

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

Project Title	REDD+ Project <i>Resguardo Indígena Unificado - Selva de Matavén</i> (RIU-SM)
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Project Proponent(s)	Project Proponents: <i>Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén – ACATISEMA</i> MEDIAMOS F&M S.A.S. company Contact name: Francisco A. Quiroga Zea, Project Director. Email address: mediamosfym@hotmail.com Phone number: +57 3206878984
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Project Lifetime	01 st January 2013 – 31 st December 2042; 30-years lifetime
GHG Accounting Period	01 st January 2013 – 31 st December 2042; 30-years lifetime
History of CCB Status	There is no any history about CCB Status, but there is about VCS Program:

Gold Level Criteria	Validation under VCS Program: VCS VALIDATION DEED OF REPRESENTATION - 6th December, 2016 JOINT VALIDATION & VERIFICATION REPORT - 10th June, 2017 Verification under VCS Program 2013 & 2014-2015 periods: VCS VERIFICATION DEED OF REPRESENTATION - 6th December, 2016 JOINT VALIDATION & VERIFICATION REPORT - 10th June, 2017 Verification under VCS Program 2016 – 2017 period: VERIFICATION REPORT - 19th November, 2018 VCS VERIFICATION DEED OF REPRESENTATION - 20th November, 2018 Verification under VCS Program 2018 & 2019 periods: VERIFICATION REPORT - 10th November, 2020 VCS VERIFICATION DEED OF REPRESENTATION - 11th November, 2020
	REDD+ Project RIU-SM Activities are: surveillance and control of RIU-SM territory, information / communication / transportation systems, strengthening of governance, family agri-food production unit system to ensure food guarantee, develop educational programs, implement projects in productive chains. In addition to these, the ACATISEMA Reserves are implemented, which are intended to bring benefits in different sensitive aspects for the Indigenous Reservation. With all these actions, it is expected to apply to all the Gold Level criteria (in Climate, Community and Biodiversity) GL1 Climate Change Adaptation Benefits REDD+ Project RIU-SM Activities are aimed at the protection, conservation, and recovery of the of natural forests of the Selva de Matavén, in a Project Area of 1,150,212 has., and avoid the GHG emission of 108,670,562 tCO₂ in the crediting period. The Project Activities also seek to generate infrastructure, logistics, resources and capacity to face the effects of climate change, such as surveillance and communication to be alert to alterations, administrative strength to manage contingency care, assurance of food and resources in seasons critical and in case of loss of vital elements. GL2 Exceptional Community Benefits Strengthening of human skills to ensure their means of subsistence and their quality of life, in relation to installed capacities to defend the autonomy of indigenous people; have administrative and economic strength, with gender equity, with spaces for the participation of different community groups in decision-making and when receiving benefits and seeking to meet the sustainable development goals; produce more and better food; develop training-participation processes, in basic and higher education; develop productive projects to ensure self-consumption and trade of different products, goods and services, to generate family and circulating economy; have more possibilities of receiving health services, treated water for consumption, improvement of housing and wellness elements (in an environmentally friendly way); attention to

	special population and in case of contingencies that threaten the welfare conditions of the communities; and protection of the HCVs: areas that provide critical ecosystem services for regulation and support, areas that are critical to the livelihood of communities and areas that are critical to the traditional cultural identity of communities. GL3 Exceptional Biodiversity Benefits Through the Project Activities, whose main purpose is to generate the conditions with which it is possible to protect and conserve the natural forests of the RIU-SM, collateral benefits are generated for the protection and conservation of the optimal conditions with which the care of subsistence resources for important and necessary species of flora and fauna, especially those vulnerable and in danger and, therefore, the protection of HCVs: species diversity (including endemic species and rare, threatened and/or endangered that are significant at local, regional, national, and global levels), landscape (significant at local, regional, national, and global levels, that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance), and rare, threatened, or endangered ecosystems, habitats or refugia.
Expected Verification Schedule	The Validation and Verification (2018 & 2019 period) processes of the REDD+ Project RIU-SM under CCB is expected to be completed on September, 2021.

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1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Outcome or Impact Estimated by the End of Project Lifetime	Section Reference
1) Reduction of the aspects of vulnerability in the RIU-SM, by: • Capacity for the development of the surveillance and control of the RIU-SM, which allows the indigenous authorities to be present in all locations of their territory, generating confidence to assert the protection of the forests and related natural resources. • Improvement of the information, communication and transportation means systems, to contribute to reducing physical distances between the RIU-SM communities. • Strengthening of governance for the Indigenous Reservation through its association ACATISEMA, which allows indigenous communities to have elements to ensure their autonomy, self-management and self-determination.	2.1.8, Product 1
2) Sustainable production system and alternative economy initiatives through the implementation of a Sustainable Management Plan for Land and Forest of the RIU-SM, to guarantee food guarantee and products for self-consumption and commercialization.	2.1.8, Product 2
3) Provision of financial resources to meet various needs of the indigenous communities of the RIU-SM.	2.1.8, Product 3
4) Generation and updating of the socio-economic and geographical information of the territory.	3 Climate 4 Community 5 Biodiversity
5) Measures to bring other elements of well-being to the RIU-SM communities, through programs to: • House improvement with materials that are not taken from the forest. • Attention to special population, such as children, the elderly, women and disabled. • Infrastructure to provide administrative workplaces and cultural activities. • Attention to calamities due to the occurrence of natural and human events that affect indigenous communities.	2.1.8, Other benefits

1.2 Standardized Benefit Metrics

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
GHG emission reductions or removals	Net estimated emission removals in the project area, measured against the without-project scenario	Not applicable	N/A
	Net estimated emission reductions in the project area, measured against the without-project scenario	108,670,562 tCO ₂ e in the Project life cycle	3.2.2/1. Estimated GHG emission reductions
Forest ¹ cover	For REDD ² projects: Estimated number of hectares of reduced forest loss in the project area measured against the without-project scenario	In Project Area, a deforestation of 298,410 ha. is expected in without Project scenario. In Project Area, a deforestation of 44,762 ha. is expected in with Project scenario. Thus, the difference between the deforestation expected in the without Project scenario vs. in the with Project scenario is the reduced forest loss of 253,648 ha., in the Project life cycle.	Validated PDD-VCS, Sections "3.1.2.6", Table 61 and "3.2 Project emissions", Table 72)
	For ARR ³ projects: Estimated number of hectares of forest cover increased in the project area measured against the without-project scenario	Not applicable	N/A
Improved land management	Number of hectares of existing production forest land in which IFM ⁴ practices are expected to occur as a result of project activities, measured	Not applicable	N/A

¹ Land with woody vegetation that meets an internationally accepted definition (e.g., UNFCCC, FAO or IPCC) of what constitutes a forest, which includes threshold parameters, such as minimum forest area, tree height and level of crown cover, and may include mature, secondary, degraded and wetland forests (*VCS Program Definitions*)

² Reduced emissions from deforestation and forest degradation (REDD) - Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land and/or reduce the degradation of forest land where forest biomass is lost (*VCS Program Definitions*)

³ Afforestation, reforestation and revegetation (ARR) - Activities that increase carbon stocks in woody biomass (and in some cases soils) by establishing, increasing and/or restoring vegetative cover through the planting, sowing and/or human-assisted natural regeneration of woody vegetation (*VCS Program Definitions*)

⁴ Improved forest management (IFM) - Activities that change forest management practices and increase carbon stock on forest lands managed for wood products such as saw timber, pulpwood and fuelwood (*VCS Program Definitions*)

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
	against the without-project scenario		
	Number of hectares of non-forest land in which improved land management practices are expected to occur as a result of project activities, measured against the without-project scenario	At Project start there were the following non-forest land in the Project Zone (RRL = Project Area + Leakage Belt + other non-forest areas): Heterogenous Agricultural Areas: 36,111 ha. Natural regeneration: 6,767 ha. Grassland: 2,997 ha. Improved land management practices are expected in 10% of these areas in the Project life cycle.	Annex 4 of validated PDD-VCS.
Training	Total number of community members who are expected to have improved skills and/or knowledge resulting from training provided as part of project activities	It is expected that around 5,000 people from the Indigenous Reservation, including leaders, Captains, <i>Cabildos</i> , members of the Coordinator Committee, Indigenous Guards, students, members of families that execute productive projects and other members of indigenous communities, will participate in training, acquire skills, and apply their new knowledge in the management of the territory of the RIU-SM.	Based on data in validated PDD-VCS, Matrix of Logic Structure, page 45
	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities	Around 45% of the RIU-SM population is female. In this way, it would be expected that around 2,000 women will participate in training, acquire skills, and apply their new knowledge in the management of the territory of the RIU-SM.	% based on Annex 18 of validated PDD-VCS
Employment	Total number of people expected to be employed in project activities, ⁵ expressed as number of full-time	It is expected that the same people who receive training will achieve occupation by participating in the execution of the Project Activities, will fulfill roles for their own benefit	Based on data in validated PDD-VCS, Matrix of

⁵ Employed in project activities means people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out project-related work.

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
	employees ⁶	and for the communities in general, for which they receive financial aid to support their efforts. In the ACATISEMA offices may employ 15 to 20 people and the MEDIAMOS F&M company, technical and administrative team could employ around 20 people. On the other hand, around 10,000 indirect jobs could be generated through external companies, with which contracts for the acquisition of goods and provision of services are signed.	Logic Structure, page 45
	Number of women expected to be employed as a result of project activities, expressed as number of full-time employees	Around 45% of the RIU-SM population is female. In this way, it would be expected that around 2,000 indigenous women will achieve occupation by participating in the implementation of the Project Activities.	% based on Annex 18 of validated PDD-VCS
Livelihoods	Total number of people expected to have improved livelihoods ⁷ or income generated as a result of project activities	It is expected that the entire RIU-SM population (around 18,000 indigenous people in the end of the Project life cycle) will have improved livelihoods or income generated as a result of Project Activities.	Based on a population projection, according to data from the Annex 18 of validated PDD-VCS
	Number of women expected to have improved livelihoods or income generated as a result of project activities	Around 45% of the RIU-SM population is female. In this way, it would be expected that around 8,000 women will have improved livelihoods or income generated as a result of Project Activities.	% based on Annex 18 of validated PDD-VCS

⁶ Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region or economic territory (adapted from the UN System of National Accounts (1993) paragraphs 17.14[15.102];[17.28])

⁷ Livelihoods are the capabilities, assets (including material and social resources) and activities required for a means of living (Krantz, Lasse, 2001. *The Sustainable Livelihood Approach to Poverty Reduction*. SIDA). Livelihood benefits may include benefits reported in the Employment metrics of this table.

