Illustration 107. Flow of Adaptive Management Plan



Source: REDD+ project RIU-SM

Adaptive management explicitly raised is experimental, ie, the integration of design with management and monitoring is sought in order to build knowledge through the development and testing of working hypotheses in order to adapt and learn. The following diagram illustrates this process.

Illustration 108. Integration of policy, implementation and cause-effect in AMP



Source: Adaptive Management: A Tool for Conservation Practitioners by Nick Salafsky, Richard Margoluis, and Kent H. Redford. http://www.fosonline.org/Adaptive_Management1.cfm

4.3.3 Technical description of the tasks of monitoring of Data and Parameters

Data and parameters

The list of data and parameters that will be collected for the monitoring are the same data of the Section 4.1 of PDD and, in same way, the procedures to make estimates of carbon stocks, which were presented in Section 3 of PDD. It should be noted that the plots installed are permanent and that the whole selected methodology is consistent with this feature.

Data Collection, Processing and Report

Data and parameters are defined in the Matrix of Logic Structure (MLS). The set of data collected, processed, reported and disseminated is the knowledge base and the Information System - IS of REDD+ Project RIU-SM; this "IS" allows to identify trends in different variables and parameters that are useful to evaluate compliance with the objectives, results and indicators MLS.

Information System of REDD+ Project RIU-SM follows the recognized stages of planning and monitoring, as indicated in Section 4.2 of PDD and whose collection, processing, analysis and interpretation of variables relation and parameters are presented in the chapters 2, 3, 4 and 5 of PDD.

The information collected in field, as presented in Section 4.3.2 of this Monitoring Report, is systematized by professionals in charge of monitoring and evaluation, according to disciplinaries areas of project (Section 4.3.1 of this Monitoring Report), who will present the monitoring report for the stage at the end of the period and will elaborate the Operative Plan of the following period, identifying additionally which manuals of instructions or protocols should be updated or adapted to the changes that occur.

Formats have been defined for the collection of the field data and for variables that are to be monitored. The collected data is systematically digitalized in spreadsheets designed according to the information requirements. The calculations are made in spreadsheets using the correspondent formulas and thereafter the required reports are delivered as a basis for the development of Monitoring Report.

All the field monitoring processes are documented. All the plots are georeferenced and systematized within the GIS.

The physical and digital files which store the data generated during the monitoring process will be accessible in the two modalities (physical files and digital files), being kept in the offices of REDD+ project RIU-SM.

Stages or processes of the information management

The information management comprises the following steps or processes:

STEP 1: SELECTION AND ANALYSIS OF THE SOURCE OF LAND USE CHANGE

a. For each Monitoring Period, the following actions will be carried out:

- The collected and analyzed data should cover the entire Project Area and Leakage Belt. These data must be available for the year when verification occurs.
- To calculate each category of change of land use:
  - The area of each category within the project area and within the leakage belt will be calculated.
  - The forest cover maps of reference for the Project Area and Leakage Belt will be updated.
  - The remaining forest area within the project zone will be updated.

b. For the Monitoring Period of 10 years - Baseline review:

- Use of high-resolution images (30 m x 30 m or less, if available) at the end of the period when the baseline will be renewed.
- The collected and analyzed data should:
  - To cover the entire reference region: data must be available for the year of baseline renewal or not more than a year earlier.
  - To be georeferenced for the processing of the land use change and geometrical corrections should be made as well as the detection of clouds and shadows.
- The area of each category within the reference region, Project Area and the Leakage Belt will be calculated.
- The forest cover maps for the reference area, Project Area and Leakage Belt will be updated.
- Deforested areas during the first 10 years are estimated in order to adjust the baseline and the deforestation rate, if necessary.

STEP 2: INTERPRETATION AND ANALYSIS

This step comprises six sub-steps:

Sub-step 2.1: Monitoring of deforestation

- Deforested area within the Project Area (PA) per stratum.
- Deforested area within the Leakage Belt (LB) per stratum.

  In both cases it must be specified the type of land use (LU) that have been changed to deforested areas. For the re-calculation of the baseline must be established or indicated if the percentage change of land use remains the same as in the initial baseline.
- Carbon stock in carbon pools:

- Carbon stock in each stratum defined in the baseline is maintained. It will be reassessed for the baseline review (in 10 years).
- Carbon stock of each land use is maintained. It will be reassessed for the baseline review (in 10 years).

• Deforested area within the Reference Region (for the baseline review).

Indications corresponding to the REDD Methodology Module be taken into account regarding the clouds for determining maps. A precise rate of 90% or more is wanted.

Sub-step 2.2: Monitoring of degradation

In this sense, it is expected that no degradation occurs by wood extraction due to illegal logging, firewood or coal production. If this happens, this degradation will be deducted.

A Participatory Rural Appraisal (PRA) will be conducted in order to determine whether degradation occurs. In this sense, these steps will be followed:

• Evaluate if degradation due to illegal logging occurs:
  - The PRA will be conducted every 2 years. If the results indicate that the Project Area has no pressure from this type of degradation, then it will be assumed that: $\Delta Cp,Deg,i,t$ = 0.

• If the results of the PRA indicate that there is potential for degradation, then it must:
  - Obtain a “penetration distance” in the PRA (distance that the degradation agents can enter from the nearest access points).
  - Identify the most important access points to the vulnerable area.
  - From these points, draw distances and create a buffer zone with a width equal to the length of the penetration distance.
  - Transects will be established to evaluate the buffer zone. The assessed area should not be lesser than 1% of the buffer area.
  - If stumps are not found (harvested trees), then it is assumed that $\Delta Cp,Deg,i,t$ = 0 and the assessment is repeated every 2 years.
  - If stumps are found, then a systematic assessment is carried out. For this, plots are distributed systematically, being the area to assess ≥ 3% of the buffer area.
  - Take into account the diameter of the stumps, which will be assumed as their DBH. If they are very large (e.g. due to buttresses), then the specie of stump is identified and standing trees of the same species are located. Afterwards, their DBH and stump diameter are measured and a ratio between DBH/stump diameters is calculated. With this ratio, the DBH from the stump diameter of the cleared individuals that were found is estimated.

- With the DBH data, the carbon stock of the harvested trees is calculated, using the allometric equation that was used for the estimation of the tree carbon stocks in the baseline.
- It will be assumed that all carbon stock of harvested trees will be emitted to the atmosphere.
- This assessment must be repeated every 2 years.

Sub-step 2.3: Monitoring of emissions in the project scenario

For this monitoring, estimation of carbon stocks before and after deforestation are used and, consequently, the estimation of changes of these stocks.

i Estimation of carbon stocks before deforestation

- Carbon stock inventory

  The procedure for the implementation of the carbon stock inventory is indicated in Section 3.1.2 of PDD in accordance with the *Protocolo para la estimación nacional y subnacional de biomasa - carbono en Colombia* settled down by IDEAM (Yepes, et al., 2011).

  Estimations of carbon stocks are based on field observations obtained from plots of stratified random sampling, then allometric equations properly validated are used. The calculations of estimations are made using appropriate statistical developments in this type of sampling, as it was done in the initial carbon inventory.

- Size of field plots

  The Protocol established by the IDEAM was applied to determine the size and type of the plots (Yepes, et al., 2011), Chapter 1, pages 17 - 24. The size and type are determined by the table 4 (page 35), Step 1-3: selected plot size is 50 x 50 m (0.25 hectares) with a sampling error of 10%.

  The plot size 50 x 50 m was considered the most suitable for this type of forest, taking into account the recommendation of studies “Keller et al. 2001”, “Chave et al. 2003”) (Yepes, et al., 2011), page 34:

  “For the projects at sub-national scales (e.g. regional / subregional), it is recommended to use plots of 0.25 ha (50 mx 50 m) because it is the most appropriate size to achieve the required error in estimations of carbon (±10% with confidence of 95%) in forestry projects (Emmer 2007, Biocarbon Fund 2008, Rügnitz et al. 2009). This size allows to make estimations of average aboveground biomass and, therefore, of carbon, with very narrow confidence intervals, and very similar behaviors to those obtained when plots of 1.0 ha are used (…). Similar results were obtained in the Brazilian Amazon and Panama (Keller et al. 2001, Chave et al. 2003), where they concluded that plots of 0.25 ha were the ideal size to estimate the existing aboveground biomass in this forests type.”

- Amount of field plots

To calculate the number of plots (n) is necessary to specify the level of accuracy given by the maximum allowable sampling error ($E\%$) and the level of probability. The VCS VMD0017 standard - Module X-UNC states:

*"Guidance on uncertainty – a precision target of a **95% confidence interval half-width** equal to or less **than 15%** of the recorded value must be targeted. This is especially important in terms of project planning for measurement of carbon stocks; sufficient measurement plots should be included to achieve this precision level across the measured stocks." (VCS Module VMD0017 Estimation of uncertainty for REDD+ project activities (X-UNC), page 5)*

To calculate the sample size (n) for stratified random sampling (H strata) Equation 4 of *Protocolo para la estimación nacional y subnacional de biomasa - carbono en Colombia - IDEAM* has been used (Yepes, et al., 2011), page 26:

$$n = \frac{t^2 \sum_{i=1}^{H} P_j {S_j}^2}{E^2 + \frac{t^2 \sum_{i=1}^{H} P_j {S_j}^2}{N}}$$ *(Equation 4)*

Where:

n : number of sample plots

t : student t value for given probability

P_j : relative importance or proportion occupied by each stratum

S_j^2 : variance associated with the variable of interest in each stratum (biomass or carbon stored in vegetation)

E : sampling error

N : total number of plots that could be established in the area of interest.

The average of inventory ($\bar{X}$) is obtained using Equation 5 of the Protocol, page 26:

$$\bar{X} = \sum_{j=1}^{H} P_j * \bar{X}_j$$ *(Equation 5)*

Where:

$\bar{X}$: average of inventory

P_j : relative importance or proportion occupied by each stratum

$\bar{X}_j$: average of inventory in each stratum

For the distribution of the number of samples in strata (n_j) Equation 6 of the Protocol is used, page 26:

$$n_j = n * P_j \text{ (Equation 6)}$$

The confidence interval (CI) was calculated with Equation 8 of the Protocol, page 26:

$$IC = \bar{X} \pm S_{ye} * Z^{(\alpha)} \text{ (Equation 8)}$$

Where:

CI : average of confidence interval

$\bar{X}$: average of inventory

S_{ye} : standard error of the stratified average of inventory

$Z^{(\alpha)}$: 1,96 (for the 95% probability level)

$$E = S_{ye} * Z^{(\alpha)}$$

With Equation 9 the sampling error percentage is calculated

$$E\% = \frac{S_{ye} * Z^{(\alpha)}}{\bar{X}} * 100 \text{ (Equation 9)}$$

$$E\% = \frac{E}{\bar{X}} * 100$$

Where:

$E\%$: sampling error (in percentage)

As shown, the value of ***n*** depends on the variance of the strata (S_j^2), which are unknown, and $E\%$ depends on the average $\bar{X}$ that is also unknown. Then the method to be used is an heuristic type, i.e. successive approximations previously using some existing related or approximate information and apply sampling pilots or pre-sampling to have some information about the variances and average, and based on them, to make a calculation of *n* and n_j of each stratum.

In our case to make pre-sampling and sampling pilots is very expensive, the high cost of travel to the selected parcels to go back, calculate and return back to the jungle. Therefore, as an initial guide information published by the IDEAM [*Figure 6 of the Protocolo para la estimación nacional y subnacional de biomasa - carbono en Colombia - IDEAM, on page 36 it is used; or table 3 on page 123, Annex 2* (Yepes, et al., 2011)], which indicates that for plot size of 50m x 50m, an $E\%$ of 15% and a probability of 95%, in simple random sampling (in each stratum a simple random sample is

selected independently) 11 plots would be required in each stratum, that is, with about 44 plots are conservatively approximate the size of stratified random sample.

Acting more conservatively and to ensure the accuracy levels required by the standard, if only 10%, there was a stratified random sample of 131 permanent plots, distributed proportionally in each stratum, as follows:

	Strata i			
	Helobiome	Peinobiome	Litobiome	Zonobiome
	n_1	n_2	n_3	n_4
n_j	16	29	24	62

Source: file "plot_study_fustales.xls", sheet "calculo Yst var PA (BA)" in folder "calculation_tables" of PDD

With independent simple random sampling in each stratum.

Application of equations

With the data of proportionality in each stratum with respect to the entire area of the Project Area, the P_j is obtained. With the data collected in each simple random sample from each stratum, estimate of S_j^2 in each stratum and the average of inventory were made:

	Strata i			
	Helobiome	Peinobiome	Litobiome	Zonobiome
P_j	0.1517	0.2835	0.1009	0.4639
S_j^2	10784.04	3448.60	4411.57	35100.57

Source: file "plot_study_fustales.xls", sheet "calculo Yst var PA (BA)" in folder "calculation_tables"

With these data Equation 4 was applied; for stratified random sampling with an $E\%$ of 15% and 95% probability:

$P_1 * S_1^2$	1,636.21
$P_2 * S_2^2$	977.60
$P_3 * S_3^2$	445.29
$P_4 * S_4^2$	16,281.77
$\sum_{i=1}^{H} P_j S_j{}^2$	19,340.87

t = 1.96

$t^2 \sum_{i=1}^{H} P_j S_j{}^2$ = 74,299.898

N = 4,600,850 (*Source: file "plot_study_fustales.xls", sheet "calculo Yst var PA (BA)" in folder "calculation_tables" of PDD*)

Sampling error (according to Equation 9)

$E\%$ = 15%

$E = E\% * \bar{X}$

E = 38.55

Finally, the number of plots in the 4 strata is calculated (Equation 4):

$$n = \frac{t^2 \sum_{i=1}^{H} P_j {S_j}^2}{E^2 + \frac{t^2 \sum_{i=1}^{H} P_j {S_j}^2}{N}} = 50$$

Equation 6 is applied to calculate the number of samples within each stratum (n_j), with n = 50:

$$n_j = n * P_j$$

	Strata i			
	Helobioma	Peinobioma	Litobioma	Zonobioma
P_j	0.1517	0.2835	0.1009	0.4639
n_j	8	14	5	23

Therefore, with sample sizes (number of plots) randomly selected independently in each stratum, compliance accuracy is guaranteed (all sample sizes in each stratum are higher than those required) to $E\%$ of 15% and probability level selected.