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
Health	Total number of people for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	It is expected that the entire RIU-SM population (around 18,000 indigenous people in the end of the Project life cycle) will have health services as a result of Project Activities.	Based on a population projection, according to data from the Annex 18 of validated PDD-VCS
	Number of women for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	Around 45% of the RIU-SM population is female. In this way, it would be expected that around 8,000 women will have health services as a result of Project Activities.	% based on Annex 18 of validated PDD-VCS
Education	Total number of people for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	It is expected that around 1,200 graduated high school students from the Indigenous Reservation will have developed their training and educational programs.	Based on data in validated PDD-VCS, Matrix of Logic Structure, page 45
	Number of women and girls for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	Around 45% of the RIU-SM population is female. In this way, it would be expected that around 500 women will have developed their training and educational programs.	% based on Annex 18 of validated PDD-VCS
Water	Total number of people who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	It is expected that the entire RIU-SM population (around 18,000 indigenous people in the end of the Project life cycle) will increase water quality and/or improved access to drinking water as a result of Project Activities.	2.1.8, Other benefits
	Number of women who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Around 45% of the population of Zones 4 and 5 of the RIU-SM is female. In this way, it would be expected that around 8,000 women will increase water quality and/or improved access to drinking water as a result of Project Activities.	% based on Annex 18 of validated PDD-VCS

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
Well-being	Total number of community members whose well-being ⁸ is expected to improve as a result of project activities	It is expected that the entire RIU-SM population (around 18,000 indigenous people in the end of the Project life cycle) will have improved well-being as a result of Project Activities.	Based on a population projection, according to data from the Annex 18 of validated PDD-VCS
	Number of women whose well-being is expected to improve as a result of project activities	Around 45% of the RIU-SM population is female. In this way, it would be expected that around 8,000 women will have improved well-being as a result of Project Activities.	% based on Annex 18 of validated PDD-VCS
Biodiversity conservation	Expected change in the number of hectares managed significantly better by the project for biodiversity conservation, ⁹ measured against the without-project scenario	In Project Area and Leakage Belt, it is expected that 1,636,423 has. of natural forest will be managed for their protection, including conservation of biodiversity elements.	Validated PDD-VCS, Section 3.1.2.6, Tables 61 and 62
	Expected number of globally Critically Endangered or Endangered species ¹⁰ benefiting from reduced threats as a result of project activities, ¹¹ measured against the without-project scenario	- Species in categories <i>Red List of Threatened Species</i> – IUCN: - 3 species: 1 birds + 2 mammals critically endangered. - 2 mammals in danger of extinction. - 7 species: 5 birds + 2 mammals vulnerable. - Endemic species: 17 species: 13 birds + 4 mammals	5.2.4

⁸ Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Livelihoods, Health, Education and Water), and may also include other benefits such as strengthened legal rights to resources, increased food guarantee, conservation of access to areas of cultural significance, etc.

⁹ Managed for biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation, e.g. enhancing the status of endangered species

¹⁰ Per IUCN's Red List of Threatened Species

¹¹ In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit

2 GENERAL

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. This Project is part of the international REDD+ mechanism¹² framed in the decisions of the UNFCCC, that allows providing compensation payments for indigenous communities by ecosystem services.

Thus, the initiative corresponds to a REDD+ Project in accordance with standards CCB & VCS. Specifically, an activity “*Avoiding Unplanned Deforestation and Degradation (AUDD)*”.

Location of the project

The *Resguardo Indígena Unificado - Selva de Matavén* (RIU-SM) is located in the east of the high plain Colombian Orinoco region, in the transition belt between the savannas of the Orinoco and the Amazon forests, in the south-eastern part of the Vichada Department, in the Cumaribo municipality (see Map 1).

2.1 Project Goals, Design and Long-Term Viability

2.1.1 Project Proponent (G1.1)

Organizational and functional structure of the REDD+ Project RIU-SM

The organizational and functional structure of the REDD+ Project RIU-SM is based on the Strategic Alliance Agreement between ACATISEMA and MEDIAMOS and their respective organizational and functional structures.

Organizational and functional structure of ACATISEMA

ACATISEMA

Organization name	<i>Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén</i> – 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

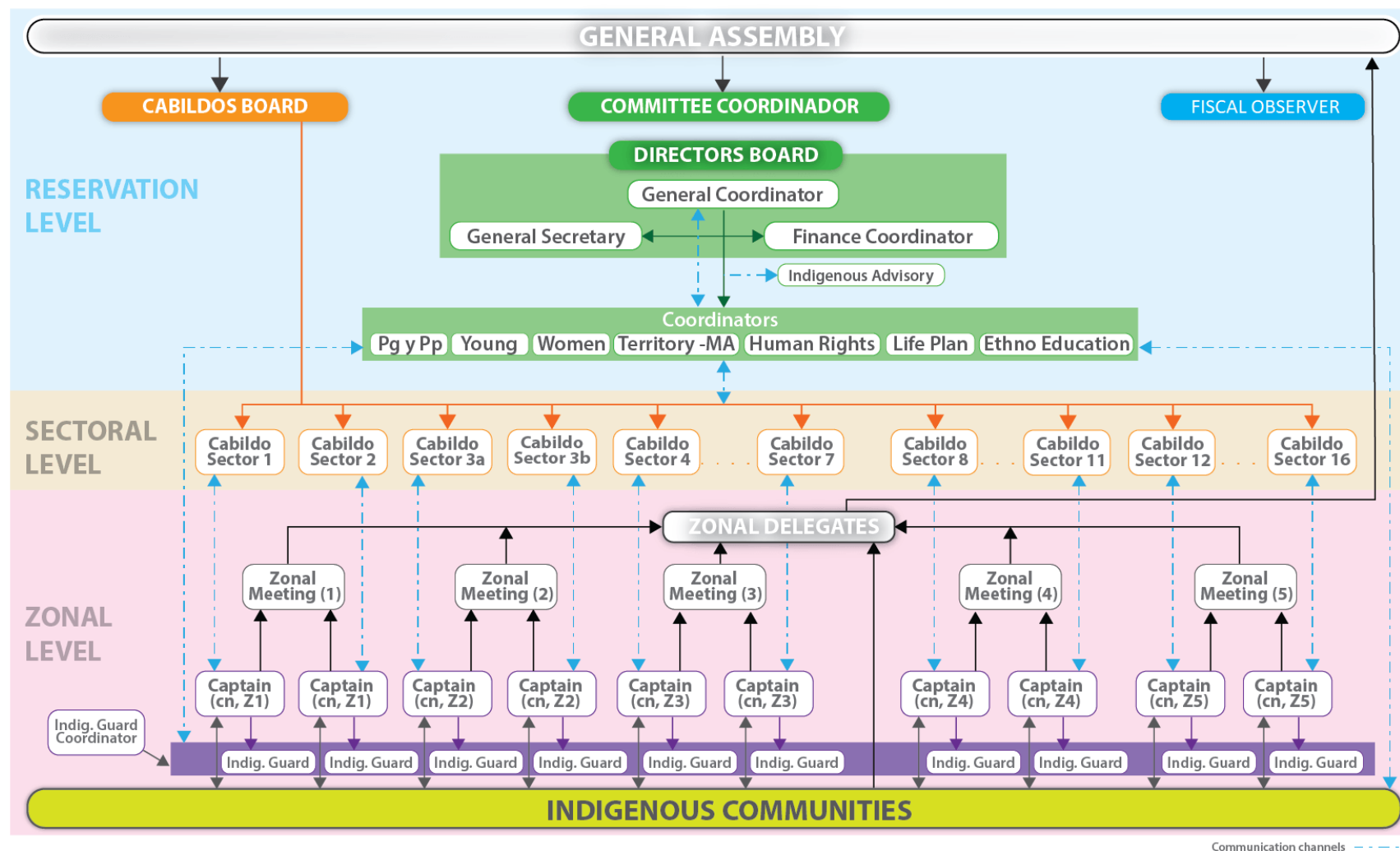
¹² “Activities that reduce GHG emissions from deforestation and/or degradation by reducing or stopping conversion of forests to non-forest land and/or reducing the degradation of forest land where forest biomass is lost; and/or activities that enhance carbon stocks through improved forest management and/or afforestation, reforestation or revegetation” (according to VCS Definitions).

ACATISEMA is an association formed by *Cabildos* and Traditional Authorities of 17 indigenous sectors 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, own and 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 (Consult more details in the validated PDD-VCS, Section “1.3 Project proponent”, page 27).

Diagram of the Hierarchical Structure of the Association (ACATISEMA) and of the Communication and Information Flows

It is a graphic representation of the hierarchy and the flow of communication between all members of ACATISEMA. This organization chart also represents the relationships that exist between the management and control bodies, the indigenous authorities by sector and by community, and the indigenous communities in general, at three levels of participation and representation: Zonal Level, Sector and Indigenous Reservation Level (see Illustration 1).

Illustration 1. Hierarchical Structure of ACATISEMA



Source: REDD+ Project RIU-SM

The **First Level or Zonal Level** constitutes the base of the Association. At this level are all the indigenous people that inhabit the RIU-SM of 315 **indigenous communities**.

Each Indigenous Community has a **Captain**, elected by the community, who is its highest authority and representative, and is responsible for transmitting their needs, concerns, complaints and proposals to the management and control bodies of ACATISEMA.

Also, part of this Zonal Level is the **Indigenous Guard**, which is the group of indigenous people in charge of surveillance and monitoring of the territory. This Indigenous Guard is made up of a **Coordinator** and 350 **Indigenous Guardians** (each community has at least one guard).

Due to its large territorial extension, the RIU-SM is divided into 5 zones. The zones are established as follows (Chapter X, Art. 33 of the ACATISEMA Statutes):

Zone 1 - Bajo Vichada I: is made up of the Sectors of:

Aiwa Kuna Tsepajibo

Caño Cawasi

Zone 2 - Bajo Vichada II: is made up of the Sectors of:

Bajo Río Vichada I

Bajo Río Vichada II

Zone 3 - Orinoco: is made up of the Sectors of:

Caño Zama

Matavén Fruta

Berrocal Ajota

Atana Piraríame

Zone 4 - Bajo Guaviare: is made up of the Sectors of:

Laguna Negra y Cacao

Laguna Anguilla La Macarena

Sejalito San Benito

Barranquito Laguna Colorada

Zone 5 - Brazo Amanaven: is made up of the Sectors of:

Caño Bocón

Cumaral

Yuri

Giro

Morocoto Buena Vista

The indigenous people of each Zone are represented and participate democratically in the **Zonal Meetings**.

The **Zonal Meetings** are the instance for the election of 3 delegates to the General Assembly for each Zone, who, in turn, will be the candidates for the composition of the Coordinating Committee.

The **Zonal Meeting** is made up of the Cabildos, Captains, traditional doctors, local leaders and members of the communities of the sectors of that zone. These Zonal Meetings are held every three years and extraordinarily when circumstances warrant. They are convened by the members of the Coordinating Committee of the respective zone (Chapter VII, Art. 24 of the ACATISEMA Statutes).

The **Zonal Meetings** have the following functions (Chapter VII, Art. 25 of the ACATISEMA Statutes):

- a) To select the delegates by zones to the General Assembly of the Association.
- b) Socialize the plans, programs and projects of the Association.
- c) Verify compliance with the objectives of the Association.
- d) Formulate the recognition to the General Assembly on the resources of the actions developed by the Association in the respective zone, which shall be proposed to the General Assembly.

Note how in paragraph b), one of the most important functions of the Zonal Meetings is to socialize the plans, programs and projects of the Association, which implies communicating within the communities the results, difficulties, processes and recommendations of the REDD+ RIU-SM Project, which results in compliance with the principle of transparency that should have all the actions of ACATISEMA.

The **Second Level or Sectorial Level** is made up of the **Cabildos** of the 17 sectors that make up the Indigenous Reservation.

The **functions** of each one **Cabildos** are as follows (Chapter IX, Art. 28 of the ACATISEMA Statutes):

Represent their respective sector in the meeting of cabildos and other governing bodies of the Association.

Agree with the communities of their sector the investment projects of the General System of Participation for Indigenous Reservations (SGPRI) with their respective implementation schedule, in accordance with Law 715 of 2001 and the Internal Regulations of ACATISEMA for these purposes.

Prepare and keep a record of the community minutes on the agreement and approval of investment projects, the sector's budget and the execution schedule.

Unify a general budget and a chronogram of the sector.

For the purpose of managing SGPRI resources, the Cabildo of each sector shall sign an internal agreement with the General Coordinator of ACATISEMA, of which the investment projects, the general budget of each sector and the community minutes that support each sector shall be an integral part.

Support and coordinate the actions undertaken by the Coordinating Committee in their respective sector.

Any other functions assigned by the General Assembly.

Watch over and take care of the assets of the Indigenous Reservation and to be responsible for their maintenance.

Remain as much as possible within the sector and receive suggestions from the sector.

All outgoing cabildo must formally hand over all files and goods acquired in the name of the Indigenous Reservation.

In accordance with the aforementioned functions, it is undeniable the high participation and decision-making power that the Councils have in the subscription and execution of agreements, alliances and contracts in which the Association is a party.

The **Third Level or Indigenous Reservation Level** is constituted by the management and control bodies of the Association.