Applying Equation 4 to calculate $E\%$:

$$E^2 = t^2 \sum P_j {S_j}^2 \left(\frac{1}{n} - \frac{1}{N}\right)$$

$E = 23.8$

$E\% = \frac{E}{\bar{X}} * 100 = 9.3\%$, with a probability level of 95%, which meets conservatively with the level of accuracy established in the standard.

This sampling error value is equal to applying the equation presented in "*Sampling Techniques, Chapter 5 Stratified Random Sampling, page 92 (Cochran, 1997)* " to estimate the error of the mean of stratified inventory:

For *stratified* random sampling, the variance of the estimate $\bar{y}_{st}$ is:

$$V(\bar{y}_{st}) = \sum_{h=1}^{L} {W_h}^2 \frac{{S_h}^2}{n_h}(1 - f_h) \quad (5.6)$$

Where:

$V(\bar{y}_{st})$: variable of weighted sample mean

$\bar{y}_{st}$: weighted sample mean ($\bar{X}$) (estimator of the mean in stratified sampling)

W_h : stratum weight

S_h : true variable by stratum

n_h : numbers of plots by stratum

f_h : sampling fraction in the stratum (n_h/N_h)

h : stratum

The Standard Error of Mean is $\sqrt{V(\bar{y}_{st})}$ = (S_{ye}).

Average of inventory $\bar{X}$ (Equation 5):

	Strata i			
	Helobiome	Peinobiome	Litobiome	Zonobiome
P_j	0.1517	0.2835	0.1009	0.4639
$\bar{X}_j$	10784.04	3448.60	4411.57	35100.57
$P_j * \bar{X}_j$	42.25	62.04	22.41	130.29
$\sum_{j=1}^{H} P_j * \bar{X}_j$	256.99			

$\bar{X}$ = 256.99 (*Source: file "plot_study_fustales.xls" sheet "calculo Yst var PA (BA)" in folder "calculation_tables" of PDD*)

Stratified inventory standard error S_{ye}:

	Strata i			
	Helobiome	Peinobiome	Litobiome	Zonobiome
${W_h}^2$	0.0230	0.0804	0.0102	0.2152
${S_h}^2$	10784.04	3448.60	4411.57	35100.57
n_h	16	29	24	62
f_h	0.00002	0.00002	0.00005	0.00003

$V(\bar{y}_{st})$ = 148.75

S_{ye} = 12.20

(*Source: file "plot_study_fustales.xls" sheet "calculo Yst var PA (BA)" in folder "calculation_tables" of PDD*)

$E\% = \frac{S_{ye} * Z^{(\alpha)}}{\bar{X}} * 100$ = 9.3%

(*Source: file "plot_study_fustales.xls" sheet "calculo Yst var PA (BA)" in folder "calculation_tables" of PDD*)

The observations of field work are presented in formats that also takes into Annex 13 of PDD – VCS Module VMD0001.

An instructive was elaborated to be applied in field work (Annex 13 of PDD: CP-AB – VCS Module VMD0001) indicating procedures for plots locating and trees measuring. This instructive was updated for this Monitoring Period (Annex 4.7.3.1 of this Monitoring Report). The form to take data from plots is in Annex 4.7.3.2, the data from sample plots (processed in spreadsheet) for verification 2018 & 2019 is in Annex 4.7.3.4 and the photographic records of field work is in Annex 4.7.3.5.

Following are the results of the analysis of the sample (Annex 19 of PDD "Estimation of carbon in the above and belowground biomass in live trees").

- Data processing

Following the corresponding steps for processing field data are presented

1. Selection of the allometric equation:

The following is the equation that is applied for trees (in Spanish "*fustales*"). There is other equation for palms.

$$ln(BA) = a + B1\ ln(D)$$

Where:

BA: is the biomass of trees in kg.

D: is the average diameter measured at 1.3 m height from the ground for trees with DBH ≥10 cm.

A and **B1** are model constants.

R^2: is the model adjustment.

Independent variable: diameter (D). The values of the estimated parameters are:

Forest type	a	B1	R^2
bh-T	-1.544	2.37	0.932

This allometric equation was selected by comparison with other equations. This equation offers the advantages of requiring only the diameter at breast height (DBH), reducing risks of uncertainty and measurement errors because other variables such as height and density are not required.

Allometric equation to estimate the biomass of palms

$$BA = 6.666 + 12.826 * H^{0,5} * \ln(H)$$

Where*:*

BA: Aboveground biomass, kg/tree

H: Height of the trunk, in meters. For palms this is the main stem, excluding the fronds.

Source: (IPCC, 2003), Annex 4.A.2 (4.A.2 table, page 4.114 [513])

2. Estimation of aboveground biomass of each tree

The estimation of **biomass** of each tree is obtained applying the allometric equation. See file "plot_study_fustales.xls" in folder "calculation_tables".

3. Calculation of the average carbon in aboveground biomass per plot in each stratum

0.47 is the value of the factor that was used to transform biomass in carbon.[13]

Results of **biomass** and **carbon** in aboveground pool are presented in PDD, Table 48 "*Statistics of simple random sampling in each stratum. Aboveground biomass*".

4. Calculation of the belowground biomass per plot in each stratum

0.24 is the value of the "R factor" that was used to calculate the belowground biomass according to aboveground biomass[14].

Results of **biomass** and **carbon** in belowground pool are presented in PDD, Section 3.1.2.2 "*Belowground tree biomass ($C_{BB\_tree,i}$)*", and in Table 51 of PDD is the "*Belowground tree biomass in each stratum*".

5. Estimation of soil organic carbon

See Annex 14 of PDD.

[13] *CF = carbon fraction of dry matter (default = 0.47), (ton C/tonne d.m.) (IPCC, 2006) INV GLs AFOLU Chapter 4 Table 4.3)*

[14] *AFOLU Guidelines (IPCC 2006, Chapter 4, page 4.49)*

Also, results of **soil organic carbon pool** study are presented in PDD, Section 3.1.2.3 "*Estimation of soil organic carbon pool*", and in Table 52 of PDD are the "*Statistics of simple random sampling in each stratum CO_2 in soil by soil depths*".

6. Estimation of carbon stocks before deforestation

Results of **carbon stocks before deforestation** are presented in PDD, Section 3.1.2.4 "*Forest carbon stock pre-deforestation*", and in Table 53 of PDD is the "*Estimation of carbon stocks (t CO_2/ha) before deforestation for stratum*".

In that section, following was presented:

- Equipment used for measuring and monitoring the aboveground carbon stock and
- Equipment used for measuring and monitoring the carbon stock in the soil organic

ii Estimation of carbon stocks after deforestation

Results of **carbon stocks after deforestation** are presented in PDD, Section 3.1.2.7 "*Forest carbon stock post-deforestation*", and in Table 68 of PDD is the "*Estimation of carbon stocks after deforestation for stratum*".

iii Estimation of carbon stocks changes

Results of **carbon stocks changes** are presented in PDD, Section 3.1.2.8 "*Forest carbon stock changes*", and in Table 69 of PDD is the "*Estimation of changes of carbon stocks for stratum*".

iv Estimation of Project emissions (Project Area - PA and Leakage Belt - LB)

Project emissions are presented in Section 5.2 "*Project Emissions*" of this Monitoring Report, and in Tables 43 and 44 are the "*Net greenhouse gas emissions under the project scenario (PA) (ΔC_p) (2018 & 2019)*".

Leakage Belt emissions are presented in Section 5.3 "*Leakage*" of this Monitoring Report, and in Table 55 are the "*Net greenhouse gas emissions due to activity shifting leakage for projects preventing unplanned deforestation net CO_2 emissions (2018 & 2019)*".

Sub-step 2.4: Estimation ex-post of net reductions in emissions of greenhouse gases

Based on real deforestation detected for 2018 & 2019 in Project Area (PA), Leakage Belt (LB), and according to Annex 10 of PDD – VCS Module VMD0007, sub-step 2.1, the **current ex-post net reductions in emissions of GHG** are presented in this Monitoring Report, Section 5.4 "*Net GHG*

Emission Reductions and Removals", and in Table 56 of this Monitoring Report are the "*Total net GHG emission reductions of the REDD project activity (2018 & 2019)*".

Sub-step 2.5: Calculation of VCS buffer

According to risk indicator, as result of application of VCS AFOLU Non-Permanence Risk Tool (Annex 5 of this Monitoring Report), **buffer** for 2018 & 2019 was calculated in Section 5.4.2 "*Buffer (2018 & 2019)*" of this Monitoring Report.

Sub-step 2.6: Calculation of VCUs

According to VCS Methodology VM0007 - REDD-MF, Section 8.4.7, VCUs for vintages 2018 & 2019 was calculated in Section 5.4.4 "*VCUs (vintages 2018 & 2019)*" of this Monitoring Report, and in Table 57 are the "*Number of Verified Carbon Units (vintages 2018 & 2019)*".

Quality control

Quality control is established according to the stage of information processing and as it sets out in Section 4 of this Monitoring Report, for each data or parameter:

- In the collection of field data: It has applied statistical methods of quality control based on Gauss or normal curve models. It can be applied to all parameters and variables established in the monitoring plan. The diameter of the trees is the variable that defines the biomass and the other parameters are derived from it.
- In the process of these data for storage and statistical analysis: It is applied the techniques of the computer processing, giving timely maintenance to the equipment and applications.
- In the analysis and interpretation of results that allow the comparison between periods in time to estimate ex post net changes in carbon stocks: also apply statistical methods of interpretation of results and inference.

All these quality controls have specialized and auxiliary personnel which allows lowering the level of risk of uncertainty and imprecision.

The process of data collection to statistics production is designing and it will be implemented in real time, saving time and manual processing steps to reduce error risks in the process.

In summary, the quality and control measures (QA/AC), standard operating procedures and methods of control and management of information collected are described as shown below:

CONTROL MEASURES	The following factors are considered: teams of collection and processing of information; trained staff; type of parameters and variables; statistical

	methods (samples, accuracy and level of reliability). The control elements are set for these factors according to established standards.
STANDARD OPERATING PROCEDURES	These procedures are defined and controlled according to the following phases: data collection, systematization, analysis, interpretation, inference and reporting of results. In Annex 4.7.3 of this Monitoring Report the QA/QC procedures that are applied by MEDIAMOS to the field monitoring forms filled out by indigenous people groups of ACATISEMA in collection and systematization phases are presented.
METHODS OF CONTROL AND INFORMATION MANAGEMENT	The core of these methods focuses on security and storage thereof. In addition, control measures and standard operating procedures are taken into account.

Duration of Monitoring Period and date of monitoring start

In Section 1.6 of this report was presented this information:

"1.6 Project Crediting Period

…

Duration of Monitoring Period…

The third Monitoring Period included two sub-periods: 2018 (annual) and 2019 (annual).

Current monitoring start date: 1st January 2018.

Current monitoring end date: 31st December 2019."

Internal Audit

The purpose of the internal audit is to minimize the risk of error, in such a way that it achieves the appropriate reliability of monitoring results. Its main stages are as follows:

1. Staff training

   It includes the training of the interdisciplinary group and the new participants in the different roles to comply with the activities and tasks established for the REDD+ Project RIU-SM, however, aiming at always having quality information, the training on those critical points of the information management will be prioritized, which are field collection and its processing (specific evaluation and monitoring staff, field staff and GIS specialist). All staff must go through an induction process before executing any activity related to the monitoring.

2. In-field verification

It basically consists of monitoring in the field, and that the field staff is following the procedures set out in the methodological guidelines given in the previous process of induction. This work is in charge of the Project´s Director and Co-director, Zonal Coordinators, Geographic Information System – GIS leader and Information System – IS leader.

An error in following the procedures should be corrected in the field during the execution of samplings or assessments.

3. Quality control when collecting and processing data

The collected data should be reviewed before (field forms) and after (electronic spreadsheet) in its digitalization, so that a second review can detect inconsistent information. This work is in charge of the Geographic Information System – GIS leader and Information System – IS leader.

If any information inconsistency is identified at the level of field forms, this information must be verified in the field. If the inconsistency is found in the digitalized information, it must be corroborated in the field forms and whether the inconsistency persists, it must be corroborated in the field.

4. Preparation of the Monitoring Report

With the information collected, processed and with results, having made the evaluation of the implementation status of Project activities and tasks, and the monitoring of Data and Parameters, the Monitoring Report was elaborated.

5. Review of the monitoring reports prior to publication

The monitoring reports must be reviewed prior to publication, in order to confirm the calculations, analysis and the conclusions are accurate and measured. This work is in charge of the Project´s Director and Co-director, Geographic Information System – GIS leader and Information System – IS leader.

If non-conformities exist during the internal or external auditing processes, the data should be reviewed and the non-conformities addressed.

6. Publication of reports.

As part of one of the same tasks of the Project, the information generated in the execution of the activities is disseminating, socialized it to the indigenous communities in meetings in the Reservation, and exhibiting it to the public through communication mechanisms (web page of the Project, social networks, VCS Project Database).

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

Monitoring results of deforested areas

The procedure description for the implementation of monitoring in the Project Area and in the Leakage Belt area are presented below, according to digital image processing and monitored points on the ground with their respective results for 2018 & 2019.

Maps of deforestation and updated land coverage were processed according to IDEAM approaches in its so-called guidelines of *Protocolo de Procesamiento Digital de Imágenes para la Cuantificación de la Deforestación en Colombia, Nivel Nacional Escala Gruesa y Fina* developed by the IDEAM (Cabrera, Galindo, & Vargas, 2011), and their procedures are considered official for regional planning to scale 1:100000. This procedure consists of selecting and downloading images of RRL Area (Region Reference to Locate Deforestation) in USGS Earth/Explorer (USGS).

Step 1: Radiometric calibration and atmospheric correction: The conversion radiance and reflectance procedure by applying the COST model (Chavez, 1996) was used, which incorporates all the elements of the model of subtraction by dark object (for the elimination of fog), the rigorous models of atmospheric correction are not applicable as there is with information from input to feed these models.

Step 2: Geometric correction: The geometric correction wasn't applied, since the Landsat and Sentinel-2 images are already Ortho-corrected. On the other hand, also it will not correct topographically, since the entire area is a subject of a flat studio with slope below 15% by 99%.

Initial classification forest coverage / No forest (automated tool application): At this stage the source document: "book about REDD GOFC-GOLD" (GOFC-GOLD, 2016) and *Protocolo de Procesamiento Digital de Imágenes para la Cuantificación de la Deforestación en Colombia, Nivel Nacional Escala Gruesa y Fina* developed by the IDEAM (Cabrera, Galindo, & Vargas, 2011) should be taken as a reference.

Step 3: Change detection: the method of detecting changes between the pair of images from the latest update of the RRL Area and the new image will be applied. So, both images will be in reflectance, in addition to add layers as NDVI and the first 3 principal components of the bands (red, green, blue and NIR).

The change detection process generates three types of situations:

- Real changes
- Areas of change that were not detected
- Transform a polynomial vector.

Parameters for polygon generation rate:

- Polygons with areas greater than 1 ha.
- Polygons that are within the area of RRL

Step 4: Inspection: An inspection and interpretation of each of the polygons of change detection will be carry out:

***Inspection 1*:** To detect changes that were not discovered by the algorithm of detecting changes and draw them according to the parameters.

***Inspection 2*:** To delete exchange polygons that were detected by the algorithm as change due to fluctuations of phenology, floods or other phenomenon that alters the spectral values.

Step 5: Calculation of deforestation on the RRL forest

- Polygons that intersect with forest are cataloged as deforestation.

Step 6: Allocation of coverage: According to the interpretation of satellite images a category is assigned to define the uses of land cover giving for national land cover legend "Methodology Corine Land Cover adapted to Colombia scale 1:100 000" developed by the IDEAM (2010).

Selection of satellite images:

The images were acquired from the USGS Geological Service portal, "Earth Explorer" (https://earthexplorer.usgs.gov/) server, which were visited by sensor type, date and percentage of cloud cover.

To estimate the coverage and land use (Forest and Non-Forest), Landsat and Sentinel-2 satellite images were used between months December 2018 and January 2019 for the 2018 coverage map and between December 2019 and January 2020 for the 2019 coverage map.

Table 27. Satellite images used to estimate the coverage and land use

Satelite	Sensor	Resolution		Map Mosaic (time period)	Adquisition date (DD/MM/YY)	ID
		Spatial	Spectral (microns)			
Sentinel-2	2B	10	0,45 - 2,35	2017-2018	04/12/2018	L1C_T19NCE_A009117_20181204T151012
Sentinel-2	2A	10			08/01/2019	L1C_T19NDE_A018526_20190108T150715
Sentinel-2	2B	10			03/01/2019	L1C_T19NEE_A010361_20190301T145734
Sentinel-2	2A	10			08/01/2019	L1C_T19NEE_A018526_20190108T150715
Sentinel-2	2A	10			29/12/2018	L1C_T19NEF_A018383_20181229T150713
Sentinel-2	2A	10			24/02/2019	L1C_T19NEF_A019198_20190224T145721
Sentinel-2	2B	10			01/12/2018	L1C_T19NFE_A009074_20181201T145721
Sentinel-2	2A	10			24/02/2019	L1C_T19NFF_A019198_20190224T145721
Sentinel-2	2A	10	0,45 - 2,35	2018-2019	03/01/2020	L1C_T19NCE_A023674_20200103T150714
Sentinel-2	2A	10			03/01/2020	L1C_T19NDE_A023674_20200103T150714
Sentinel-2	2A	10			03/01/2020	L1C_T19NEE_A023674_20200103T150714
Sentinel-2	2A	10			10/01/2020	L1C_T19NEE_A023774_20200110T145720
Sentinel-2	2A	10			31/12/2019	L1C_T19NEF_A023631_20191231T145720
Sentinel-2	2A	10			13/01/2020	L1C_T19NEF_A023817_20200113T150714
Sentinel-2	2A	10			10/01/2020	L1C_T19NFE_A023774_20200110T145720
Sentinel-2	2A	10			31/12/2019	L1C_T19NFF_A023631_20191231T145720

Note that these images may only be acquired over a time period between December and March of each year, since the remaining rainy season months do not allow to observe the earth's surface, given the percentage of cloud cover.

Processing of satellite images:

For the processing of the selected satellite images IDRISI SELVA 17®, GDAL-Python and QGIS 3.4 type were used.

The processing of satellite images should include the following steps:

- Geometric correction: This process is applied only if the Landsat image does not come with this band composition process.

  It is applied to obtain a better quality in the classification of images by obtaining a single file per image.

- Visual classification: IDEAM methodology was used to classify the satellite images and working scale was 1:100000. The identified types were:

  - Forest
  - Non-forest land

The last one was divided into sub categories:

  - Pastures
  - Heterogeneous Agricultural Areas

- Secondary forest
- Grasslands – sheets
- Regenerating vegetation

An accuracy assessment was developed to analyze the precision of the final maps.

More details about the whole procedure can be seen in the final technical report made (Annex 6 of this Monitoring Report). In that report the details of the work related to the GIS component of the REDD+ Project RIU-SM are presented, explaining the procedures, methods and techniques applied, and the adequate tools used to perform the tasks of obtaining, processing, analyzing and verifying the maps of Land Coverage and Land Uses. Records of samples of GIS points were analized with relation to results of processing of satelital images, and are in Annex 6a of this Monitoring Report.

This process was carried out from March 2019 to February 2020, during which activities of digital processing of satellite images, geoprocessing, verification of changes in the territory, training of the people of indigenous communities and validation of the final result were carried out. The product of this procedure is the updated map of the land uses and coverage in RRL (Reference Region for the location of deforestation) and, of course, the areas of change from Forest to Non-Forest. It also includes the transition tables (file “monitoring.xlsx”, sheets “Defor2018” and “Defor2019”, in folder “calculation_tables”) generated from the geographic data, evaluated and consolidated.

In this report, a detailed description is made of each of the land cover and land use, characterized in the *Selva de Matavén*, as well as the technical procedures of the remote sensors, satellite image processing is detailed, the detection of the changes, the allocation and coherence of the changes in land cover and the methodology used for the quantitative validation of the map.

It is finalized by presenting the results of the land cover map, the verification process carried out with the support of aerial images, in areas where to verify some changes that were observed during the processing of the satellite images was important.

The results of the monitoring of deforestation for 2018 & 2019 are presented as following.

Table 28. Change from forest to other land use in the Project Area (PA) and Leakage Belt (LB)

	Change LC/LU 2018		**Change LC/LU 2019**	
	Has	**%**	**Has**	**%**
Project Area (PA)	1,354.1	50.1%	709.1	39.9%
Leakage Belt (LB)	1,350.8	49.9%	1,069.1	60.1%
Total	**2,704.9**	**100%**	**1,778.2**	**100%**

Source: Folder “calculation_tables”, File “monitoring.xlsx”, Sheets “Defor2018” and “Defor2019”

Table 29. Anthropic Deforestation (without considering change from forest to wetlands) in the Project Area (PA) and Leakage Belt (LB)

	Change LC/LU 2018		Change LC/LU 2019	
	Has	**%**	**Has**	**%**
Project Area (PA)	766.9	40.9%	641.7	39.9%
Leakage Belt (LB)	1,108.0	59.1%	967.7	60.1%
Total	**1,874.9**	**100%**	**1,609.5**	**100%**

Source: Folder "calculation_tables", File "monitoring.xlsx", Sheets "Defor2018" and "Defor2019"

Deforested areas projected for 2018 in PA and LB were 15,557.7 hectares (according to results of the application of spatial model, 10,568.1 ha. in PA and 4,989.6 ha. in LB. Source: file "spatial_model_results.xlsx" in folder "calculation_tables"). Anthropic deforestation (without considering change from forest to wetlands) found for this year was 1,874.9 hectares, which gives a percentage ratio of 12.05% i.e., that is, the deforestation threat was stopped at 87.95% in the PA and LB. In this year the winter wave affected the forests of the RIU-SM, representing a loss of 830 hectares, situation very similar to that detected in the past Monitoring Period 2016-2017.

Deforested areas projected for 2019 in PA and LB were 15,596.2 hectares (according to results of the application of spatial model, 13,908.7 ha. in PA and 1,687.5 ha. in LB. Source: file "spatial_model_results.xlsx" in folder "calculation_tables"). Anthropic deforestation (without considering change from forest to wetlands) found for this year was 1,609.5 hectares, which gives a percentage ratio of 10.32% i.e., that is, the deforestation threat was stopped at 89.68% in the PA and LB.

The deforestation with respect to the previous verified periods (2013 & 2014-2015 and 2016-2017) is mainly due to the immigration of indigenous people and settlers from Venezuela during these years (2018 & 2019), especially in Zone 3 (Orinoco river, that borders with Venezuela). This situation has been analyzed in meetings with Zonal Coordinators, Co-director of the Project, assistant of Co-director, zonal leaders and technical assistants of ACATISEMA, together with the Project Director and technical staff of MEDIAMOS. Based on this, measures have been defined to resolve this impact in the reservation, incorporating some indigenous families into the RIU-SM communities and contacting the settlers.

Table 30. Change from forest to other land use in the Project Area (PA) by strata (biomes)

	Change LC/LU 2018		Change LC/LU 2019	
Biome	**Has**	**%**	**Has**	**%**
Helobiome	736.9	54.4%	335.2	47.3%
Peinobiome	131.3	9.7%	33.3	4.7%
Litobiome	8.2	0.6%	3.8	0.5%
Zonobiome	477.7	35.3%	336.8	47.5%
Total	**1,354.1**	**100%**	**709.1**	**100%**

Source: Folder "calculation_tables", File "monitoring.xlsx" Sheets "Defor2018" and "Defor2019"

Table 31. Change from forest to other land use in the Leakage Belt (LB) by strata (biomes)

	Change LC/LU 2018		Change LC/LU 2019	
Biome	**Has**	**%**	**Has**	**%**
Helobiome	340.5	25.2%	275.5	25.8%
Peinobiome	248.3	18.4%	140.2	13.1%
Litobiome	134.2	9.9%	52.3	4.9%
Zonobiome	627.8	46.5%	601.0	56.2%
Total	**1,350.8**	**100%**	**1,069.1**	**100%**

Source: Folder "calculation_tables", File "monitoring.xlsx" Sheets "Defor2018" and "Defor2019"

Table 32. Change from forest to other land use in PA and LB, by land use (2018)

Spatial boundaries		Categories of land cover (ha)											
		HAA	%/PA+LB	**GL**	%/PA+LB	**BS**	%/PA+LB	**VR**	%/PA+LB	**WL**	%/PA+LB	**Total**	%/PA+LB
Project Area (PA)	has	603.9	46.6%	92.5	43.5%	0.0	0.0%	70.5	19.2%	587.2	70.7%	1,354.1	50.1%
	%/total	44.6%		6.8%		0.0%		5.2%		43.4%		100%	
Leakage Belt (LB)	has	691.1	53.4%	120.2	56.5%	0.0	0.0%	296.7	80.8%	242.8	29.3%	1,350.8	49.9%
	%/total	51.2%		8.9%		0.0%		22.0%		18.0%		100%	
TOTAL		**1,295.0**	**100%**	**212.7**	**100%**	**0.0**	**0%**	**367.2**	**100%**	**830.0**	**100%**	**2,704.9**	**100%**
%		**47.9%**		**7.9%**		**0.0%**		**13.6%**		**30.7%**		**100%**	

Source: Based on file "monitoring.xlsx" Sheet "Defor2018", in Folder "calculation_tables"

In both, Project Area and Leakage Belt, the change of Land Cover / Land Use, for 2018, from Forest to other coverage has been dedicated in 47.9% to Heterogeneous Agricultural Areas (**HAA**), in 30.7% to Wetland (**WL**), in 13.6% to Vegetation in Regeneration (**VR**) and in 7.9% to Grassland (**GL**.