The management of ACATISEMA is made up of the following bodies (Chapter VII, Art. 14 of the ACATISEMA Statutes):

1. General Assembly
2. Sector *Cabildos* Board
3. Coordinating Committee

The Association's Management Bodies have as their spiritual and political guides the wise men of the communities of the Selva-Matavén in the search for the preservation of the culture, uses and customs of the indigenous communities that belong to the Association (Chapter VIII, Art. 26 of ACATISEMA's Statutes).

The **General Assembly** is the highest authority of the Association and is made up of the 17 cabildos of the sectors, the captains of the 315 indigenous communities and the delegates by sector in the areas of Education, Health, Youth, Women, Traditional Medicine, Productive Projects and evangelical preacher) (Chapter VIII, Art. 15 of the ACATISEMA Statutes).

The functions of General Assembly are (Chapter VIII, Art. 16 of ACATISEMA's Statutes):

- a) Determine the orientation and policies of the Association.
- b) Elect the members of the Coordinating Committee of the Association.
- c) Adopt and amend the by-laws.
- d) Adopt and amend the general plans and programs and the triennial budget of the Association.
- e) Approve and disapprove the triennial balance sheet presented by the Sector Council Board, the Finance Coordinator and the Coordinating Committee.
- f) Approve and disapprove projects, programs and policies presented by the Coordinating Committee.
- g) Approve and disapprove the reports presented by the Sector Councils and the Coordinating Committee.
- h) Call an extraordinary session of the General Assembly, accepted by at least 20% of the members of the Assembly.

Any other functions not provided for in these by-laws.

All projects that affect the cultural, social and soil and subsoil integrity may only be decided through a process of prior consultation and the decision shall be taken by unanimous decision at the Ordinary General Assembly in accordance with the institutional cycle of ACASETIMA.

The highlighting is ours, and serves to demonstrate the intervention of the highest social body in making transcendental decisions for the indigenous communities that inhabit Selva-Matavén, such as the signing of the Strategic Alliance and the development and execution of the REDD+ RIU-SM Project, which have

generated the implementation of other productive sub-projects, the execution of works and other activities that have brought well-being and progress to the Unified Indigenous Reservation of the *Selva de Mataven*.

The General Assembly of the Association meets ordinarily once every three years in the first days of April and extraordinarily if convened by the Sector Cabildos Board, the Coordinating Committee and the fiscal observer (Chapter VIII, Art. 18 of the ACATISEMA Statutes).

ACATISEMA's second governing organ is the Board of Cabildos, which is made up of the 17 cabildos representing the 17 sectors of the RIU-SM. It meets in ordinary session once a year, during the first days of April.

The functions of the Board of Cabildos are as follows (Chapter IX, Art. 29 of the ACATISEMA Statutes):

- a) Approve, modify or disapprove the annual work plan presented by the Coordinating Committee.
- b) Adopt or modify the annual budget of the Association.
- c) Approve or disapprove the annual balance sheet presented by the Finance Coordinator or the Coordinating Committee.
- d) Approve or disapprove the projects presented by the Coordinating Committee.
- e) Approve or disapprove the reports presented by the Coordinating Committee.
- f) Authorize the Coordinating Committee, when the movement of funds exceeds 30 minimum legal salaries in force.
- g) Call an Extraordinary General Assembly, accepted by no less than 10 of the 17 Councils that are part of the Association.
- h) Be the instance for the resolution of conflicts among the members of the Association.

While the General Assembly is not in session, the Junta de Cabildos has the power to appoint and designate absentees within the Coordinating Committee or Board of Directors of ACATISEMA (Chapter IX, Paragraph, Art. 29, of the ACATISEMA Statutes).

The third governing body of ACATISEMA is the **Coordinating Committee**.

The **Coordinating Committee** is the general body responsible for coordinating, disseminating and implementing the policies, programs, projects and actions approved by the General Assembly (Chapter X, Art. 31 of the ACATISEMA Statutes).

The **Coordinating Committee** is composed of 16 persons elected by the General Assembly for a period of 3 years. The Coordinating Committee may be re-elected consecutively up to one time (Chapter X, Art. 32 of the ACATISEMA Statutes).

The members of the **Coordinating Committee** are elected at the General Assembly to occupy the following positions (Chapter X, Art. 34 of the ACATISEMA Statutes):

- a) General Coordinator
- b) General Secretary
- c) Finance Coordinator
- d) Two Program and Project Coordinators
- e) One Women's Coordinator

- f) Two Coordinators of Territory and Environment
- g) Two Integral Health Coordinators
- h) One Human Rights Coordinator
- i) Two Life Plans Coordinators
- j) Two Ethno-education Coordinators
- k) One Youth Coordinator

The functions of the Coordinator Committee are the following (Chapter X, Art. 37 of the ACATISEMA Statutes):

- a) Execute the policies established by the governing bodies.
- b) Establish the internal work regulations.
- c) Manage resources for the Association through programs and projects for the fulfillment of the purposes of the Association.
- d) Prepare the annual work plan to be presented to the Board of Sector Councils.
- e) Prepare the income and expense budget to be presented to the Sector Councils Board.
- f) Prepare the triennial work reports and budget to be presented to the General Assembly.
- g) Contract personnel or entities to develop training processes or consultancies on specific topics.
- h) Approve the annual, semi-annual and monthly balance sheets prepared by the Finance Coordinator.
- i) Discipline those officers who have not complied with the internal regulations of the Committee and the Association.
- j) Receive semi-annual reports rendered by the General Coordinator of the Committee and leave a record and recommendations as the case may be.
- k) Propose to stimulate the planning processes for the preservation of the indigenous communities (life plans, ethno-education, traditional health, etc.).
- l) Together with the other management bodies, elaborate the development plan in collaboration with the design of the Land Management Plan as a guideline element for development in accordance with the cosmovision of the indigenous peoples of the *Selva-Matavén*.
- m) Advise and support the processes of consultation and conflict resolution to the problems of the Matavén Forest, according to the guidelines established by the General Assembly and the Sector Cabildos Board.
- n) Develop processes of dialogue and coordination of plans, programs and concrete actions to be carried out within the framework of the GIA at the national and regional level.

Note not only its essential role in coordinating, disseminating and implementing the policies, programs and projects of the Association's decisions, but also the broad participation of the grassroots (indigenous communities) in decision-making through this Coordinating Committee.

The functions of the **General Coordinator** are the following (Chapter XI, Art. 39 of the ACATISEMA Statutes):

- a) Legally represent the Association.
- b) Execute all acts, contracts and operations that correspond to the purpose of the Association, in accordance with these Statutes and its regulations.
- c) Enforce the policies outlined by the governing bodies concerning the conservation and preservation of the environment of the Selva-Matavén.
- d) Manage before governmental and non-governmental entities of national and international order, the programs and projects for the fulfillment of the purposes of the Association.
- e) Administer and oversee all the Association's assets.
- f) Prepare the annual budget in association with the Finance Coordinator to be presented to the Sector Councils Board.
- g) Present the activity and financial report to the General Assembly.
- h) Sign all documents of value that imply movement of funds in association with the Finance Coordinator.
- i) Supervise and evaluate the development of the plans and projects of the Association and the administrative conduct of the entire Association under his care, informing the General Assembly, the Sector Cabildos Board and the Coordinating Committee of any irregularities and the measures taken for their solution.
- j) Represent the Association in the events that are invited or to designate a person of the Association for such purpose.
- k) Install the General Assembly of the Association.
- l) Call an extraordinary meeting of the General Assembly, the Sector Caucus and the Coordinating Committee when he/she deems it necessary.
- m) Request authorization from the Coordinating Committee, when the movement of funds exceeds 100 legal monthly minimum salaries in force.
- n) Request authorization from the Sector Cabildos Board when the movement of funds exceeds 300 legal minimum salaries in force.
- o) Coordinate in association with the Coordinator of Programs and Projects and the other thematic Coordinators, all the programs, projects and activities to develop with the sector's Cabildos, governmental and non-governmental institutions of cultural, sports, research and others, to be developed within the Selva Matavén.
- p) Manage resources, agreements and projects to support the higher education studies of the young people of the Selva Matavén in accordance with the established guidelines of the Association.
- q) Any other duties established by law and by the Association in the General Assembly.
- r) All agreements signed shall be socialized with the Coordinating Committee and the Board of Cabildos and recognized leaders.

The functions of the **Secretary General** are the following (Chapter XII, Art. 41 of the ACATISEMA Statutes):

- a) Serve as Secretary General of the Coordinating Committee and of the Association's governing bodies.

- b) To Replace the General Coordinator in temporary absence.
- c) Keep the minute books of the Coordinating Committee meetings and to file the minutes of the General Assembly.
- d) Keep records of correspondence received and delivered.
- e) Organize the archives of the Association.
- f) Prepare all correspondence and documents for the signature of the General Coordinator.
- g) Any other duties indicated in the internal provisions of the Association.

The functions of the **Finance Coordinator** are as follows (Chapter XIII, Art. 43 of the ACATISEMA Statutes):

- a) Take care of the movement of funds by collecting the income and carrying out the steps ordered by the General Coordinator in accordance with the statutory legal powers.
- b) Sign jointly with the Legal Representative the checks and documents that imply disbursements of money and presentation of required supports.
- c) Keep the records and receipts of money movements under his/her charge.
- d) Keep the treasury, bank, profit and loss books and all other books necessary for the proper operation and financial control of the Association.
- e) Prepare the annual balance sheet of economic management of the Association.
- f) Coordinate with the other members of the Committee the financial projects of the Association.
- g) Make consignments in bank accounts of the income received for the different concepts in the name of the Association.
- h) Provide the members of the Coordinating Committee and the Fiscal Overseer with the accounting vouchers, books and documents in his/her charge for their review, as well as the reports requested by them.
- i) Carry out annual inventories of movable and immovable property, taking a record of the new items found, and shall also keep a record of the Association's assets.

The control body of ACATISEMA is represented by the **Fiscal Observer** (Chapter XXI, Art. 60 of the Statutes of ACATISEMA). It is the supervising entity of the fulfillment of the activities that correspond to the members of the Coordinating Committee and the operation of the Association in general. It is the internal control body of the Coordinating Committee and is elected at the **General Assembly** for a period of 3 years.

The functions of the **Fiscal Observer** (Chapter XXI, Art. 61 of the ACATISEMA Statutes):

- a) Request technical and financial reports on activities, projects and programs.
- b) Evaluate said activities.
- c) Submit reports of the activities carried out to the General Assembly.
- d) Communicate to the General Assembly and the Junta de Cabildos any irregularities in the development of the Association.

- e) Summon the General Assembly and the Junta de Cabildos whenever he/she considers it pertinent.
- f) Any others not contemplated in these Statutes and assigned by law.

As can be seen in the previous points, ACATISEMA has an adequate structure of direction, governance and control at the level of the entire Indigenous Reservation, but the most important thing to highlight is that in decision making, the indigenous communities have a wide participation and any indigenous person can reach through their merits and capabilities to belong to any of the organs of the Association.

Organizational and functional structure of MEDIAMOS:

MEDIAMOS F&M S.A.S.