Table 33. Change from forest to other land use in PA and LB, by land use (2019)

Spatial boundaries		Categories of land cover (ha)											
		HAA	%/PA+LB	**GL**	%/PA+LB	**BS**	%/PA+LB	**VR**	%/PA+LB	**WL**	%/PA+LB	**Total**	%/PA+LB
Project Area (PA)	has	493.6	48.4%	38.4	18.3%	0.0	0.0%	109.8	29.1%	67.4	39.9%	709.1	39.9%
	%/total	69.6%		5.4%		0.0%		15.5%		9.5%		100%	
Leakage Belt (LB)	has	525.4	51.6%	171.6	81.7%	3.4	0.0%	267.4	70.9%	101.4	60.1%	1,069.1	60.1%
	%/total	49.1%		16%		0.3%		25.0%		9.5%		100%	
TOTAL		**1,019.0**	**100%**	**209.9**	**100%**	**3.4**	**0%**	**377.2**	**100%**	**168.7**	**100%**	**1,778.2**	**100%**
%		**57.3%**		**11.8%**		**0.2%**		**21.2%**		**9.5%**		**100%**	

Source: Based on file "monitoring.xlsx" Sheet "Defor2019", in Folder "calculation_tables"

In both, Project Area and Leakage Belt, the change of Land Cover / Land Use, for 2019, from Forest to other coverage has been dedicated in 57.3% to Heterogeneous Agricultural Areas (**HAA**), in 21.2% to Vegetation in Regeneration (**VR**), in 11.8% to Grassland (**GL**), in 9.5% to Wetland (**WL**), and in 0.2% to Bare Soil (**BS**).

5.1 Baseline Emissions

To calculate the baseline emissions, the following three stages were fulfilled:

1. *Calculation of Carbon stocks and CO_2-e in biomass in following pools: Aboveground Tree Biomass ($C_{AB\_tree,i}$), Belowground Tree Biomass ($C_{BB\_tree,i}$) and Soil Organic ($C_{SOC,i}$), by stratum i, by hectare.*
2. *Determination of the unplanned deforestation within the Region Reference to project Deforestation rate (RRD) during historical reference period (HRP), to estimate the threat of deforestation within Project Area (PA).*
3. *Calculation of baseline Carbon stock changes and GHG emissions.*

The following is a summary of each stage:

5.1.1 Calculation of carbon stocks in Aboveground tree biomass, Belowground tree biomass and Soil Organic

5.1.1.1 Estimation of carbon stocks in Aboveground Tree Biomass ($C_{AB\_tree,i}$)

To calculate Aboveground Tree Biomass CO_2-e ($C_{AB\_tree,i}$) (Annex 13 of PDD – VCS Module VMD0001, part 1) following steps were fulfilled:

1: Determine the tree dimensions and size and amount of field plots

Procedures to determinate size and number of plots and parameters to be measured in each tree and results are presented in Annex 13 of PDD – VCS Module VMD0001, page 7 – 15 and Section 3.1.2.1, step 1 of PDD.

2: Selection of an appropriate and validated allometric equation

The equation used for estimation of biomass in trees was Equation 12 of *Protocolo para la estimación nacional y subnacional de biomasa - carbono en Colombia - IDEAM* (Yepes, et al., 2011) (Annex 13 of PDD – VCS Module VMD0001, page 15), and Equation 5 for palms applied according to the "G*ood practice guidance for land use, changing land use and forestry. 2003 - Annex 4.A.2 (table 4.A.2, page 4.114 [513])*" (IPCC, 2003). Procedures are also presented in Section 3.1.2.1, step 2 of PDD.

This is the allometric equation used for estimation of aboveground tree biomass by individual:

$$ln\,(BA) = a + B1\,ln(D)$$

Where:

BA (kg): aboveground biomass of the trees (tons of dry matter in each tree).

a : constant of the model (equal to –1.544 according to Holdridge life zone "bh-T").

B1 : constant of the model (equal to 2.37 according to Holdridge life zone "bh-T").

D : average diameter, measured at 1.3 m height from the ground, in tree with DBH from 10 cm and up.

Equation used for estimation of aboveground palm biomass:

$$BA = 6.666 + 12.826 * H^{0.5} * ln(H)$$

Where:

BA (kg): aboveground biomass of the palms (tons of dry matter in each palm).

H (m): height of the trunk (main stem, excluding the fronds).

Results by tree in plots are in Folder "calculation_tables", file "plot_study_fustales.xlsm", Sheets by each plot.

Aboveground tree biomass by plot: To calculate the Aboveground Tree Biomass by plot, all the results of the dry matter of each tree and palm in a same plot were added.

Results by plot are in Folder "calculation_tables", file "plot_study_fustales.xlsm", Sheet "estad grals".

Aboveground tree biomass by hectare: To calculate the Aboveground Tree Biomass by hectare, Equation 14 of *Protocolo para la estimación nacional y subnacional de biomasa - carbono en Colombia - IDEAM* (Yepes, et al., 2011) (Annex 13 of PDD – VCS Module VMD0001, page 17)

Equation used for estimation of biomass by hectare:

$$BA\ (t/ha) = BA\ (kg/plot) * (1\ t/1000\ kg) * FC$$

Where:

BA (t/ha): aboveground tree biomass by hectare (tons of dry matter in each hectare).

BA (kg/par): aboveground tree biomass by plot (kg of dry matter in each plot).

(1 t/1000 kg): conversion factor from kg to tons.

FC : conversion factor from plots to hectares (depended on the size of plot used: for 50x50m=0,25 ha the conversion factor is "4").

Results of Aboveground Biomass in each biome by hectare can see in Table 48 of PDD.

3: Estimate Carbon stock in Aboveground Tree Biomass

The aboveground tree biomass of each individual already was estimated using the appropriate Equations (as it was explained before). Standard defines a parameter factor of 0.47 [carbon fraction - CF in VCS Module VMD0001, page 12; (IPCC, 2006) INV GLs AFOLU, chapter 4 table 4.3] to estimate Carbon stock from Aboveground Tree Biomass.

According the Equation 1 of Module VCS-VMD0001 (page 5):

$$C_{AB\_tree,sp,i} = \Sigma_j^S \Sigma_{l=1}^{Nj,sp,i} f_j(X, Y \ldots) * CF_j$$

Where:

$C_{AB\_tree,sp,i}$: Carbon stock in aboveground biomass of trees in plot sp in stratum i (ton C).

CF_j : Carbon fraction of biomass for species group j (0.47 ton C / ton d.m.).

$f_j(X, Y \ldots)$: Aboveground biomass of trees based on allometric equation for species group j based on measured tree variable(s) (1 / ton d.m. tree).

Equation 1 of Module VCS-VMD0001 is equivalent to:

$$CBA = BA\ (t/ha) * CF$$

Where:

CBA: Carbon stock in aboveground tree biomass (tons of C / ha).

$BA\ (t/ha)$: Aboveground tree biomass already converted to “ton dry matter / ha” from “ton dry matter / plot”.

CF : Carbon fraction of biomass for species group j (0.47 ton C / ton d.m.).

Results for each tree, each plot and by hectare can see in: PDD Folder “calculation_ tables”, file “plot_study_fustales.xlsm”, in Sheets for each plot in each stratum, for example (for plot 10 of helobiome, the sheet is called H-10). A mean by stratum i of Carbon stock in aboveground tree biomass can see in REDD+ Project RIU-SM Folder “calculation_tables”, file “plot_study_fustales.xlsm”, Sheets “estad H”, “estad P”, “estad L”, “estad Z”.

Results of Aboveground Tree Biomass Carbon stock in each biome by hectare can see in Table 48 of PDD.

4: Calculate Aboveground Tree Biomass Carbon stock converted to Carbon Dioxide equivalent

According the Equation 2 of Module VCS-VMD0001 (page 5):

$$C_{AB\_tree,i} = \Sigma_{sp=1}^{Pi} (C_{AB\_tree,sp,i} / A_{sp,i}) * 44/12$$

Where:

$C_{AB\_tree,i}$: Mean aboveground biomass carbon stock in stratum i (t CO_2-e / ha).

$C_{AB\_tree,sp,i}$: Aboveground biomass carbon stock of trees in sample plot sp of stratum i (t C / plot).

$A_{sp,i}$: Area of sample plot sp in stratum i (ha).

To convert the values of "*Aboveground Tree Biomass Carbon stock* CAB (already converted in tons of C / ha)" into *Carbon Dioxide Equivalent* $C_{AB\_tree,i}$ (tons of CO_2-e / ha) the factor of 44/12 ≈ 3.67 was used (this factor by dividing the atomic weight of a molecule of carbon dioxide, by the specific weight of carbon), as recommended by the IPCC 2003, 2006. That is, the number of tons of "CAB" is multiplied by 3.67.

Results of aboveground tree biomass ($AB - t\ d.m/ha$), Carbon stock in aboveground tree biomass ($CBA - t\ C/ha$) and $C_{AB\_tree,i}$ ($t\ CO_2/ha$) in each biome by hectare can be seen in the Table 48 of PDD.

Detailed results by hectare in each plot are in PDD Folder "calculation_tables", file "plot_study_fustales.xlsm", Sheet "estad grals".

5.1.1.2 Estimation of carbon stocks in Belowground Tree Biomass ($C_{BB\_tree,i}$)

To calculate Belowground Tree Biomass CO_2-e ($C_{BB\_tree,i}$) (Annex 13 of PDD – VCS Module VMD0001, part 2) following steps were fulfilled:

1: Calculate the belowground tree biomass carbon stock for each plot:

According the Equation 5 of Module VCS-VMD0001 (page 7):

$$C_{BB\_tree,sp,i} = R * C_{AB\_tree,sp,i}$$

Where:

$C_{BB\_tree,sp,i}$: Belowground tree biomass carbon stock of trees in sample plot sp of stratum i (t C / plot).

$C_{AB\_tree,sp,i}$: Aboveground tree biomass carbon stock in sample plot sp of stratum i (t C / plot).

R *: Root to shoot ratio* (t root d.m. / t shoot d.m.).

The Belowground Tree Biomass Carbon stocks of each tree were obtained by multiplying the results of Part 1, Step 3 (Aboveground Tree Biomass Carbon stock (tons of C / ha)) with the Root to Shoot Ratio, equal to 0.24. This value is for Tropical rainforest with Aboveground Biomass higher than 125 t/ha, and was taken from the Module VCS VMD0001 CP-AB, version 1.1 [in Module VCS VMD0001 CP-AB a table based on table 4.4 of the AFOLU Guidelines [(IPCC, 2006), Chapter 4, page 4.49] is presented in page 17, about the Data/Parameter "R"].

Results of Belowground Tree Biomass Carbon stock in each biome by hectare can see in Table 51 of PDD.

2: Calculate Belowground Tree Biomass Carbon stock converted to Carbon Dioxide equivalent

According the Equation 6 of Module VCS-VMD0001 (page 7):

$$C_{BB\_tree,i} = \Sigma_{sp=1}^{Pi} (C_{BB\_tree,sp,i} / A_{sp,i}) * 44/12$$

Where;

$C_{BB\_tree,i}$: Mean belowground biomass carbon stock in stratum i (t CO_2-e / ha).

$C_{BB\_tree,sp,i}$: Mean belowground tree biomass carbon stock of trees in plot sp of stratum i (t C / plot).

$A_{sp,i}$: Area of sample plot sp of stratum i (ha).

To convert the values of "*Belowground Tree Biomass Carbon stock* CBB (already converted in tons of C / ha)" into *Carbon Dioxide Equivalent* $C_{BB\_tree,i}$ (tons of CO_2-e / ha) the factor of 44/12 ≈ 3.67 was used (this factor by dividing the atomic weight of a molecule of carbon dioxide, by the specific weight of carbon), as recommended by the IPCC 2003, 2006. That is, the number of tons of "CBB" is multiplied by 3.67.

Results of belowground tree biomass ($t\ d.m/ha$), Carbon stock in belowground tree biomass ($t\ C/ha$) and $C_{BB\_tree,i}$ ($t\ CO_2/ha$) in each biome by hectare can be seen in the Table 51 of PDD.

Detailed results by hectare in each plot are in PDD Folder "calculation_tables", file "plot_study_fustales.xlsm", Sheet "BB_plots"

A study of the biomass in "vegetation on regeneration" (folder "calculation_tables", file "plot_study_regeneracion.xlsx") was also carried out, but for conservative effects these amounts of carbon were not included in the total used in baseline.

Illustration 109. DAP measurement, tree marking and registry of the measured data

5.1.1.3 Estimation of carbon stocks in Soil Organic ($C_{SOC,i}$)

To calculate Soil Organic CO_2-e ($C_{SOC,i}$) (Annex 14 of PDD – VCS Module VMD0004, part 1) following steps were fulfilled:

1: Calculate of the Soil Organic Carbon stock

In some plots where Aboveground and Belowground biomass is calculated, samples of ground were extracted as field sampling of soil organic.

To determine the bulk density of the soil samples, the Protocol of Burton & Pregitzer (2008) was used. Volume and density of the rocks and fractions were calculated using the Equations 32, 33, 34 and 35 of such protocol.

For the determination of total organic carbon in a soil sample, method of wet combustion of Walkley – Black (Mendoza P., 2011) was used by sugerence of Soil Laboratory of IDEAM (see report analyzing soil organic carbon and bulk density "Annex 14-1_report_soil_analysis" of PDD, and the format standardization "determination of organic carbon in soils-Walkley Black Method", IDEAM 2011 "Annex 14-2_Walkley-Black_method" of PDD).

The calculation of carbon stock was performed for each sampled depth in the pit in selected sample plot by stratum.

Equation 1 of VCS Module VMD0004 (page 2) is used to calculate the Carbon stock in soil organic carbon for each sample of ground.

Equation 1 of VCS Module VMD0004 is equal to Equation 37 of Burton & Pregitzer, 2008

$$C_{SOC,sp,i} = C_{SOCsample,sp,i} * BD_{sample,sp,i} * Dep_{sample,sp,i} * 100$$

Where:

$C_{SOC,sp,i}$: Carbon stock in soil organic carbon for sample plot sp, stratum i (t C / ha).

$C_{SOCsample,sp,i}$: Soil organic carbon of the sample in sample plot *sp,* stratum *i;* determined in the laboratory (fine fraction <2 mm) (g C / 100 g soil).

$BD_{sample,sp,i}$: Bulk density of fine (<2 mm) fraction of mineral soil in sample plot *sp,* stratum *i;* determined in the laboratory (g fine fraction / cm^3 total sample volume).

$Dep_{sample,sp,i}$: Depth to which soil sample is collected in sample plot *sp* in stratum *i* (cm).

$C_{SOCsample,sp,i}$ is determined in the laboratory. This % value is calculated to each plot in each stratum. Results can see in *PDD Folder "calculation_tables", file "soil_analysis.xlsx"*, where each plot is identified by its code (for example, for plot 10 of helobiome, the sheet is called H-10).

In each plot $C_{SOC,sp,i}$ is calculated for each depth. Results can see in *PDD Folder "calculation_tables", file "soil_analysis.xlsx", Sheet "COS ac biom"* for each plot in each stratum.

Results of Soil Organic Carbon stock by hectare can see in Table 99 of PDD.

2: Calculation of Soil Organic Carbon stock converted to Carbon Dioxide equivalent:

Equation 2 of VCS Module VMD0004 (page 3) is used to calculate the Carbon stock in soil organic carbon converted to Carbon Dioxide equivalent for each sample of ground.

Equation 2 of VCS Module VMD0004 is equal to Equation 38 Burton & Pregitzer, 2008

$$C_{SOC,i} = \Sigma_{sp=1}^{Pi}(C_{SOC,sp,i}) / P_i * 44/12$$

Where:

$C_{SOC,i}$: Mean carbon stock in soil organic carbon for stratum *i* (t C / ha).

$C_{SOCsp,i}$: Carbon stock in soil organic carbon for sample plot *sp,* stratum *i* (t C / ha).

sp : 1, 2, 3, … *Pi* sample plots in stratum *i.*

To convert the values of "*Soil Organic Carbon stock SOC*" into *Carbon Dioxide Equivalent* $C_{SOC,i}$ (tons of CO_2-e / ha) the factor of 44/12 ≈ 3.67 was used (this factor by dividing the atomic weight of a molecule of carbon dioxide, by the specific weight of carbon), as recommended by the IPCC 2003, 2006. That is, the number of tons of "*SOC*" is multiplied by 3.67.

Results have been calculated for different depths, but for REDD+ Project RIU-SM only a cumulative Soil Organic Carbon stock to depth 30 cm was considered. Results of Soil Organic Carbon stock and $C_{SOC,i}$ for depth 30 cm can be seen in the following Table:

Table 34. Average of Soil Organic Carbon stock (tons C /ha) and Carbon Dioxide equivalent $C_{SOC,i}$ (tons CO_2 /ha) in depth 30 cm according stratum *i*

i=1 Helobiome		*i*=2 Peinobiome		*i*=3 Litobiome		*i*=4 Zonobiome	
SOC (ton C/ha)	$C_{SOC,i}$ (ton CO_2/ha)	SOC (ton C/ha)	$C_{SOC,i}$ (ton CO_2/ha)	SOC (ton C/ha)	$C_{SOC,i}$ (ton CO_2/ha)	SOC (ton C/ha)	$C_{SOC,i}$ (ton CO_2/ha)
33.7	123.5	53.4	195.8	56.7	207.8	54.3	199.2

Source: Folder "calculation_ table", file "soil_analysis.xlsx", Sheets "COS ac biom" and "CO2 ac biom"

Illustration 110. "Calicata", samples of soil and registry of data for Soil Organic Carbon analysis

5.1.2 Determination of the unplanned deforestation within the RRD during historical reference period (HRP), to estimate the threat of deforestation within Project Area (PA)

In VMD0007 (Annex 10 of PDD) the estimation of annual areas of unplanned deforestation was calculated (Part 2, page 35). The procedure was implemented by applying the following steps

5.1.2.1 Analysis of historical deforestation

A historical reference period (HRP) was defined to realize the study of historical deforestation in RRD. HRP consists in a period from 2001 to 2011, with three points (2001, 2005 and 2011).

Collection of appropriate data Sources: Landsat TM and ETM + images were used to identify the deforestation. A list of these images is in Annex 10 of PDD – VCS Module VMD0007, Table 16, page 36.

Mapping of historical deforestation: Different procedures were implemented to analyze and interpret the digital information available in satellite images. These procedures are described in Annex 10 of PDD – VCS Module VMD0007, pages 37 - 42.

Calculation of the historical deforestation rate: Deforestation during historical reference period (hrp) is in Section 3.1.2.5 of PDD.

Map accuracy assessment: An evaluation of the verifiable accuracy of maps produced in the former step 2.1.4 (Annex 10 of PDD – VCS Module VMD0007) was required to produce a reliable estimate of the historical deforestation rate.

5.1.2.2 Estimation of the annual areas of unplanned baseline deforestation in the RRD, PA and LB

$A_{BSL,RRD,unplanned,t}$ = 13,857 ha / year

$A_{BSL,RR,unplanned,t}$ = 15,694 ha / year

$A_{BSL,PA,unplanned,t}$ = 11,031 ha / year

$A_{BSL,LK,unplanned,t}$ = 4,663 ha / year

The procedures and their results are in Section 3.1.2.6 of PDD.

Projected area of unplanned baseline deforestation in the Project Area / year was estimated by applying spatial model. Results are presented in the PDD, Table 61 for PA and Table 62 for LB:
Total projected area of unplanned baseline deforestation in Project crediting period (2013-2042), in PA and LB:

$A_{BSL,PA,unplanned}$ = 298,410 ha

$A_{BSL,LK,unplanned}$ = 169,828 ha

5.1.3 Calculation of baseline carbon stock changes and GHG emissions

5.1.3.1 Forest carbon stocks pre-deforestation

Baseline Carbon Stocks by pool per forest stratum i are presented in Table 53 of PDD:

5.1.3.2 Calculation of post-deforestation carbon stocks

Historical area-weighted average was used to estimate the post-deforestation carbon stocks.

Weightings by classes of land uses post-deforestation (2001-2011) are presented in Table 63 of PDD.

Estimations of carbon stocks after deforestation for land use by stratum are presented in Tables 64, 65, 66 and 67 of PDD.

Estimations of carbon stocks after deforestation for stratum are presented in Table 68 of PDD.

5.1.3.3 Calculation of changes of Carbon Stocks for stratum

Procedures and results of changes of Carbon Stocks for stratum are presented in PDD: Section 3.1.2.8 and Table 69.

5.1.3.4 Calculation of the sum of baseline carbon stock changes

Procedures and results of changes of sum of baseline carbon stock changes in PDD: Section 3.1.2.9 and Table 70 for PA and Table 71 for LB.

5.1.4 Baseline Emissions (2018 & 2019)

The net GHG emissions under the baseline scenario for 2018 & 2019 (PDD, Table 70):

Table 35. Net GHG emissions under the baseline scenario (2018 & 2019)

t	Year	$\Delta C_{BSL,unplanned}$ (t CO2-e)
6	2018	4,422,586
7	2019	6,500,811

Source: Annex 10 of PDD – VCS Module VMD0007, Table 46; and Folder "calculation_tables", File "monitoring.xlsx", sheet "Monitoring_summary", 2018 & 2019, Section "Baseline Emissions" and File "VMD0007.xlsx", sheet "P4 Step4.3 Eq24(PA) C stck chng"

5.2 Project Emissions

To calculate the Project Emissions, the following stages were fulfilled:

1. *Calculation of Baseline Carbon stock by pool / stratum.*
2. *Calculation of Carbon stock after deforestation in all pools for land use / stratum.*
3. *Calculation of Net Carbon stock changes after deforestation in all pools for land use / stratum.*
4. *Determination of deforested area in Project Area in all pools for land use / stratum.*
5. *Calculation of Net Carbon stock changes after deforestation in Project Area, in all pools for land use / stratum.*

The following is a summary of each stage:

5.2.1 Calculation of Baseline Carbon stock by pool / stratum

Annex 10 of PDD – VCS Module VMD0007, Part 4, Step 4.2.1, presents the "*Estimation of Carbon stock changes by each pool in each stratum*"

$C_{BSL,i}$ is the subtotals from Table 53 of PDD, by each stratum.

Table 36. Baseline Carbon Stocks by pool per forest stratum *i*

C Pool	*i*=1 Helobiome	*i*=2 Peinobiome	*i*=3 Litobiome	*i*=4 Zonobiome
	t CO_2-e / ha	*t CO_2-e / ha*	*t CO_2-e / ha*	*t CO_2-e / ha*
$C_{BSL,i}$	718.5	663.4	682.3	799.4

Source: Folder "calculation_tables", File "VMD0007.xlsx", Sheet "P4 Step4.2.1 forest C stock"

5.2.2 Calculation of Carbon stock after deforestation by pool for land use / stratum

Equation 6 of VCS Module VMD0015 was used to calculate the Carbon stock in all pools in post-deforestation land use u in stratum i (VCS Module VMD0015, equation 6 is presented in Section 3.2, numeral 2º).

$C_{post,u,i}$ are in Table 73 of PDD, by each stratum:

Table 37. Estimation of Carbon Stocks after deforestation for land use ($C_{post,u,i}$) (*t CO_2-e / ha*)

C Pool	*i*=1 Helobiome			*i*=2 Peinobiome			*i*=3 Litobiome			*i*=4 Zonobiome		
	VR	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*
$C_{post,u,i}$	258.2	203.6	149.3	329.6	240.4	219.4	341.5	246.5	231.1	333.0	242.1	222.7

Land Uses: VR: vegetation on regeneration; HAA: Heterogeneous Agricultural Areas; GL: Grassland.
Source: Folder "calculation_tables", File "VMD0015.xlsx", Sheet "Eq6 CP,post,u,i,t" and file "VMD0007.xlsx", Sheet "P4 Step4.2.2 postdef C stock"

5.2.3 Calculation of Net Carbon stock changes after deforestation in all pools for land use / stratum

Equation 5 of VCS Module VMD0015 was used to calculate the Net Carbon stock changes in all pools as a result of deforestation in the project scene in land use u in stratum i (equation 5 is presented in VCS Module VMD0015, Section 3.2, numeral 2º).

$\Delta C_{pools,Def,u,i,t}$ are in Table 74 of PDD, by each stratum:

Table 38. Estimation of Net Carbon stock changes after deforestation for land use ($\Delta C_{pools,Def,u,i,t}$) ($t\ CO_2\text{-}e\ /\ ha$)

	i=1 Helobiome			*i*=2 Peinobiome			*i*=3 Litobiome			*i*=4 Zonobiome		
	VR	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*
$\Delta C_{pools,Def,u,i,t}$	460.3	514.9	569.2	333.8	423.0	444.0	340.8	435.8	451.2	466.4	557.3	576.6

Land Uses: VR: vegetation on regeneration; HAA: Heterogeneous Agricultural Areas; GL: Grassland.

Source: Folder "calculation_tables", File "VMD0015.xlsx", Sheet "Eq5 Cpools,Def,i,t"

5.2.4 Determination of deforested area in Project Area in all pools for land use / stratum

Through cartographic review and field verification area of recorded deforestation in the Project Area (PA) stratum i ($A_{DefPA,u,i,t}$) converted to land use u for 2018 & 2019 was identified. Results are:

Table 39. Deforestation in Project Area in all pools for Land Use/stratum ($A_{DefPA,u,i,t}$, ha) (2018)

	i=1 Helobiome			*i*=2 Peinobiome			*i*=3 Litobiome			*i*=4 Zonobiome			TOTAL		
Year	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*
2018	38.1	291.7	30.0	6.8	71.4	2.5	2.6	1.3	0.0	22.9	239.5	60.1	70.5	603.9	92.5
TOTAL	Σ = 359.8			Σ = 80.7			Σ = 3.9			Σ = 322.5			Σ = 766.9		

Land Uses: VR: vegetation on regeneration; HAA: Heterogeneous Agricultural Areas; GL: Grassland.

Source: Deforested area in the Project Area in all pools for Land Use / stratum ($A_{DefPA,u,i,t}$) during 2018, by strata and land use, according to monitoring study, is in Folder "calculation_tables", File "monitoring.xlsx" Sheet "Defor2018". and File "VMD0015.xlsx", Sheet "Eq3 CPDefPA,i,t Expost"

Table 40. Deforestation in Project Area in all pools for Land Use/stratum ($A_{DefPA,u,i,t}$, ha) (2019)

	i=1 Helobiome			*i*=2 Peinobiome			*i*=3 Litobiome			*i*=4 Zonobiome			TOTAL		
Year	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*
2019	21.1	277.0	14.8	6.2	26.5	0.0	0.9	2.8	0.1	81.7	187.2	23.4	109.8	493.6	38.4
TOTAL	Σ = 312.9			Σ = 32.7			Σ = 3.8			Σ = 292.3			Σ = 641.7		

Land Uses: VR: vegetation on regeneration; HAA: Heterogeneous Agricultural Areas; GL: Grassland.