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

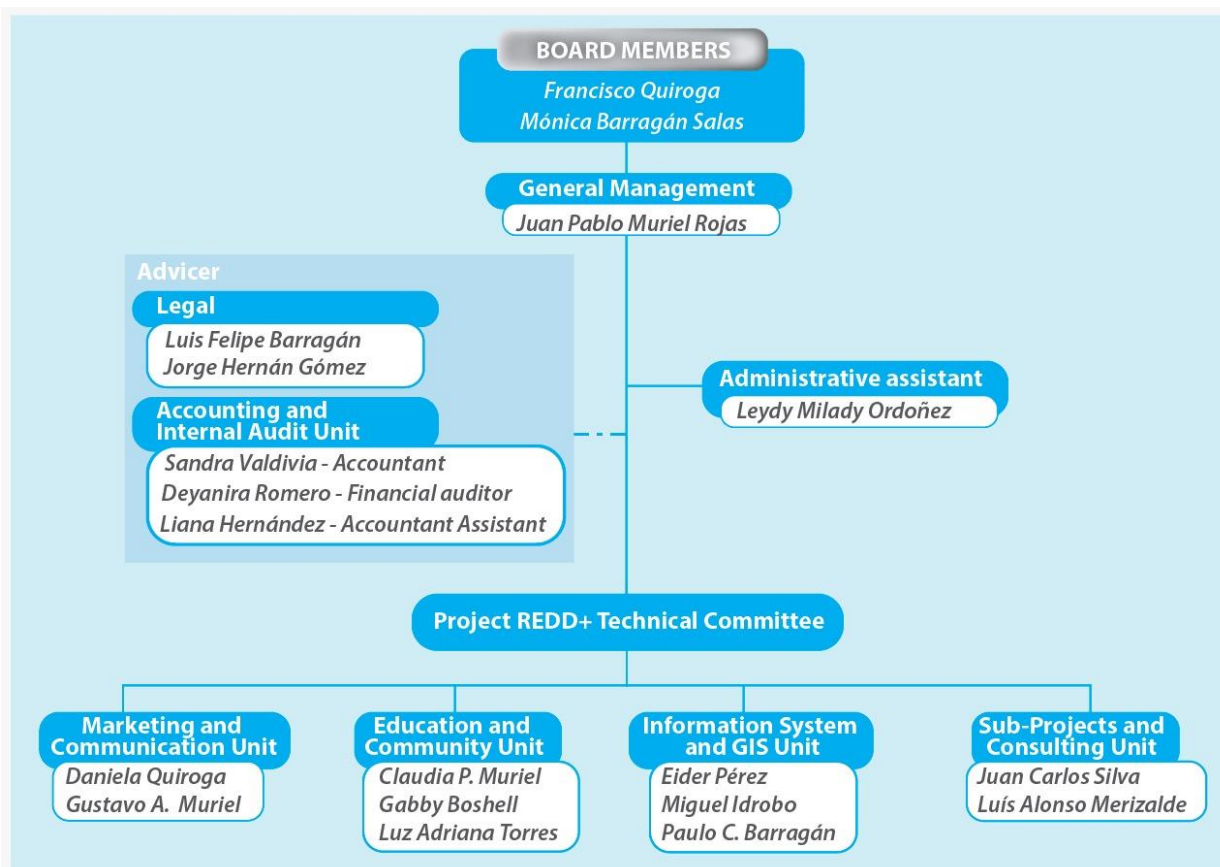
MEDIAMOS F&M S.A.S. is a Colombian company founded by Deed No. 1555 on May 12th, 1999 of Sixth Notary in Cali, registered at the Chamber of Commerce on May 26th, 1999 under No. 3589 of Folio IX, with commercial registration No. 511356-16 on May 26th, 1999 and domiciled in Cali city. Its Tax Identification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

In 22 years of activities, MEDIAMOS has developed projects and programs in the educational and environmental areas, which has generated experience and expertise in these areas, which has allowed the successful development and execution of the REDD+ RIU-SM Project.

Consult more details in the validated PDD-VCS, Section “1.3 Project proponent”, page 30.

The following organization chart shows the different areas of the entity involved in this project.

Illustration 2. Hierarchical Structure of MEDIAMOS



Source: REDD+ Project RIU-SM

For the REDD+ Project RIU-SM, a **Technical Committee** was formed with the participation of the founding partners of the entity and of the Project with professionals from the 4 areas. This Technical Committee establishes the guidelines to be followed, plans and organizes the different activities with their respective work schedules in order to meet the proposed goals, seeking the strengthening and sustainability of the Project.

This Committee meets at least once a month, but depending on the activities to be developed or if any contingency arises, meetings are held as often as necessary.

MEDIAMOS has a qualified and interdisciplinary professional staff to develop this type of REDD+ Project and has strengthened its teamwork during the 10 years of the current life of the REDD+ Project RIU-SM, which guarantees, from this point of view, the sustainability and success of the project.

Organizational and functional structure of Strategic Alliance:

The Strategic Alliance between ACATISEMA and MEDIAMOS seeks the protection, conservation and recovery, through the sustainable management of natural forests and other renewable natural resources of the RIU-SM and obtain income from the compensation of environmental services through the marketing of Verified Carbon Units (VCUs) (Clause One - Alliance Agreement) and for this, it needs cooperative work, where each of the two entities make their contributions and expect the achievement of results.

In addition, with the Project and the generation of resources, the Project seeks to improve the quality of life of the inhabitants of the Indigenous Reservation, in terms of food, education, health, sanitation, etc. All this, respecting and protecting the ethnic and cultural diversity of the 6 indigenous peoples that inhabit it.

In this Strategic Alliance, the entities share information, outline and organize work plans jointly, while maintaining their legal, economic and administrative autonomy. By virtue of this, each party assumes direct responsibility for its actions with respect to its personnel, subcontractors and/or third parties. After almost 10 years of the Project, there has been a coordinated and transparent work between the parties. Difficulties and differences have been resolved in the Joint Commission in the best possible way, which has resulted in good relations that guarantee the sustainability of the Project. The Alliance Agreement, as a framework that delineates the obligations of the parties, has been a very useful instrument, which has been improved with the daily progress of its execution.

The **obligations** corresponding to **MEDIAMOS** are (Clause Seven - Alliance Agreement):

1. Direct the technical and scientific development of the Project in its different phases of design, validation, verification and execution.
2. To provide the technical and scientific knowledge with its technological elements for the design, validation, verification and execution of the Project.
3. To provide and manage the necessary resources for the design and elaboration of the Project and for the presentation, validation and registration before the VCSA and/or any other Association of similar characteristics. In this sense, it will manage the complementary financial resources required to achieve its validation and verification (Accreditation and Registration), according to the stages of the carbon project cycle.
4. Strictly comply with its responsibilities and contributions taking into account the POAs and Budget defined for the execution of the activities and tasks defined in the PDD.
5. Make the necessary arrangements to carry out the necessary updates and transfer of the required technological information.
6. To be responsible for the quality of the technical, financial, social, environmental and market studies.
7. Maintain a technical file containing the documentation and make it available during the term of the Agreement.

The **obligations** that correspond to **ACATISEMA** are (Clause Eight - Alliance Agreement):

1. Concurrence: ACATISEMA declares that it is not in force, at the signing of the Agreement, another contract, agreement, pact or alliance with the same object of this Agreement or that prevents and hinders the same.
2. To resolve autonomously the difficulties or conflicts of internal and social character that may arise and that affect or hinder the execution of the normal development of the Project.
3. Strictly comply with its responsibilities and contributions taking into account the POAs and the Budget defined for the execution of the activities and tasks defined in the PDD, in particular, regarding the control and surveillance of the forest and the development of the System of Agrifood Productive Units (SUPA) that guarantee the commitment not to deforest or degrade in the part defined as the project area, described in the PDD.

4. Allow and facilitate access and transit through the RIU-SM territories to technical, specialized and operations personnel designated by MEDIAMOS, during the term of the Agreement.
5. Facilitate, cooperate and transmit the information and elements necessary for the design, validation, verification and development of the Project.
6. Coordinate, define and establish the locations and meeting arrangements with the members of ACATISEMA necessary for the design, development and implementation of the Project.
7. Inform, disseminate and publish the scope and achievements of the Project to the members of the RIU-SM and other communities at national and international level.

In order to carry out an appropriate and efficient execution of the REDD+ Project RIU-SM, new bodies were created: Joint Commission, Project Co-director (an indigenous leader), and Zonal Coordinators (other six indigenous leaders).

A **Joint Commission** was created in which both entities are represented and some positions were established with their respective functions. The periodic evaluations carried out during the implementation of the Project have shown that the work carried out jointly has been highly satisfactory for the parties.

The **Joint Commission** is currently comprised of:

MEDIAMOS:

Project Director: Francisco A. Quiroga.

Administrative Coordinator: Monica Barragán

ACATISEMA:

Current General Coordinator: Albeiro Beltrán

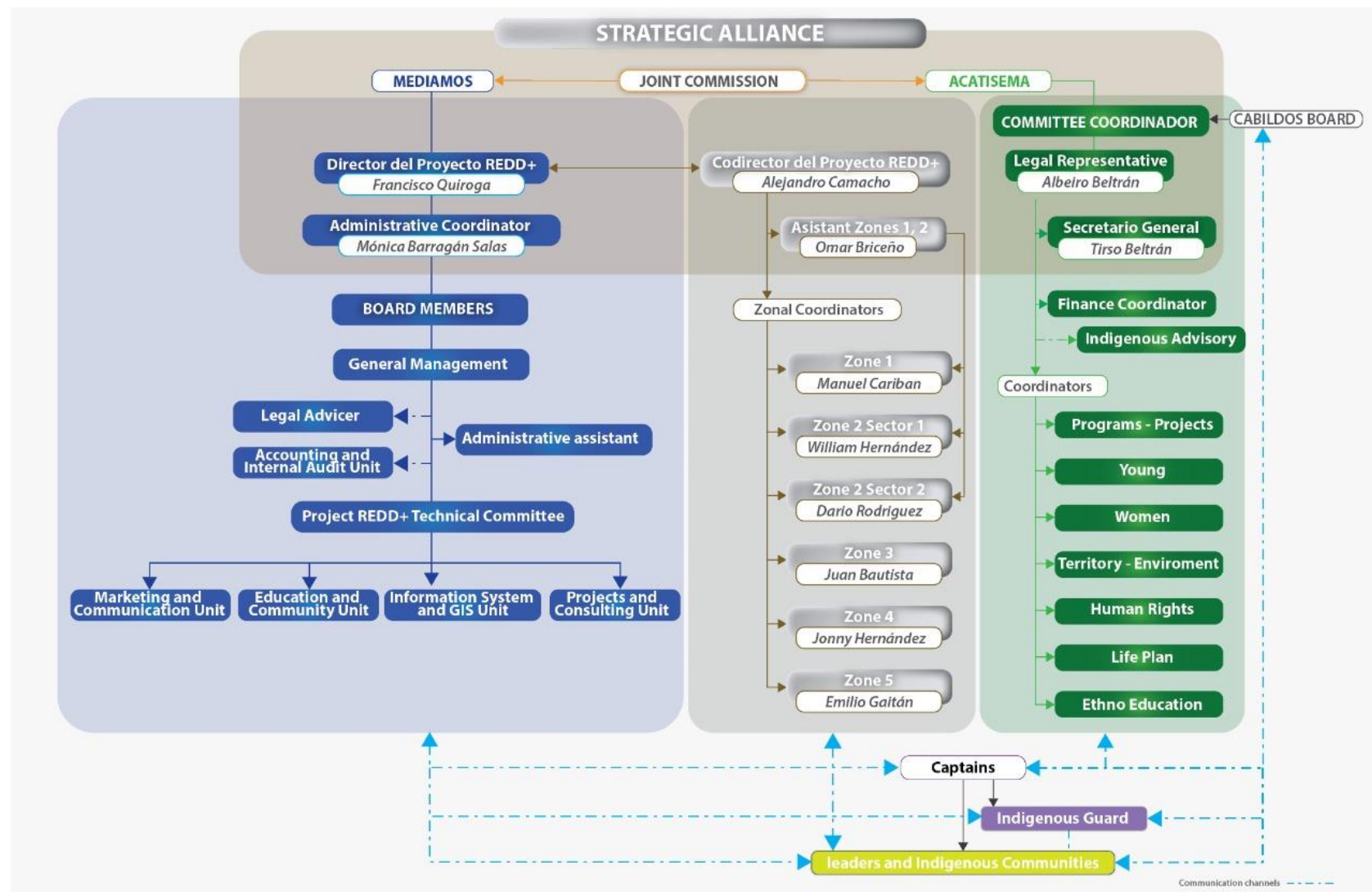
Current General Secretary: Tirso Beltrán

Co-director of the Project: Alejandro Camacho

Assistant to the Co-director Zone 1 and Zone 2: Omar Briceño

The following chart shows the general organizational chart of the Alliance, which is supported by the organizational structures of the two entities, being a fundamental element for the adequate execution of the Project.