Source: Deforested area in the Project Area in all pools for Land Use / stratum ($A_{DefPA,u,i,t}$) during 2019, by strata and land use, according to monitoring study, is in Folder "calculation_tables", File "monitoring.xlsx" Sheet "Defor2019". and File "VMD0015.xlsx", Sheet "Eq3 CPDefPA,i,t Expost"

5.2.5 Calculation of Net Carbon stock changes after deforestation in Project Area, in all pools for land use / stratum (2018 & 2019)

Equation 3 of VCS Module VMD0015 was used to calculate the Net Carbon stock change as a result of deforestation in the project scene in the Project Area in stratum i:

$$\Delta C_{P,DefPA,i,t} = \Sigma_{u=1}^{U}(A_{DefPA,u,i,t} * \Delta C_{pools,P,Def,u,i,t})$$

Where:

Acronym	Unit	Description
$\Delta C_{P,DefPA,i,t}$	t CO_2-e	Net carbon stock change as a result of deforestation in the project case in the project area in stratum i at time t
$A_{DefPA,u,i,t}$	ha	Area of recorded deforestation in the project area stratum i converted to land use u at time t
$\Delta C_{pools,P,Def,u,i,t}$	t CO_2-e ha^{-1}	Net carbon stock changes in all pools in the project case in land use u in stratum i at time t

Source: VCS - VMD0015- Methods for monitoring of GHG emissions and removals (M-MON) Equation 3, page 8

Table 41. Net Carbon stock change ($\Delta C_{P,DefPA,i,t}$) as a result of deforestation in the project scene in the Project Area in stratum I (2018)

	i=1 Helobiome			*i*=2 Peinobiome			*i*=3 Litobiome			*i*=4 Zonobiome		
	VR	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*
$\Delta C_{pools,Def,u,i,t}$	460.3	514.9	569.2	333.8	423.0	444.0	340.8	435.8	451.2	466.4	557.3	576.6
$A_{DefPA,u,i,t}$ 2018	38.1	291.7	30.0	6.8	71.4	2.5	2.6	1.3	0.0	22.9	239.5	60.1
$\Delta C_{pools} * A_{DefPA}$	17,558.9	150,181.0	17,051.8	2,276.0	30,219.5	1,098.2	888.8	568.6	0.0	10,678.8	133,483.6	34,643.6
$\Delta C_{P,DefPA,i,t}$	$\Sigma_{i:1}$= 184,791.7			$\Sigma_{i:2}$= 33,593.6			$\Sigma_{i:3}$= 1,457.4			$\Sigma_{i:4}$= 178,806.0		

Land Uses: VR: vegetation on regeneration; HAA: Heterogeneous Agricultural Areas; GL: Grassland.

Source: Based on Folder "calculation_tables", File "VMD0015.xlsx", Sheet "Eq3 CPDefPA,i,t Expost" (implicitly includes values of $\Delta C_{pools,Def,u,i,}$ in the sheet "Eq5 Cpools,Def,i,t")

Table 42. Net Carbon stock change ($\Delta C_{P,DefPA,i,t}$) as a result of deforestation in the project scene in the Project Area in stratum I (2019)

	i=1 Helobiome			*i*=2 Peinobiome			*i*=3 Litobiome			*i*=4 Zonobiome		
	VR	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*
$\Delta C_{pools,Def,u,i,t}$	460.3	514.9	569.2	333.8	423.0	444.0	340.8	435.8	451.2	466.4	557.3	576.6
$A_{DefPA,u,i,t}$ 2019	21.1	277.0	14.8	6.2	26.5	0.0	0.9	2.8	0.1	81.7	187.2	23.4
$\Delta C_{pools} * A_{DefPA}$	9,702.5	142,621.4	8,452.1	2,062.8	11,219.7	0.0	295.9	1,238.3	53.2	38,088.4	104,338.2	13,500.3
$\Delta C_{P,DefPA,i,t}$	$\Sigma_{i:1}$= 160,775.9			$\Sigma_{i:2}$= 13,282.5			$\Sigma_{i:3}$= 1,587.5			$\Sigma_{i:4}$= 155,926.9		

Land Uses: VR: vegetation on regeneration; HAA: Heterogeneous Agricultural Areas; GL: Grassland.

Source: Based on Folder "calculation_tables", File "VMD0015.xlsx", Sheet "Eq3 CPDefPA,i,t Expost" (implicitly includes values of $\Delta C_{pools,Def,u,i,}$ in the sheet "Eq5 Cpools,Def,i,t")

5.2.6 Project Emissions (2018 & 2019)

Net greenhouse gas emissions under the project scenario (PA) are:

Table 43. Net greenhouse gas emissions under the project scenario (PA) (ΔCp) (2018)

Stratum	$\Delta C_{pDef,PA,i,t}$	$\Delta C_{pDeg,PA,i,t}$	$\Delta C_{pDist,PA,i,t}$	$GHG_{p\text{-}E,i,t}$	$\Delta C_{p,Enh,i,t}$	TOTAL ΔCp
Helobiome	184,792					184,792
Peinobiome	33,594					33,594
Litobiome	1,457					1,457
Zonobiome	178,806					178,806
TOTAL	**398,649**					**398,649**

Source: Folder "calculation_tables", File "monitoring.xlsx", sheet "Monitoring_summary", 2018, Section "Project Emissions" and $\Delta C_{pDef,PA,i,t}$ from File "VMD0015.xlsx", sheet "Eq3 CPDefPA,i,t Expost", 2018

Table 44. Net greenhouse gas emissions under the project scenario (PA) (ΔCp) (2019)

Stratum	$\Delta C_{pDef,PA,i,t}$	$\Delta C_{pDeg,PA,i,t}$	$\Delta C_{pDist,PA,i,t}$	$GHG_{p\text{-}E,i,t}$	$\Delta C_{p,Enh,i,t}$	TOTAL ΔCp
Helobiome	160,776					160,776
Peinobiome	13,282					13,282
Litobiome	1,587					1,587
Zonobiome	155,927					155,927
TOTAL	**331,573**					**331,573**

Source: Folder "calculation_tables", File "monitoring.xlsx", sheet "Monitoring_summary", 2019, Section "Project Emissions" and $\Delta C_{pDef,PA,i,t}$ from File "VMD0015.xlsx", sheet "Eq3 CPDefPA,i,t Expost", 2019

5.3 Leakage

To calculate the Leakage Emissions the following stages were fulfilled:

1. *Calculation of area deforested by immigrants in the Project Area and Leakage Belt under the project scenario.*
2. *Calculation of Total area deforested by immigrant agents in the baseline and project scenario.*
3. *Calculation of the area deforested by immigrants outside the Leakage Belt and Project Area.*
4. *Calculation of Net CO_2 emissions due to unplanned deforestation displaced outside the Leakage Belt.*
5. *Determination of deforested area in Leakage Belt in all pools for land use / stratum.*
6. *Calculation of Net Carbon stock changes after deforestation in Leakage Belt, in all pools for land use / stratum.*

7. Net CO_2 emissions due to unplanned deforestation displaced from the Project Area to the Leakage Belt

The following is a summary of each stage:

5.3.1 Calculation of area deforested by immigrants in the Project Area (PA) and Leakage Belt (LB) under the project scenario (2018 & 2019)

Equation 8 of VCS Module VMD0010 was used to calculate the area deforested by immigrants in the project area and leakage belt under the project scenario for 2018 & 2019:

$$A_{LK\text{-}ACT\text{-}IMM,t} = PROP_{IMM} * (\Sigma_{i=1}^{M} A_{DefPA,i,t} + A_{DefLB,it})$$

Where:

$PROP_{IMM}$ = 0.0976: Proportion of Resident / Migrant Population that Deforests in the PA and LB = 402 migrants / 4,121 municipal population (*Source: Folder "calculation_tables", File "VMD0010.xlsx" Sheet "S2 defor inm"*)

Deforested area in the Project Area ($A_{DefPA,i,t}$) and deforested area in the Leakage Belt ($A_{DefLB,it}$) during 2018 & 2019, by strata and land use, according to monitoring study, are in Folder "calculation_tables", file "monitoring.xlsx" Sheets "Defor2018" and "Defor2019"; and in File "VMD0010.xlsx" Sheet "S4 ADef,PA,LK" (2018 & 2019).

Table 45. Area deforested by immigrants in the Project Area and Leakage Belt ($A_{LK\text{-}ACT\text{-}IMM,t}$) (2018 & 2019)

Years	$A_{DefPA,i,t}$	$A_{DefLB,it}$	A_{Def} (PA+LB)	$PROP_{IMM}$	$A_{LK\text{-}ACT\text{-}IMM,t}$
2018	766.9	1,108.0	1,874.9	0.1058	**198.4**
2019	641.7	967.7	1,609.5	0.1058	**170.3**

Source: Folder "calculation_tables", File "VMD0010.xlsx" Sheet "S4 Eq8 ALK-ACT-IMM,t"

5.3.2 Calculation of Total area deforested by immigrant agents in the baseline and project scenario (2018 & 2019)

Equation 7 of VCS Module VMD0010 was used to calculate the Total area deforested by immigrant agents in the baseline and project scenario for 2018 & 2019:

$$A_{LK\text{-}IMM,t} = PROP_{IMM} * A_{BSL,PA,unplanned,t}$$

Where:

$A_{BSL,unplanned,i,t}$ *(PA):* Projected *area of unplanned baseline deforestation in the project area*: Annex 10 of PDD - VMD0007, Table 35 and file *Folder "calculation_tables", "spatial_model_results.xlsx" Sheet "PA"*.

Table 46. Total area deforested by immigrant agents in the project scenario ($A_{LK\text{-}IMM,t}$) (2018 & 2019)

Years	$A_{BSL,PA,unplanned,t}$	$PROP_{IMM}$	$A_{LK,IMM,t}$
2018	10,568.1	0.1058	**1,118.4**
2019	13,908.7	0.1058	**1,471.9**

Source: Folder "calculation_tables", File "VMD0010.xlsx" Sheet "S4 Eq7 ALK-IMM,t"

5.3.3 Calculation of the area deforested by immigrants outside the Leakage Belt (LB) and Project Area (PA) (2018 & 2019)

Equation 9 of VCS Module VMD0010 was used to calculate the area deforested by immigrants outside the Leakage Belt and Project Area for 2018 & 2019:

$$A_{LK\text{-}OLB,t} = A_{LK,IMM,t} - A_{LK\text{-}ACT\text{-}IMM,t}$$

Where:

Acronym	Unit	Description
$A_{LK\text{-}OLB,t}$	ha	Area deforested by immigrants outside the Leakage Belt and project area under the project scenario in year *t*
$A_{LK,IMM,t}$	ha	Total area deforested by immigrant agents in the baseline and project scenario in year *t*
$A_{LK\text{-}ACT\text{-}IMM,t}$	ha	Area deforested by immigrants in the project area and Leakage Belt under the project scenario in year *t*

Table 47. Area deforested by immigrants outside the Leakage Belt and Project Area ($A_{LK\text{-}OLB,t}$) (2018 & 2019)

Years	$A_{LK,IMM,t}$	$A_{LK\text{-}ACT\text{-}IMM,t}$	$A_{LK\text{-}OLB,t}$
2018	1,118.4	198.4	**920.0**
2019	1,471.9	170.3	**1,301.6**

Source: Folder "calculation_tables", File "VMD0010.xlsx" Sheet "S4 Eq9 ALK-OLB,t"

5.3.4 Calculation of Net CO_2 emissions due to unplanned deforestation displaced outside the Leakage Belt (2018 & 2019)

Equation 11 of VCS Module VMD0010 was used to calculate the Net CO_2 emissions due to unplanned deforestation displaced outside the Leakage Belt for 2018 & 2019:

$$\Delta C_{LK\text{-}ASU,OLB} = C_{OLB} * (\Sigma_{t=1}^{t} * A_{LK\text{-}OLB,t})$$

Where:

C_{OLB}: Average of CO_2 (tCO_2-e/ha) in Tropical wet rainforest. *Source: (Phillips, et al., 2011), page 51, Table 3.1 Promedio de Carbono para Bosque húmedo tropical (*Carbon Average for Tropical Rainforest*) 132.1 ton C / ha = 484.4 tCO_2-e / ha.*

$A_{LK\text{-}OLB,}$ *:* Area deforested by immigrants outside the Leakage Belt and Project Area under the project scenario at time *t.*

Table 48. Net CO_2 emissions due to unplanned deforestation displaced outside the Leakage Belt ($\Delta C_{LK\text{-}ASU,OLB}$) (2018 & 2019)

Years	C_{OLB}	$A_{LK\text{-}OLB,t}$	$\Delta C_{LK\text{-}ASU\text{-}OLB}$
2018	484.4	920.0	**445,602.3**
2019	484.4	1,301.6	**630,440.7**

Source: Folder "calculation_tables", File "VMD0010.xlsx" Sheet "S4 Eq11 CLK-ASU,OLB"

5.3.5 Determination of deforested area in Leakage Belt in all pools for land use / stratum (2018 & 2019)

Through cartographic review and field verification, area of recorded deforestation in the Leakage Belt (LB) stratum *i* ($A_{DefLB,u,i,t}$) converted to land use *u* for 2018 & 2019 was identified. Results are:

Table 49. Deforested area in Leakage Belt in all pools for land use / stratum ($A_{DefLB,u,i,t}$, *ha*) (2018)

Year	*i*=1 Helobiome			*i*=2 Peinobiome			*i*=3 Litobiome			*i*=4 Zonobiome			TOTAL		
	VR	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*
2018	20.2	103.0	5.7	18.5	207.5	20.3	3.8	87.6	25.2	254.2	293.0	69.0	296.7	691.1	120.2
TOTAL	**Σ = 129.0**			**Σ = 246.3**			**Σ = 116.5**			**Σ = 616.2**			**Σ = 1,108.0**		

Land Uses: VR: vegetation on regeneration; HAA: Heterogeneous Agricultural Areas; GL: Grassland.

Source: Deforested area in the Leakage Belt in all pools for land use / stratum ($A_{DefLB,u,i,t}$) during 2018, by strata and land use, according to monitoring study, is in Folder "calculation_tables", File "monitoring.xlsx" Sheet "Defor2018"; and File "VMD0015.xlsx", Sheet "Eq4 CPDefLB,i,t Expost"

Table 50. Deforested area in Leakage Belt in all pools for land use / stratum ($A_{DefLB,u,i,t}$, *ha*) (2019)

Year	*i*=1 Helobiome			*i*=2 Peinobiome			*i*=3 Litobiome			*i*=4 Zonobiome			TOTAL		
	VR	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*
2019	26.3	148.6	4.8	22.7	82.5	35.0	0.2	52.1	0.0	218.1	242.2	131.8	267.4	525.4	171.6
TOTAL	**Σ = 179.7**			**Σ = 140.2**			**Σ = 52.3**			**Σ = 592.1**			**Σ = 964.3**		

Land Uses: VR: vegetation on regeneration; HAA: Heterogeneous Agricultural Areas; GL: Grassland.

Source: Deforested area in the Leakage Belt in all pools for land use / stratum ($A_{DefLB,u,i,t}$) during 2019, by strata and land use, according to monitoring study, is in Folder "calculation_tables", File "monitoring.xlsx" Sheet "Defor2019"; and File "VMD0015.xlsx", Sheet "Eq4 CPDefLB,i,t Expost"

5.3.6 Calculation of Net Carbon stock changes after deforestation in Leakage Belt, in all pools for land use / stratum (2018 & 2019)

Equation 4 of VCS Module VMD0015 was used to calculate the Net Carbon stock change as a result of deforestation in the project scene in the Leakage Belt in stratum i:

$$\Delta C_{P,DefLB,i,t} = \Sigma_{u=1}^{U}(A_{DefLB,u,i,t} * \Delta C_{pools,P,Def,u,i,t})$$

Where:

Acronym	Unit	Description
$\Delta C_{P,DefLB,i,t}$	t CO_2-e	Net carbon stock change as a result of deforestation in the project case in the leakage belt in stratum i at time t
$A_{DefLB,u,i,t}$	ha	Area of recorded deforestation in the leakage belt stratum i converted to land use u at time t
$\Delta C_{pools,P,Def,u,i,t}$	t CO_2-e ha^{-1}	Net carbon stock changes in all pools in the project case in land use u in stratum i at time t

Table 51. Carbon stock change ($\Delta C_{P,DefLB,i,t}$) as a result of deforestation in the project scene in the Leakage Belt in stratum I (2018)

	i=1 Helobiome			*i*=2 Peinobiome			*i*=3 Litobiome			*i*=4 Zonobiome		
	VR	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*
$\Delta C_{pools,Def,u,i,t}$	460.3	514.9	569.2	333.8	423.0	444.0	340.8	435.8	451.2	466.4	557.3	576.6
$A_{DefLB,u,i,t}$ 2018	20.2	103.0	5.7	18.5	207.5	20.3	3.8	87.6	25.2	254.2	293.0	69.0
$\Delta C_{pools} * A_{DefLB}$	9,319.3	53,039.7	3,262.1	6,174.5	87,775.1	9,010.2	1,299.0	38,163.1	11,351.8	118,553.4	163,298.0	39,780.3
$\Delta C_{P,DefLB,i,t}$	**$\Sigma_{i:1}$= 65,621.1**			**$\Sigma_{i:2}$= 102,959.8**			**$\Sigma_{i:3}$= 50,813.9**			**$\Sigma_{i:4}$= 321,631.7**		

Land Uses: VR: vegetation on regeneration; HAA: Heterogeneous Agricultural Areas; GL: Grassland.

Source: Based on Folder "calculation_tables", File "VMD0015.xlsx", Sheet "Eq4 CPDefLB,i,t Expost" (implicitly includes values of $\Delta C_{pools,Def,u,i,}$ in the sheet "Eq5 Cpools,Def,i,t")

Table 52. Carbon stock change ($\Delta C_{P,DefLB,i,t}$) as a result of deforestation in the project scene in the Leakage Belt in stratum I (2019)

	i=1 Helobiome			*i*=2 Peinobiome			*i*=3 Litobiome			*i*=4 Zonobiome		
	VR	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*	*VR*	*HAA*	*GL*
$\Delta C_{pools,Def,u,i,t}$	460.3	514.9	569.2	333.8	423.0	444.0	340.8	435.8	451.2	466.4	557.3	576.6
$A_{DefLB,u,i,t}$ 2019	26.3	148.6	4.8	22.7	82.5	35.0	0.2	52.1	0.0	218.1	242.2	131.8
$\Delta C_{pools} * A_{DefLB}$	12,122.3	76,501.3	2,704.4	7,582.6	34,886.8	15,551.6	70.3	22,718.0	0.0	101,728.5	135,003.3	75,986.9
$\Delta C_{P,DefLB,i,t}$	$\Sigma_{i:1}$= 91,328.0			$\Sigma_{i:2}$= 58,021.0			$\Sigma_{i:3}$= 22,788.3			$\Sigma_{i:4}$= 312,718.7		

Land Uses: VR: vegetation on regeneration; HAA: Heterogeneous Agricultural Areas; GL: Grassland.

Source: Based on Folder "calculation_tables", File "VMD0015.xlsx", Sheet "Eq4 CPDefLB,i,t Expost" (implicitly includes values of $\Delta C_{pools,Def,u,i,}$ in the sheet "Eq5 Cpools,Def,i,t")

5.3.7 Net CO_2 emissions due to unplanned deforestation displaced from the Project Area to the Leakage Belt (2018 & 2019)

Equation 1 of VCS Module VMD0010 was used to calculate the Net CO_2 emissions due to unplanned deforestation displaced from the Project Area to the Leakage Belt for 2018 & 2019:

$$\Delta C_{LK\text{-}ASU\text{-}LB} = \Delta C_{P,LB} - \Delta C_{BSL,LK,unplanned}$$

Where:

$\Delta C_{P,LB}$ *from previous Table (for 2018 & 2019)*

$\Delta C_{BSL,LK,unplanned}$*: REDD+ Project RIU-SM. Folder "calculation_tables" file "VMD0007.xlsx", Sheet "P4 Step4.3 Eq24(LK) C stck chng"*

Table 53. Net CO_2 emissions ($\Delta C_{LK\text{-}ASU\text{-}LB}$) due to unplanned deforestation displaced from PA to LB (2018)

	i=1 Helobiome	*i*=2 Peinobiome	*i*=3 Litobiome	*i*=4 Zonobiome	
	t CO_2-e / ha	*t CO_2-e / ha*	*t CO_2-e / ha*	*t CO_2-e / ha*	**Subtotal**
$\Delta C_{P,DefLB,i,t}$	65,621.1	102,959.8	50,813.9	321,631.7	541,026.5
$\Delta C_{BSL,LK,unplanned\ 2018}$	150,274	373,269	898,167	553,106	1,974,816
$\Delta C_{LK\text{-}ASU\text{-}LB}$	-84,653	-270,309	-847,353	-231,474	-1,433,790

Source: Folder "calculation_tables", File "VMD0010.xlsx" Sheet "S3 Expost Eq1 CLK-$_{ASU,LB}$"

If $\Delta C_{LK\text{-}ASU\text{-}LB} < 0$, then $\Delta C_{LK\text{-}ASU\text{-}LB} = 0$

As $\Delta C_{LK\text{-}ASU\text{-}LB}$ in 2018 < 0 (-1,433,790), then

$\Delta C_{LK\text{-}ASU\text{-}LB(2018)}$ = 0

Table 54. Net CO_2 emissions ($\Delta C_{LK\text{-}ASU\text{-}LB}$) due to unplanned deforestation displaced from PA to LB (2019)

	i=1 Helobiome	*i*=2 Peinobiome	*i*=3 Litobiome	*i*=4 Zonobiome	
	t CO_2-e / ha	*t CO_2-e / ha*	*t CO_2-e / ha*	*t CO_2-e / ha*	**Subtotal**
$\Delta C_{P,DefLB,i,t}$	91,328.0	58,021.0	22,788.3	312,718.7	484,856.0
$\Delta C_{BSL,LK,unplanned\ 2019}$	150,274	373,269	898,167	553,106	1,974,816
$\Delta C_{LK\text{-}ASU\text{-}LB}$	-58,208	34,235	2,154	-436,865	-458,684

Source: Folder "calculation_tables", File "VMD0010.xlsx" Sheet "S3 Expost Eq1 CLK-ASU,LB"

If $\Delta C_{LK\text{-}ASU\text{-}LB} < 0$, then $\Delta C_{LK\text{-}ASU\text{-}LB} = 0$

As $\Delta C_{LK\text{-}ASU\text{-}LB}$ in 2019 < 0 (-458,684), then

$\Delta C_{LK\text{-}ASU\text{-}LB(2019)} = 0$

5.3.8 Leakage (2018 & 2019)

$$\Delta C_{LK\text{-}AS,unplanned} = \Delta C_{LK\text{-}ASU\text{-}LB} + \Delta C_{LK\text{-}ASU,OLB} + GHG_{LK,E}$$

Eq.16 VMD0010 LK-ASU

Where:

Acronym	Unit	Description
$\Delta C_{LK\text{-}AS,unplanned}$	t CO_2e	Net greenhouse gas emissions due to activity shifting leakage for projects preventing unplanned deforestation Net CO_2 emissions
$\Delta C_{LK\text{-}ASU\text{-}OLB}$	t CO_2e	Net CO_2 emissions due to unplanned deforestation displaced outside the Leakage Belt
$\Delta C_{LK\text{-}ASU\text{-}LB}$	t CO_2e	Net CO_2 emissions due to unplanned deforestation displaced from the project area to the Leakage Belt
$GHG_{LK,E}$	t CO_2-e	Greenhouse gas emissions as a result of leakage of avoiding deforestation activities

Table 55. Net greenhouse gas emissions due to activity shifting leakage for projects preventing unplanned deforestation net CO_2 emissions (2018 & 2019)

Years	$\Delta C_{LK\text{-}ASU\text{-}LB}$	$\Delta C_{LK\text{-}ASU,OLB}$	$\Delta C_{LK\text{-}ASU\text{-}PEAT}$	$GHG_{LK,E}$	$\Delta C_{LK\text{-}AS,unplanned}$
2018	0	445,602	0	0	**445,602**
2019	0	630,441	0		**630,441**

Source: Folder "calculation_tables", File "monitoring.xlsx", sheet "Monitoring_summary", 2018 & 2019, Section "Leakage" and File "VMD0010.xlsx", sheet "S7 Eq16 CLK-AS,unp Expost"

5.4 Net GHG Emission Reductions and Removals

5.4.1 Net GHG Emission Reductions and Removals (2018 & 2019)

Summary of GHG Emission Reductions and Removals

$$NER_{REDD} = \Delta C_{BSL\text{-}REDD} - \Delta C_{WPS\text{-}REDD} - \Delta C_{LK\text{-}REDD}$$

Eq.2 VM0007 REDD-MF

Where:

Acronym	Unit	Description
NER_{REDD}	t CO_2e	Total net GHG emission reductions of the REDD project activity up to year *t**
$\Delta C_{BSL\text{-}REDD}$	t CO_2e	Net GHG emissions in the REDD baseline scenario up to year *t**
$\Delta C_{WPS\text{-}REDD}$	t CO_2e	Net GHG emissions in the REDD project scenario up to year *t**
$\Delta C_{LK\text{-}REDD}$	t CO_2e	Net GHG emissions due to leakage from the REDD project activity up to year *t**

Table 56. Total net GHG emission reductions of the REDD project activity (2018 & 2019)

Years	Baseline emissions or removals (tCO_2e) $\Delta C_{BSL,unplanned}$	Project emissions or removals (tCO_2e) ΔC_{WPS}	Leakage emissions (tCO_2e) $\Delta C_{LK\text{-}AS,unplanned}$	Net GHG emission reductions or removals (tCO_2e) NER_{REDD}
2018	4,422,586	398,649	445,602	3,578,335
2019	6,500,811	331,573	630,441	5,538,798
Total	**10,923,397**	**730,221**	**1,076,043**	**9,117,133**

Source: Folder "calculation_tables", File "monitoring.xlsx", sheet "Monitoring_summary", 2018 & 2019, Section "GHG Emission Reductions and Removals"

5.4.2 Buffer (2018 & 2019)

A final discount due to Permanence Risk Buffer was made.

$$Buffer_{UNPLANNED} = \left\{ \begin{array}{l} (\Delta C_{BSL,unplanned} - \sum_{t=1}^{t^*}\sum_{i=1}^{M}(E_{FC,i,t} + N_2O_{direct,i,t}) - \\ \text{Baseline Unplanned} \\ (\Delta C_{Punplanned} - \sum_{t=1}^{t^*}\sum_{i=1}^{M}(E_{FC,i,t} + N_2O_{direct,i,t}) \\ \text{Project Unplanned} \end{array} \right\} * (Buffer\ \%)$$

Eq.9 VM0007 REDD-MF

Where:

Acronym	Unit	Description
$Buffer_{Unplanned}$	$t\ CO_2\text{-}e$	Buffer withholding for avoiding unplanned deforestation project activities
$\Delta C_{BSL,unplanned}$	$t\ CO_2\text{-}e$	Net GHG emissions in the baseline from unplanned deforestation
$E_{FC,i,t}$	$t\ CO_2\text{-}e$	Emission from fossil fuel combustion in stratum i in year t
$N_2O_{direct,i,t}$	$t\ CO_2\text{-}e$	Direct N_2O emission as a result of nitrogen application on the alternative land use within the project boundary in stratum i in year t
ΔC_P	$t\ CO_2\text{-}e$	Net GHG emissions within the project area under the project scenario (The project emissions must be divided between the emissions arising from the respective project areas for planned and unplanned deforestation and degradation through fuelwood extraction/charcoal production.)
Buffer%	$t\ CO_2\text{-}e$	Buffer withholding percentages are based on the project's overall risk classification, the percentage of carbon credits generated by the approved project activity that must be deposited into the AFOLU pooled buffer account to cover non-permanence related project risks. Buffer withholding percentage was calculated using ***"VCS AFOLU Non-Permanence Risk Tool, VCS Version 4" (Annex 5 of this Monitoring Report; also, file "VCS_risk_calculation_toolV4.xls" in folder "calculation_tables".*). Obtained value was 10%.**
i		1, 2, 3, …M (4) strata
t	*years*	1, 2, 3, … t* (30) years elapsed since the start of the REDD VCS project activity

$$Buffer_{UNPLANNED} = ((\Delta C_{BSL,unplanned} - 0) - (\Delta C_P - 0)) * 10\%$$

Source: Equation 9 VM0007 REDD-MF

[10% according to "VCS AFOLU Non-Permanence Risk Tool, VCS Version 4" (Annex 5 of this Monitoring Report; also file "risk_report_calculation_tool_v4" in folder "calculation_tables".].