Illustration 3. Hierarchical Structure of REDD+ Project RIU-SM



Source: REDD+ Project RIU-SM

The functions of the **Joint Commission** are (Clause Nine, Paragraph 1 - Alliance Agreement):

1. Define the basic guidelines for the elaboration, design, validation, verification and execution of the Project, particularly with regard to the definition of the budget according to the POAs and the PDD.
2. Review, evaluate and define the adjustments to the different reports produced in the design and execution of the Project.
3. Periodically evaluate the development of the activities and tasks of the Project and define the adjustments that are considered convenient for the good development of the Project.
4. To guide and define the dissemination and extension campaigns.
5. To guide, define and organize participation circles or groups of similar nature, whose objectives are: to provide spaces for the periodic evaluation of the Project, promoting the joint construction of values and habits that strengthen teamwork.
6. Guide and define the communication channels in order to promote and guarantee the participation of the communities, the expression of ideas, suggestions or concerns related to the Project, strengthening operational coherence and functional harmony, which facilitate and encourage teamwork.
7. Guide and guarantee corrective functions, particularly in the processing of complaints.

The **functions** of the **Project Director** are (Clause Nine, Paragraph 2 - Alliance Agreement):

1. Represent the Project, jointly with the Legal Representative of ACATISEMA, before national and international entities or third parties.
2. Lead and plan the Project in all its aspects, identifying the activities to be carried out, the resources available, deadlines and budgeted costs.
3. Allocate and coordinate the resources (human, technical, economic, etc.) used in the project, as described in the PDD.
4. Define and enforce compliance with the Project's technical and regulatory guidelines.
5. Guide and define together with the Administrative Coordinator, the budget of the POAs according to the guidelines of the Joint Commission and the PDD.
6. To be the authorizing officer of the expenditure according to the items and amounts determined in the POA budget.
7. Define, assign, organize and enforce the scope of activities, tasks and other work of the Project.
8. Organize and determine the objectives of each working group that is formed, according to the PDD.
9. Carry out the general and specific scheduling of activities and tasks.
10. To guide and establish the information and communication systems.
11. To carry out the permanent maintenance of the Project's external relations: customers, suppliers, subcontractors, other departments, public entities, etc.
12. To define and implement corrective and control actions in a timely manner, i.e. to establish the adoption of relevant corrective measures to remedy any deviations detected.
13. Propose, if necessary, modifications to the conditions, limits or specific objectives of the Project when circumstances so warrant.

14. Negotiate, nationally and internationally, the VCUs, based on the definitions of the Joint Commission.

Considering the experience in the execution of the Project in previous years, other functions have been annexed to the Project Director:

15. Determine the guidelines and directives of the REDD+ Project RIU-SM for its strengthening and sustainability.
16. Study and define together with the Administrative Coordination of the Project, the annual budget of income and expenses, in accordance with the Strategic Plan of the REDD+ RIU-SM Project to ensure its sustainability.
17. Recommend adjustments that contribute to the permanent improvement of the policies and guidelines of the REDD+ Project RIU-SM for the general management of resources, seeking its strengthening and sustainability.
18. Recommend measures to resolve conflicts in economic and social matters that arise between management entities related to the RIU-SM REDD+ Project.

The **functions of the Administrative Coordinator** of the Project are (Clause Nine, Paragraph - Alliance Agreement):

1. Coordinate with the Project Director, the resources assigned to the Project, including qualified participants, materials, transportation, equipment, food, field trip arrangements, work and office space, administrative and support staff, photocopying and other services.
2. To replace the Project Director in temporary absences.
3. Advise the Project Director and the Joint Commission on administrative and financial matters.
4. Establish a schedule, according to the Project Director's guidelines, for the fulfillment of the goals and activities.
5. Coordinate the tasks performed by the human talent team under his/her charge.
6. Monitor and evaluate the performance of the staff, informing the Project Director and the Joint Commission, in order to make the necessary adjustments.
7. Integrate, register and control the various resources that the Project requires for its proper functioning.
8. To prepare and execute, in accordance with the Project Director's and Joint Commission's guidelines, the budget of the AOPs.
9. Others that may be determined by the Joint Commission.

Based on the experience in the implementation of the Project in previous years, it has been recommended that more complementary functions be applied to Administrative Coordination:

10. To ensure the security of investments, harmonized with the objective of generating social value.
11. To ensure that investments and the management of the Project's resources are guided by the Project's activities with equity and transparency.

12. To request the financial and accounting reports from the General Coordinator and the Project Co-Director that it considers convenient for the adequate development of the Project's activities and guidelines.
13. Submit to the Joint Commission, the observations and recommendations it deems necessary, as a result of the evaluation of positive and negative externalities obtained in the execution of the Project and the management of the Project's resources.

Considering the statutory functions of the General Coordinator of ACATISEMA mentioned above, within the REDD+ RIU-SM Project, it has been recommended to complement the following functions for the **General Coordinator**:

1. Adopt, in accordance with the policies and strategic guidelines aimed at strengthening the RIU-SM REDD+ Project defined by the Joint Commission, specific decisions for contracting entities or professionals and all other aspects that may be necessary.
2. Present annually to the Junta de Cabildos and the Coordinating Committee the execution report of the RIU-SM REDD+ Project and the pertinent adjustments.
3. Submit to the General Assembly, together with the Co-Director, the reports on the execution of the RIU-SM REDD+ Project during the three years of its administration.
4. To consider in the first instance, together with the Co-Director, the accounts for the fiscal year and the economic and social balance sheets of the RIU-SM REDD+ Project, which will be submitted, with its concept, to the approval of the General Assembly.
5. Resolve complaints presented by the communities regarding non-compliance with the activities and implementation contracts governing the development of the RIU-SM REDD+ Project.
6. Provide the necessary information and inputs so that the Fiscal Oversight can exercise social control to verify compliance with the activities of the REDD+ RIU-SM Project.

The following functions have been recommended and complemented for the **Cabildos Board** related to the REDD+ Project RUI-SM:

1. Authorize capital investments that individually exceed 10% of the resources allocated to the Reserves item corresponding to ACATISEMA of the RIU-SM REDD+ Project budget.
2. To provide the Joint Commission with proposals on the development of opportunities in the respective sectors.
3. To transmit to the General Coordinator initiatives in favor of their indigenous communities and problems in their sectors that have not been resolved by the competent authorities.
4. Evaluate the reports of the Joint Commission and the Coordinating Committee and present concerns, observations and recommendations on the same, deploying the information received in each of the sectors.
5. Request information from the REDD+ Project RIU-SM that is considered convenient to the General Coordinator and the Co-Director of the Project to socialize to the captains of their respective sectors.
6. Ensure the strengthening of the quality of life of the indigenous communities and the conservation of forests and biodiversity in the Indigenous Reservation.

7. Recommend adjustments that contribute to the permanent improvement of the policies and guidelines of the REDD+ Project RIU-SM.
8. Present to the General Coordinator the initiatives or proposals that are aligned with the activities of the REDD+ Project RIU-SM to be studied and approved by the Joint Commission.
9. Participate in the preparation of the sectoral budget and ACATISEMA Reserves, according to the guidelines of the REDD+ Project RIU-SM.
10. The sectoral budget shall be considered, in the first instance by the needs and requirements of the indigenous communities, taking into account the guidelines of the REDD+ Project RIU-SM.

The **functions and authorities delegated to the Project Co-Director** are (Clause Nine, Paragraph 4 - Alliance Agreement):

1. Assist and support the Project Director in each of his functions, specifically in relation to field activities in the territory.
2. Organize and coordinate in the zones, with the support of the Zonal Coordinators of the Project, the execution of the corresponding activities and tasks.
3. Monitor and record, with the support of the Project's Zonal Coordinators, the development of the different activities and tasks in each of the zones.
4. Propose the adjustments and corrections considered pertinent in the work of the zones.

Considering the experience in the execution of the Project in previous years, other functions have been recommended and complemented to the Co-Director of the Project:

5. Coordinate and promote the participatory planning processes for the preparation of the annual investment plan to be approved by the Joint Commission.
6. Present projects that are aligned with the activities of the RIU-SM REDD+ Project to be studied and considered by the Joint Commission.
7. Apply the sanctions imposed on the Zonal Coordinators and the Advisor of Zones 1 and 2 for non-compliance with their duties.
8. Approve, by delegation of the Joint Commission, the entry, withdrawal and exclusion of direct personnel of the REDD+ RIU-SM Project that are part of ACATISEMA.

The **functions of the Zonal Coordinators of the Project** are (Clause Nine, Paragraph 6 - Alliance Agreement):

1. Assist and support the Project Director and Co-Director in the functions related to field activities in each of its zones.
2. Organize and coordinate, with the support of the Project Co-Director, the execution of the corresponding activities and tasks in their areas.
3. Monitor and record, with the support of the Project Co-Director, the development of the different activities and tasks in each of their zones.
4. Propose the adjustments and corrections that they consider pertinent in the work of their zones.

Considering the experience in the execution of the Project in previous years, other functions have been recommended and complemented to the Zonal Coordinators:

5. Know and evaluate complaints and claims that the communities submit to them about possible breaches in the activities that govern the development of the REDD+ RIU-SM Project, as well as the breach of contracts for the execution of the REDD+ Project RIU-SM and that directly affect them.
6. Inform indigenous communities of the results and progress on complaints of non-compliance or requests received as part of the REDD+ RIU-SM Project.

As mentioned before, the participation of the parties in the execution of the Project is broad; their activities, competencies and functions are well defined, and it is clear which management body is in charge, either ACATISEMA or MEDIAMOS. In addition, with the passage of time and the execution of the Project, new activities have been generated, which by mutual agreement, have been assigned according to the need and the work and suitability of the executor, all in the interest of preserving and improving the execution of the Project.

Finally, the rights over the results of the REDD+ Project RIU-SM belong to the Proponents and signatory entities of the Strategic Alliance Agreement: ACATISEMA and MEDIAMOS F&M S.A.S.

2.1.2 Project Objectives (G1.2)

Project's Climate, Community and Biodiversity objectives

The REDD+ Project RIU-SM aims to develop a participative process to achieve the establishment of an integrated management system of forests and lands of the *Resguardo Indígena Unificado - Selva de Matavén* (RIU-SM). This process includes:

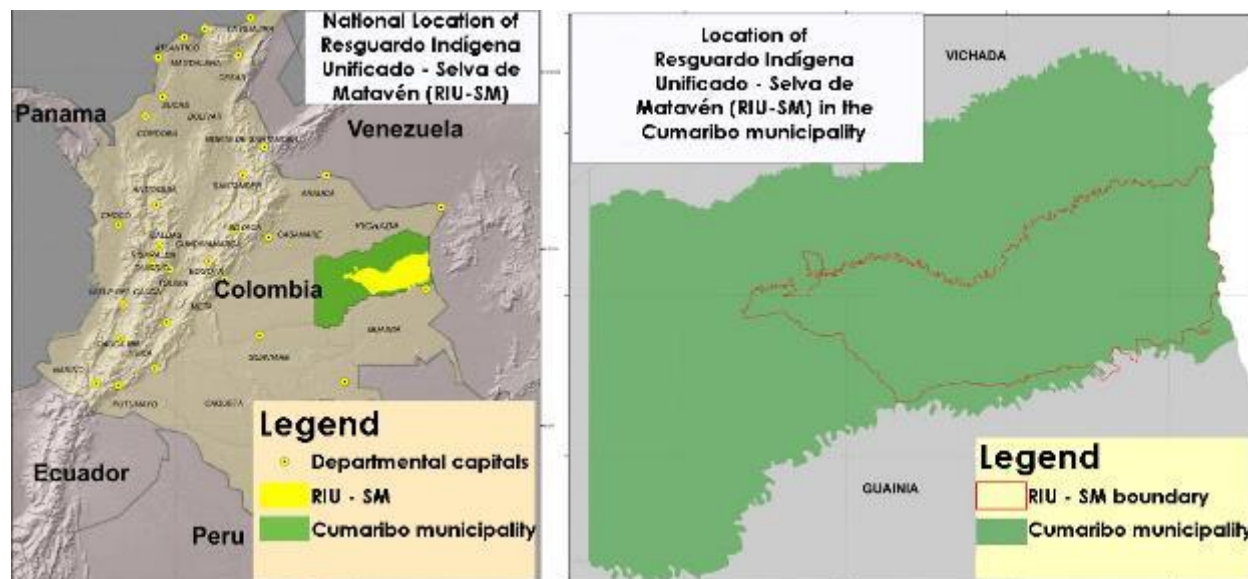
- Mitigate threats to conservation, protection and recovery of RIU-SM's forests and lands, through the implementation of actions to ensure the sustainability, reducing Greenhouse Gases (GHG) emissions (particularly by avoiding deforestation due several factors), to contribute to the mitigation of climate change and generate VCUs to claim compensations for environmental services.
- Improve in the life quality of the RIU-SM's communities, community groups (women / men, indigenous authorities, shamans, traditional doctors, healers, shepherds of 6 ethnic groups of the territory: *Cubeo, Curripaco, Piapoco, Piaroa, Puinave, and Sikuani*) and some of other stakeholders (teachers, settlers) by protection of the High Conservation Values (HCVs) related to Community component, which generate them net positive impacts.
- Improve in the RIU-SM's biodiversity resources through the knowledge of the natural history of species and of the natural capital conservation agreements, the control and surveillance of the territory and by protection of the High Conservation Values (HCVs) related to Biodiversity component, generate them net positive impacts.
- Generate Climate, Community and Biodiversity exceptional benefits through awareness-raising about the theme of climate change, its effects on the territory and mitigation and adaptation to this phenomenon.

2.1.3 Physical Parameters (G1.3)

Project Location

The REDD+ Project RIU-SM is developed in the *Resguardo Indígena Unificado - Selva de Matavén* (RIU-SM), which is located at the east of the Colombian Orinoco high plain, south-eastern of the Vichada Department, municipal jurisdiction of Cumaribo (Map 1).

Map 1. National and municipality location of RIU-SM



Source: REDD+ Project RIU-SM, GIS (validated PDD-VCS, Map 1, page 17)

Consult more details in the validated PDD-VCS, Section “1.9 Project location”, page 60.

Geographic Boundaries

Vichada River borders the north of the RIU-SM, Guaviare River to the south, Orinoco River to the east and Chupave Creek to the west. Hydrographically RIU-SM is located in the lower basin of Matavén Creek. 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.

Consult more details in the validated PDD-VCS, Section “1.9 Project location”, page 60.

Annex 17 of the validated PDD-VCS, contains the KML files with the spatial boundaries PA, LB, RRD, and RRL, and geodetic coordinates.

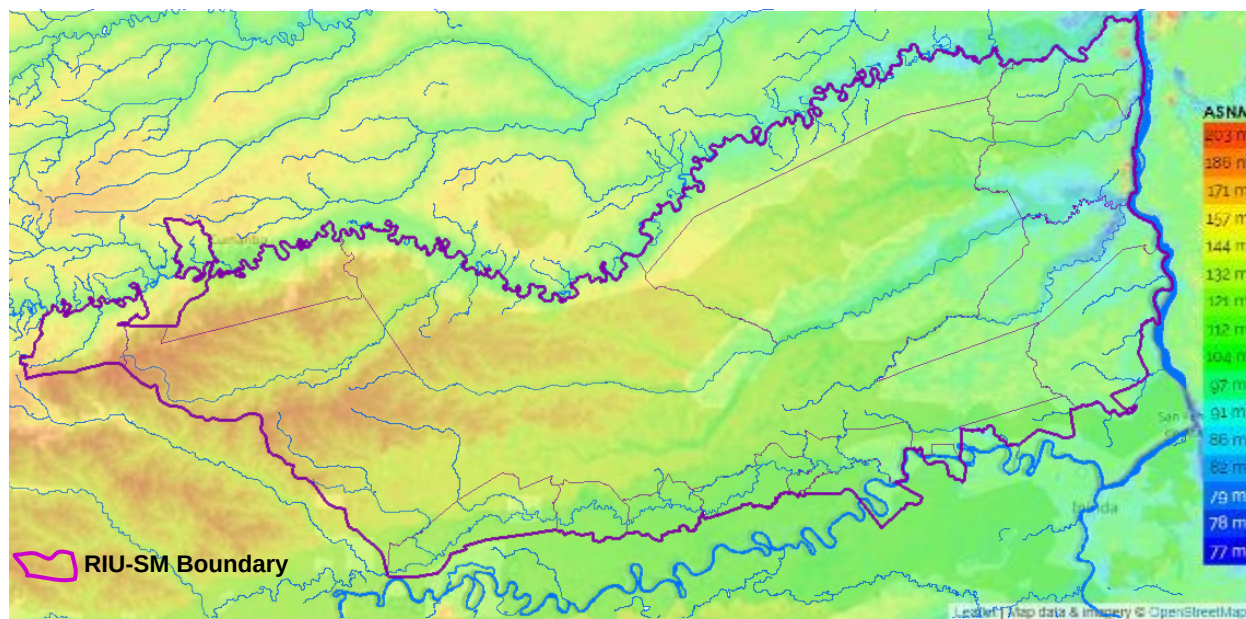
Topography

The topography of the terrain is flat to undulating and corresponds, as previously indicated, to the eastern plains of the Orinoquía, formed by alluvial valleys and dissected rocky highlands.

The general height in the RIU-SM does not exceed 200 meters in terms of height above sea level (HASL),

having as a minimum height around 80 m at the level of the *Orinoco* river, 90 m in the lower basin of the *Matavén* Creek, predominance of heights between 100 and 130 m in east of the RIU-SM and along the *Vichada* and *Guaviare* river basins, between 140 and 170 in the central-western zone of the RIU-SM and up to 180 m at the western end of the RIU-SM (see Map 2).

Map 2. HASL levels of the topography in RIU-SM



Source: <https://es-co.topographic-map.com/maps/3ssy/Vichada/>

Physiography - Geomorphology

Physiographic aspects: Geomorphology and materials that make up the high plains of the Orinoco are closely related to the geology and genesis of the *Andes* and the denudation of the geological structures of the *Escudo Guayanés*.

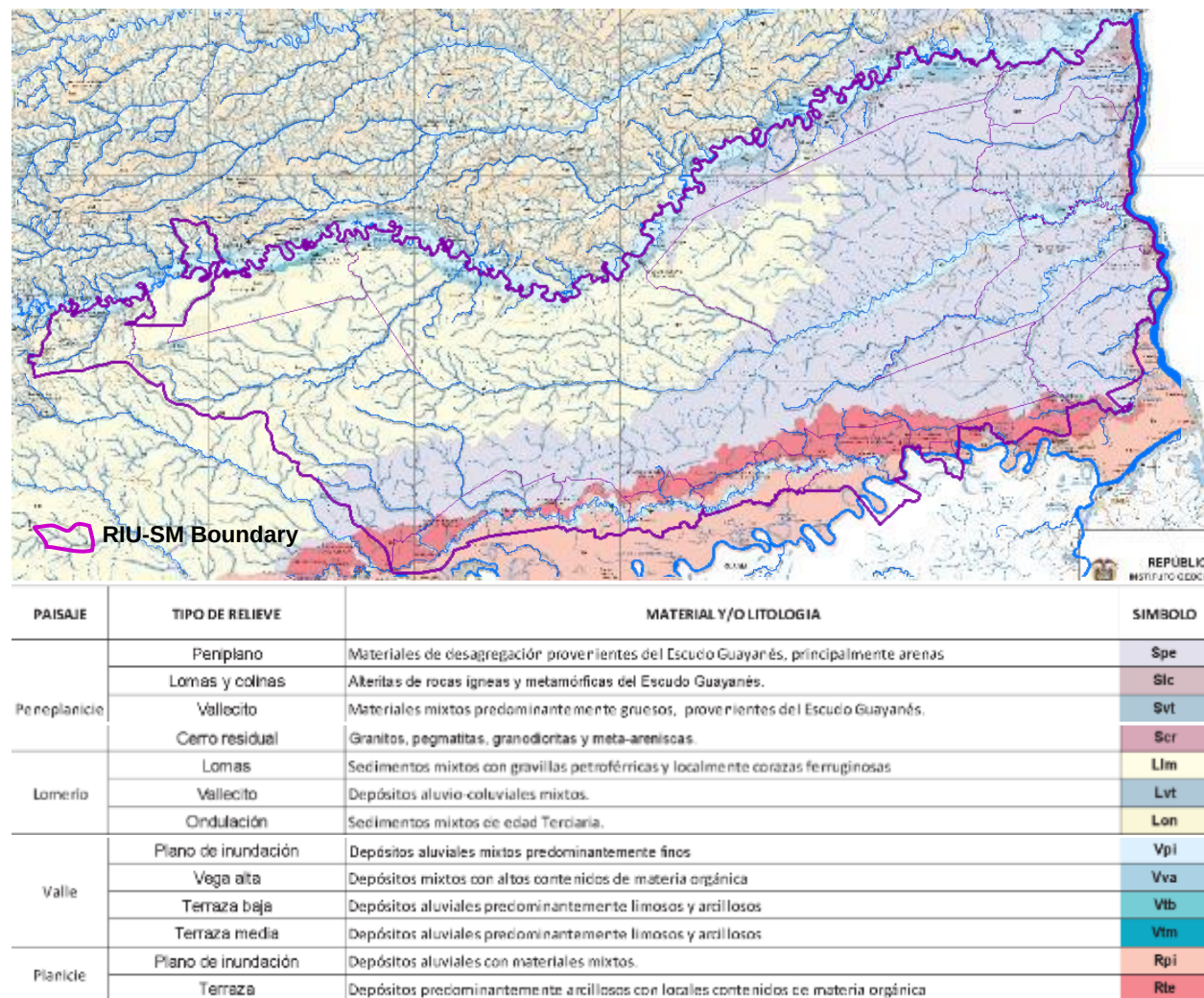
Consult more details in the validated PDD-VCS, Section “1.10.4 Physiography”, page 75.



Landscape on the Vichada river

The following Map 3 shows the distribution of the geomorphological features in the RIU-SM.

Map 3. Geomorphology in RIU-SM



Source: (IGAC, 2014). *Estudio general de suelos y zonificación de tierras departamento de Vichada*

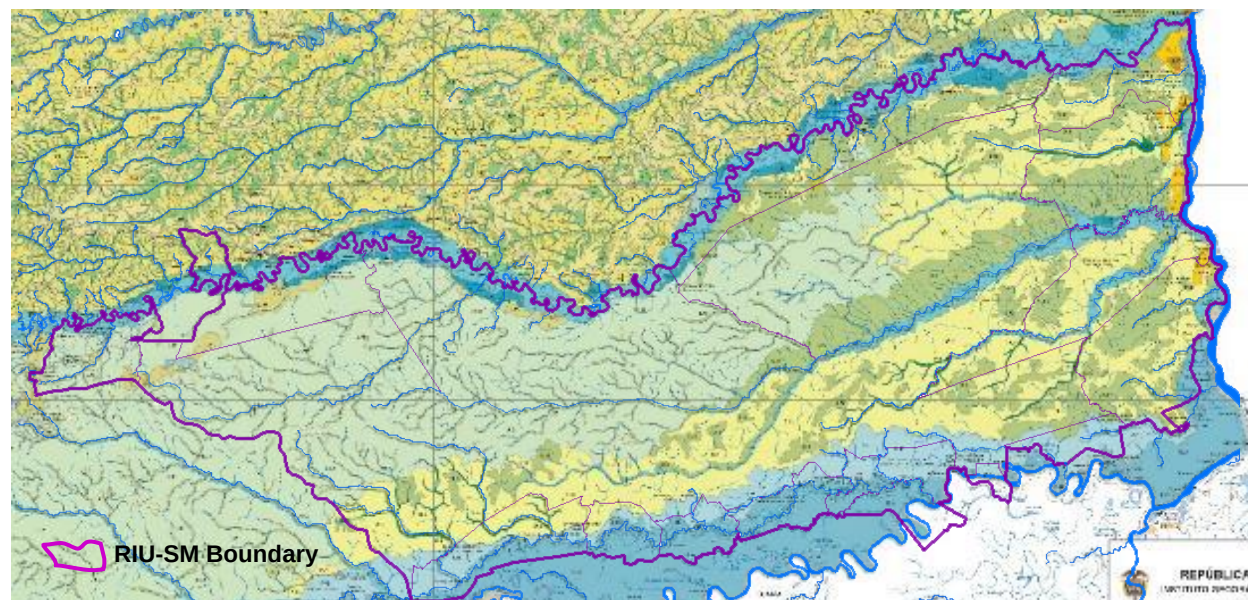
Soils

Drain conditions (internal and external) of savanna soils allowing to know that there is a close relationship between this factor and vegetation structure. For this reason, the species are highly adapted to the availability and permanence of water in the soil during the year.

Consult more details in the validated PDD-VCS, Section “1.10.7 Soils”, page 78.

The following Map 4 shows the distribution of the soils in the RIU-SM.

Map 4. Soils in the RIU-SM



Símbolo	Características principales de los suelos	Símbolo	Características principales de los suelos
RUA	Superficiales y moderadamente profundos limitados por fluctuaciones del nivel freático; textura finas a moderadamente finas; pobre e imperfectamente drenados; inundaciones y encharcamientos frecuentes; muy altos niveles de aluminio; reacción muy fuertemente ácida y fertilidad natural muy baja.	LUC	Superficiales limitados por la fluctuación del nivel freático; texturas finas; pobremente drenados; inundaciones y encharcamientos frecuentes, durante la época invernal; altos niveles de aluminio; reacción fuerte a moderadamente ácida y fertilidad natural muy baja.
RUB	Profundos y moderadamente profundos; texturas finas y moderadamente finas; drenaje bueno y moderado; encharcamientos frecuentes en sectores; niveles muy altos de aluminio; reacción muy fuertemente ácida y fertilidad natural muy baja.	SUA	Profundos y moderadamente profundos; texturas gruesas y finas; bien a excesivamente drenados; encharcamientos ocasionales en sectores localizados; niveles altos de aluminio; reacción extremadamente ácida y fertilidad natural muy baja.
VUA	Superficiales, limitados por nivel freático, texturas medias, finas y gruesas, drenaje pobre y en sectores moderadamente excesivo, inundaciones y/o encharcamientos, muy altas saturaciones de aluminio, fuertemente ácidos, fertilidad natural muy baja.	SUB	Superficiales y moderadamente profundos limitados por la fluctuación del nivel freático; texturas gruesas y finas; drenaje pobre y moderadamente excesivo; encharcamientos frecuentes en amplios sectores; niveles altos de aluminio; reacción extremadamente ácida y fertilidad natural muy baja.
VUB	Superficiales, texturas finas, drenaje pobre, inundaciones y/o encharcamientos, muy altas saturaciones de aluminio, muy fuertemente ácidos, fertilidad natural baja.	SUC	Profundos y moderadamente profundos limitados por presencia de fragmentos gruesos de roca; texturas gruesas y moderadamente finas; drenaje bueno y moderadamente excesivo; niveles altos de aluminio; reacción muy fuertemente ácida y fertilidad natural muy baja.
LUA	Profundos; texturas finas a moderadamente finas; bien drenados; niveles altos de aluminio; reacción extremadamente ácida y fertilidad natural muy baja.	SUD	Afloramientos rocosos con vegetación escasa de líquenes, musgos y arbustos entre las grietas.
LUB	Profundos y moderadamente profundos, limitados por presencia de gravillas petroclásticas, en sectores; texturas moderadamente finas; bien drenados; altos niveles de aluminio; reacción extremadamente ácida y fertilidad natural muy baja.	SUE	Superficiales limitados por la fluctuación del nivel freático; texturas gruesas y moderadamente finas; pobremente drenados; inundaciones y encharcamientos frecuentes, durante toda la época invernal; reacción fuertemente ácida y fertilidad natural muy baja.

Source: (IGAC, 2014). *Estudio general de suelos y zonificación de tierras departamento de Vichada*

Climate

Temperature: The temperature regime of the *Orinoquía* is iso-mega-thermic, i.e., the temperature difference between the coldest and warmest month is below 5 °C. However, no temperature data are available closest stations to *Selva de Matavén*. In *Inírida* station, south of the study area, the average annual temperature is 26.5 °C. Maximum temperatures occur in the dry season (January to March), while the minimum (25.6 to 25.9 °C) coincide with the period of maximum rainfall (May to July) [(Villarreal Leal , et al., 2009), page 76].

According to information in “*Catálogo Nacional de Estaciones*” published by IDEAM (National Catalog of Stations – platform DHIME), in *Cumaribo* municipality between the months of January to February the

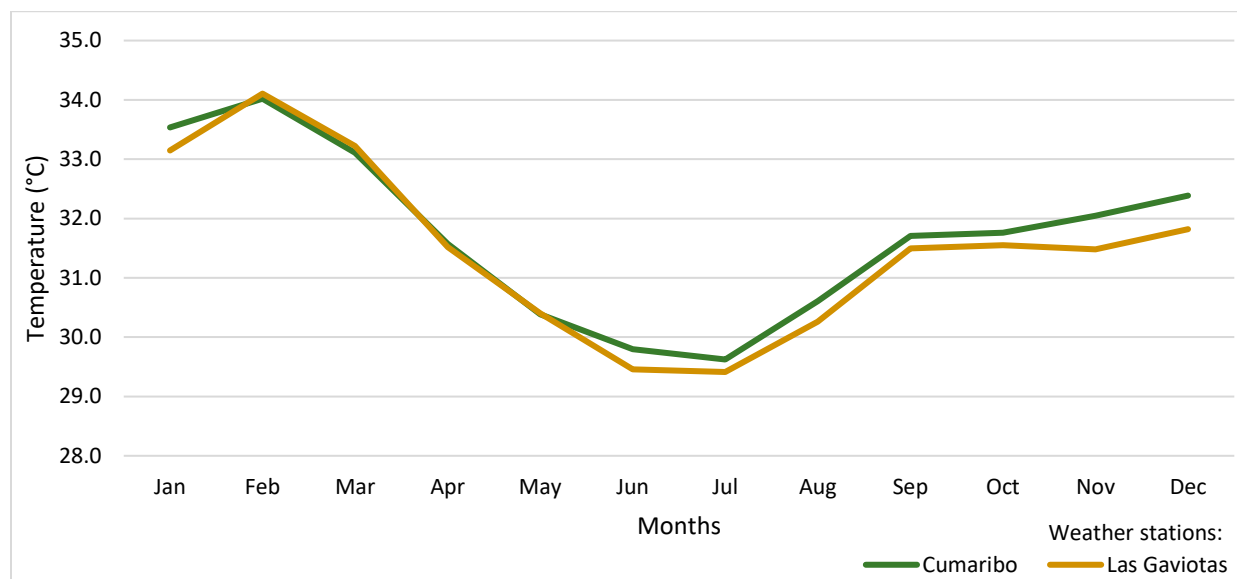
highest average temperatures are presented, reaching 34 °C, followed by a decrease to 29 °C between June and July, after there is an increase to 31 °C between September and November and up to 32 °C in December, as it is presented in the following Table 1 and illustration 4.

Table 1. Multi-year average temperatures in Cumaribo, according near weather stations

Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cumaribo	33.5	34.0	33.1	31.6	30.4	29.8	29.6	30.6	31.7	31.8	32.0	32.4
Las Gaviotas	33.1	34.1	33.2	31.5	30.4	29.5	29.4	30.3	31.5	31.5	31.5	31.8

Source: Based on <http://dhime.ideam.gov.co/atencionciudadano/>, between 2010 and 2019

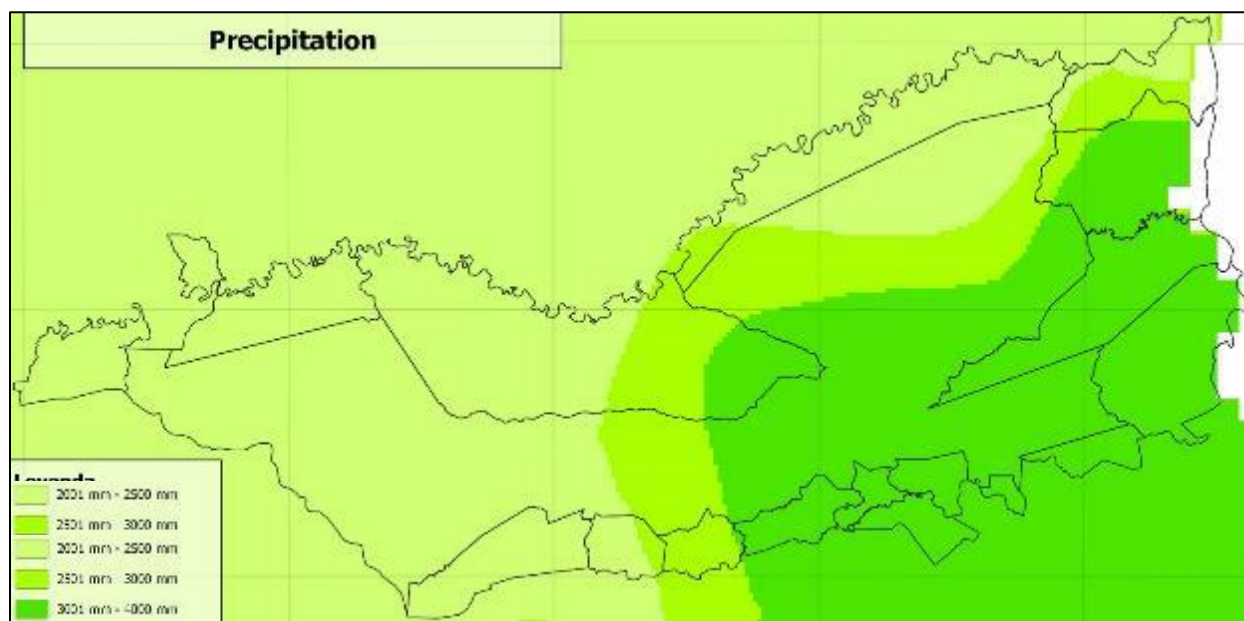
Illustration 4. Multi-year average temperatures in Cumaribo, according near weather stations



Source: Based on <http://dhime.ideam.gov.co/atencionciudadano/>, between 2010 and 2019

Rainfall: Regionally, the rainfall in the north of the Orinoco and Amazon increases from east to west and north to south. It ranges from 1500-2000 mm / year in the northern of Vichada department, and increases towards the south (*Cumaribo* and *Selva de Matavén*) until reaching 4000 mm / year. In the following Map 5, the areas with the different precipitation levels are shown.