So, the final Buffer result for 2018 is:

$$Buffer_{UNPLANNED} = ((4{,}422{,}586.9 - 0) - (398{,}648.7 - 0)) * 10\% = 402{,}394\ t\ CO_2\text{-}e$$

$$Buffer_{UNPLANNED} = 402{,}394\ t\ CO_2\text{-}e$$

Source: Folder "calculation_tables", File "monitoring.xlsx", sheet "Monitoring_summary", 2018, Section "GHG Emission Reductions and Removals"

And for 2019 is:

$$Buffer_{UNPLANNED} = ((6{,}500{,}811.3 - 0) - (331{,}572.7 - 0)) * 10\% = 616{,}924\ t\ CO_2\text{-}e$$

$$Buffer_{UNPLANNED} = 616{,}924\ t\ CO_2\text{-}e$$

Source: Folder "calculation_tables", File "monitoring.xlsx", sheet "Monitoring_summary", 2019, Section "GHG Emission Reductions and Removals"

5.4.3 Uncertainty (2018 & 2019)

Then, this result was adjusted to account for the uncertainty analysis:

$$Adjusted\_NER_{REDD} = NGR_{ARR} + (NER_{REDD+} NER_{WRC}) * (100\% - NER_{REDD+ERROR} + 15\%)$$

Eq.16 VMD0017 X-UNC

Where:

Acronym	Unit	Description
$Adjusted\_NER_{REDD}$	t CO_2e	Total net GHG emission reductions of the REDD+ project activities up to year *t** adjusted to account for uncertainty
NGR_{ARR}	t CO_2e	Total net GHG removals of the ARR Project activity up to year t*
NER_{REDD}	t CO_2e	Total net GHG emission reductions of the REDD project activity up to year *t**
NER_{WRC}	t CO_2e	Total net GHG emission reductions of the WRC project activity up to year *t**
$NER_{REDD+ERROR}$	%	Cumulative uncertainty for the REDD+ (REDD and WRC) project activities up to year *t**

The Uncertainty result for 2018 is:

$$Adjusted\_NER_{REDD} = 3,578,335 *(100\% - 15\% + 15\%) = 3,578,335\ t\ CO_2\text{-}e$$

Uncertainty does not exceed the 15%, is **8.4%.** (source: Folder "calculation_tables", File "VMD0017.xlsx", sheet "RIU-SM soils").

And for 2019 is:

$$Adjusted\_NER_{REDD} = 5,538,798 *(100\% - 15\% + 15\%) = 5,538,798\ t\ CO_2\text{-}e$$

Uncertainty does not exceed the 15%, is **8.4%.** (source: Folder "calculation_tables", File "VMD0017.xlsx", sheet "RIU-SM soils").

5.4.4 VCUs (vintages 2018 & 2019)

In this way, the total emission reductions due to project activity for 2018 & 2019 were obtained:

$$VCU_t = (Adjusted\_NER_{REDD,t2} - Adjusted\_NER_{REDD,t1}) - Buffer_{Total}$$

Equation 13 VM0007 REDD-MF

Where:

Acronym	Unit	Description

VCU_t	VCU	Number of Verified Carbon Units at year $t = t_2 - t_1$
$Adjusted\_NER_{REDD,t2}$	t CO_2e	Total net GHG emission reductions of the REDD+ project activity up to year t_2 adjusted to account for uncertainty
$Adjusted\_NER_{REDD,t1}$	t CO_2e	Total net GHG emission reductions of the REDD+ project activity up to year t_1 adjusted to account for uncertainty
$Buffer_{Total}$	t CO_2e	Total permanence risk buffer withholding

Table 57. Number of Verified Carbon Units (vintages 2018 & 2019)

Years	Baseline emissions or removals (tCO_2e) $\Delta C_{BSL,unplanned}$	Project emissions or removals (tCO_2e) ΔC_{WPS}	Leakage emissions (tCO_2e) $\Delta C_{LK-AS,unplanned}$	Net GHG emission reductions or removals (tCO_2e) NER_{REDD}	Buffer pool allocation $Buffer_{UNPLANNED}$	VCUs eligible for issuance
2018	4,422,586	398,649	445,602	3,578,335	402,394	3,175,941
2019	6,500,811	331,573	630,441	5,538,798	616,924	4,921,874
Total	***10,923,397***	***730,221***	**1,076,043**	**9,117,133**	**1,019,318**	**8,097,815**

Source: Folder "calculation_tables", File "monitoring.xlsx", sheet "Monitoring_summary", 2018 & 2019, Sections "GHG Emission Reductions and Removals" and "VCU_t"

FINAL EVALUATION OF THE MONITORING PERIOD

The evaluation of the monitoring of these years (2018 & 2019) allows us to conclude the following:

1. The Project has been implemented as designed (Matrix of Logical Structure, Management Plan) in a highly satisfactory manner (see compliance with objectives, final of Section 3.1.1 of this Monitoring Report).
2. Deforestation has been stopped with an efficiency of 87.95% for 2018, and of 89.68% for 2019, indicating an achievement of products and objectives very good. Contingency measures were established, as explained in Section 3.1.1 of this Monitoring Report, to address the issue of immigration of Venezuelan citizens in the RIU-SM.
3. Once verification and registration of Project were accomplished, VCUs have been commercialized, in such a way that the breakeven point of the Project was achieved in year 2017, according to the projections made in design stage. The Project was stabilized in its cash flow, as it was designed, and the investments approved by the Zonal Meetings were made.
4. The team (ACATISEMA and MEDIAMOS) has been participating in the project as a good guarantee for success.
5. The ACATISEMA unit was strengthened adequately, resolving its internal differences, based on its statutes. Strategic alliance between ACATISEMA and MEDIAMOS has been strengthened through the support of the communities.
6. The continuity of the Project was approved by ACATISEMA for an additional cycle of 30 years.

Illustration 111. The RIU-SM people is committed to the development of the Project

REFERENCES

Cabrera, E., Galindo, G., & Vargas, D. M. (2011). Protocolo de Procesamiento Digital de Imágenes para la Cuantificación de la Deforestación en Colombia, Nivel Nacional Escala Gruesa y Fina. 44. Bogotá D.C., Colombia: Instituto de Hidrología, Meteorología, y Estudios Ambientales-IDEAM.

Chavez, J. (1996, September). Image-Based Atmospheric Corrections - Revisited and Improved. *Photogrammetric Engineering & Remote Sensing PE&RS, 62*(9), 1025-1036. Retrieved from http://info.asprs.org/publications/pers/96journal/september/1996_sep_1025-1036.pdf

Colciencias. (2017, December). Los Objetivos de Desarrollo Sostenible en Colombia y el aporte de la ciencia, la tecnología y la innovación. 30. Colombia: Ministerio de Ciencia Tecnología e Innovación. Retrieved from https://minciencias.gov.co/sites/default/files/objetivos_de_desarrollo_sostenible_en_colombia_y_el_aporte_de_la_ctei_2.pdf

Congreso de Colombia. (2011). Ley 1450 de 2011 por la cual se expide el Plan Nacional de Desarrollo 2010-2014. 165. Bogotá, D. C., Colombia: Congreso de Colombia.

Congreso de la República. (2015). Ley 1753 de 2015 por la cual se expide el Plan Nacional de Desarrollo 2014-2018. 104. Bogotá, D. C., Colombia: Diario Oficial. doi:ISSN 0122-2112

CONPES. (2011). Estrategia Institucional para la articulación de políticas y acciones en materia de cambio climático en Colombia. 139. Bogotá D.C., Colombia: Departamento Nacional de Planeación. Retrieved from https://colaboracion.dnp.gov.co/CDT/Conpes/Econ%C3%B3micos/3700.pdf

CONPES. (2018). Estrategia para la implementación de los Objetivos de Desarrollo Sostenible (ODS) en Colombia. 73. Bogotá D.C., Colombia: Departamento Nacional de Planeación. Retrieved from https://colaboracion.dnp.gov.co/CDT/Conpes/Econ%C3%B3micos/3918.pdf

Correa, H. D., Ruiz, S. L., & Arévalo, L. M. (2005). Plan de Acción en Biodiversidad de la Cuenca del Orinoco - Colombia 2005-2015 - Propuesta Técnica. 273. Bogotá D.C., Colombia: Corporinoquia, Cormacarena, I.A.v.H, Unitrópico, Fundación Omacha, Fundación Horizonte Verde, Universidad Javeriana, Unillanos, WWF - Colombia, GTZ –Colombia.

DNP. (2011). *Plan Nacional de Adaptación al Cambio Climático - PNACC*. Retrieved from https://www.dnp.gov.co/programas/ambiente/CambioClimatico/Paginas/Plan-Nacional-de-Adaptacion.aspx

DNP. (2018, March 16). *Las 16 grandes apuestas de Colombia para cumplir los Objetivos de Desarrollo Sostenible*. Retrieved from Departamento Nacional de Planeación: https://www.dnp.gov.co/Paginas/Las-16-grandes-apuestas-de-Colombia-para-cumplir-los-Objetivos-de-Desarrollo-Sostenible.aspx

GOFC-GOLD. (2016). A sourcebook of methods and procedures for monitoring and reporting anthropogenic greenhouse gas emissions and removals associated with deforestation, gains and losses of carbon stocks in forests remaining forests, and forestation. *(GOFC-GOLD Land Cover Project Office, Wageningen University)*. Netherlands.

IPCC. (2003). Good Practice Guidance for Land Use, Land-Use Change and Forestry. 632. (J. Penman, M. Gytarsky, T. Hiraishi, T. Krug, D. Kruger, R. Pipatti, . . . F. Wagner, Eds.) Japan: The Intergovernmental Panel on Climate Change.

IPCC. (2006). IPCC Guidelines for National Greenhouse Gas Inventories. *4*, 678. Japan.

MADS. (2011). *ENREDD+*. Retrieved from http://www.minambiente.gov.co/index.php/component/content/article?id=439:plantilla-bosques-biodiversidad-y-servicios-ecosistematicos-32#imagenes

MADS. (2011). *Estrategia Colombiana de Desarrollo Bajo en Carbono*. Retrieved from http://www.minambiente.gov.co/index.php/component/content/article/469-plantilla-cambio-climatico-25#estrategia-colombiana-de-desarrollo-bajo-en-carbono

MADS. (2016). Intended Nationally Determined Contribution iNDC. Bogotá D.C., Colombia. Retrieved from http://www.minambiente.gov.co/images/cambioclimatico/pdf/colombia_hacia_la_COP21/iNDC_ingles.pdf

MADS. (2017, 05 25). Decreto 870 de 2017. 14. Bogotá D.C., Colombia.

MADS-IDEAM. (2017). Estrategia Integral de Control a la Deforestación y Gestión de los Bosques. 349. Colombia: Ministerio de Ambiente y Desarrollo Sostenible. Retrieved from http://www.minambiente.gov.co/images/Estrategia_Integral_de_control_a_la_Deforestacion_y_Gestion_de_los_Bosques.pdf

Mendoza P., Y. (2011). Determinación de carbono orgánico de suelos. Método de Walkley Black. 5. Colombia: IDEAM Subdirección de hidrología - Grupo laboratorio de calidad ambiental.

Minhacienda. (2010, 12 29). Decreto 4819 de 2010. 9. Bogotá D.C., Colombia. Retrieved from http://wsp.presidencia.gov.co/Normativa/Decretos/2010/Documents/Diciembre/29/dec481929122010.pdf

Minhacienda, MADS. (2017, 06 01). Decreto 926 de 2017. 13. Bogotá D.C., Colombia.

Phillips, J. F., Duque, A. J., Yepes, A. P., Cabrera, K. R., García, M. C., Navarrete, D. A., . . . Cárdenas, D. (2011). *Estimación de las reservas actuales (2010) de carbono almacenadas en la biomasa aérea en bosques naturales de Colombia. Estratificación, alometría y*

métodos análiticos. Bogotá D.C., Colombia: Instituto de Hidrología, Meteorología, y Estudios Ambientales - IDEAM.

UNSD. (2018). Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development. 21. United Nations Statistics Division. Retrieved from https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%20refinement_Eng.pdf

USGS. (n.d.). USGS Global Visualization Viewer. Retrieved from http://glovis.usgs.gov

Yepes, A. P., Navarrete, D. A., Duque, A. J., Phillips, J. F., Cabrera, K. R., Álvarez, E., . . . Ordoñez, M. F. (2011). Protocolo para la estimación nacional y subnacional de biomasa - carbono en Colombia. 162. Bogotá, Colombia: Instituto de Hidrología, Meteorología, y Estudios Ambientales-IDEAM.