Map 5. Distribution of the precipitation in RIU-SM



Source: REDD+ Project RIU-SM, GIS

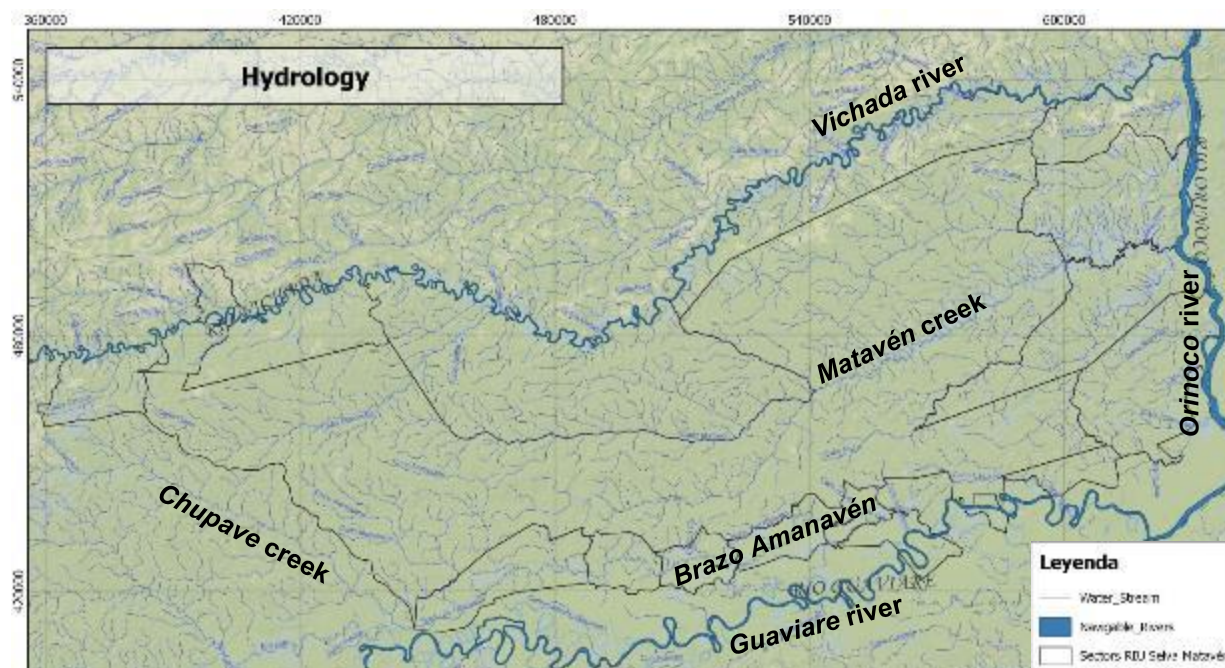
Consult more details in the validated PDD-VCS, Section “1.10.6 Rainfall”, page 76.

Hydrology

The Indigenous Reservation is rich in water resources, having as its territorial axis the *Matavén* Creek basin and the lower basins of the *Vichada*, *Guaviare* and *Brazo Amanavén* rivers that run from west to east, ending in the *Orinoco* river, which runs from south to north to the east of RIU-SM; many streams flow among these rivers: creeks and “*brazos*” (water courses parallel to a main channel) have been identified.

Below is Map 6 with the water network in the *Matavén* Creek basin.

Map 6. Matavén Creek hydrological basin



Source: REDD+ Project RIU-SM, GIS

Vegetation

The transition strip between the Amazon forest and Orinoco plains contains associated rocky outcrops, forests in flood and not flood plains, shrubs and savannas.

Forests are composed of layers of different thicknesses establishing canopies. There are flood forests, very extensive lower areas covered with kaolin clay or sand called "overflows" swamp forests, and sand-covered highlands where growing shrubs and herbaceous, locally called savannas.

Savannah is an ecosystem of the tropical lowlands, dominated by a grass cover consisting primarily of clumps of grasses and cyperaceous with heights up to 30 cm tall at the time of peak activity. It shows a clear seasonality in its development, with a period of low activity related to water stress. Savannah may include woody species (shrubs, trees and palms), but these species do not form a continuous coverage and pastures. The diversity of the sheets is present at all scales, with differences in the structure of vegetation and floristic composition.

Consult more details in the validated PDD-VCS, Section "1.10.3 Vegetation", page 69.

Fauna

In terms of wildlife, the *Selva de Matavén* also houses a rich and considerable number of rare and endemic species of high potential for Colombia that give great importance for conservation, for example, 33% of bird species are restricted to areas of endemism. The *Matavén* Creek is the second highest fish diversity in the region.

Consult more details in the validated PDD-VCS, Section "1.10.8 Fauna", page 79.

2.1.4 Social Parameters (G1.3)

Communities

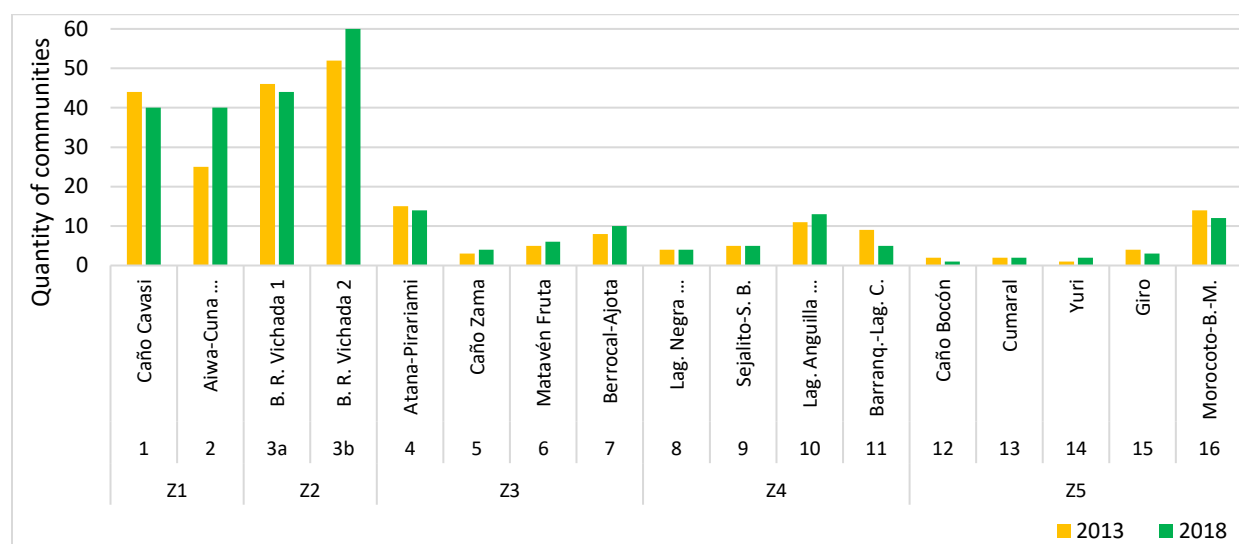
According to information collected in 2013, by a socioeconomic survey, and the indigenous self-census 2018 carried out as part of Activity A2.1 of the REDD+ Project RIU-SM, the following quantity of communities were identified, distributed in the Zones and Sectors of RIU-SM, as follows in Table 2:

Table 2. Quantity of communities, at Project start (2013) and during Project (2018)

#	Sectors	Ethnicity	At Project start 2013	%	During Project 2018	%
ZONE 1: Vichada River Middle Zone						
1	<i>Caño Cavasi</i>	Sikuani	44	17.6	40	15.1
2	<i>Aiwa-Cuna, Tsepajivo</i>	Sikuani	25	10.0	40	15.1
	Subtotal Z1		69	27.6	80	30.2
ZONE 2: Vichada River Low Zone						
3a	<i>Bajo Río Vichada 1</i>	Sikuani	46	18.4	44	16.6
3b	<i>Bajo Río Vichada 2</i>	Sikuani	52	20.8	60	22.6
	Subtotal Z2		98	39.2	104	39.2
ZONE 3: Orinoco River Zone						
4	<i>Atana-Pirariami</i>	Sikuani, Piaroa	15	6.0	14	5.3
5	<i>Caño Zama</i>	Piaroa	3	1.2	4	1.5
6	<i>Matavén Fruta</i>	Piaroa	5	2.0	6	2.3
7	<i>Berrocal-Ajota</i>	Piaroa, Puinave	8	3.2	10	3.8
	Subtotal Z3		31	12.4	34	12.8
ZONE 4: Guaviare River Zone – Brazo Amanavén I						
8	<i>Lagunas Negra y Cacao</i>	Curripaco, Cubeo, Puinave	4	1.6	4	1.5
9	<i>Sejalito –San Benito</i>	Sikuani, Piapoco	5	2.0	5	1.9
10	<i>Laguna Anguilla- La Macarena</i>	Sikuani	11	4.4	13	4.9
11	<i>Barranquito-Laguna Colorada</i>	Sikuani	9	3.6	5	1.9
	Subtotal Z4		29	11.6	27	10.2
ZONE 5: Guaviare River Zone – Brazo Amanavén II						
12	<i>Caño Bocón</i>	Puinave	2	0.8	1	0.4
13	<i>Cumara</i>	Piaroa	2	0.8	2	0.8
14	<i>Yuri</i>	Piapoco	1	0.4	2	0.8
15	<i>Giro</i>	Piapoco	4	1.6	3	1.1
16	<i>Morocoto-Buenavista-Manajua</i>	Puinave	14	5.6	12	4.5
	Subtotal Z5		23	9.2	20	7.5
	TOTAL		250	100%	265	100%

Source: Ethnic Groups by ACATISEMA / Resolution 037, 2003; socioeconomic survey 2013 and indigenous self-census 2018

Illustration 5. Distribution of quantity of communities of RIU-SM by Zones and Sectors



Source: REDD+ Project RIU-SM, socioeconomic survey 2013 and indigenous self-census 2018

The Map 10 shows Settlements in the Indigenous Reservation.

The RIU-SM communities are more concentrated in between Zone 1 (27.6% in 2013 and 30.2% in 2018) and Zone 2 (39.2% in 2013 and 2018), that is, 66.8% in 2013 and 69.4% in 2018 of the communities are distributed along the Vichada River, where *Sikuani* is the predominant ethnic group.

Depending on the size of the community (number of inhabitants) the following information (in Table 3) can be considered, with their Sector and respective predominant ethnic group:

Table 3. Main communities according their number of inhabitants, with Sector and ethnicity

Sector	Community	Inhabitants	Ethnicity
Matavén Fruta	Sarriapa	416	Piaroa
Aiwa Cuna Tsepajibo	Cumariana	245	Sikuani
Aiwa Cuna Tsepajibo	Guaturiba	240	Sikuani
Aiwa Cuna Tsepajibo	Brisa	228	Sikuani
Morocoto Buena Vista	San Rafael Morocoto	220	Piapoco
Morocoto Buena Vista	Morichal	187	Piapoco
Bajo Vichada 1	Camunianae	184	Sikuani
Barranquito Laguna Colorada	Barranquito	184	Sikuani
Aiwa Cuna Tsepajibo	Maniare	179	Sikuani
Morocoto Buena Vista	Miraluz	162	Piapoco
Sejalito San Benito	Sejalito Dos	158	Sikuani
Barranquito Laguna Colorada	Laguna Colorada	154	Sikuani
Berrocal Ajota	Pueblo Escondido	150	Piapoco
Sejalito San Benito	Sejalito Uno	146	Sikuani
Morocoto Buena Vista	Belen	140	Piapoco
Bajo Vichada 2	San Piñalito Morichal	137	Sikuani

Sector	Community	Inhabitants	Ethnicity
Atana Pirariame	Pirariami	135	Sikuani
Bajo Vichada 2	Serrania	135	Sikuani
Aiwa Cuna Tsepajibo	Matsuldani	134	Sikuani
Sejalito San Benito	San Benito	134	Piapoco
Laguna Negra Cacao	Laguna Cacao	129	Puinave
Bajo Vichada 2	La Rompida	128	Sikuani
Cumaral	Cumaral	127	Piaroa
Laguna Anguilla La Macarena	Sejal Esperanza	126	Sikuani
Bajo Vichada 1	Sabanita	119	Sikuani
Berrocal Ajota	Guayabal Anapo	119	Curripaco
Morocoto Buena Vista	Buena Vista	116	Piapoco
Bajo Vichada 1	Amue Tsenebo	114	Sikuani
Bajo Vichada 1	Urbana Morichal	114	Sikuani
Bajo Vichada 2	Tirso Atana	111	Sikuani
Caño Zama	Pueblo Nuevo	111	Piaroa
Aiwa Cuna Tsepajibo	Remanso	109	Sikuani
Aiwa Cuna Tsepajibo	Palmita	107	Sikuani
Berrocal Ajota	Porvenir	104	Piaroa, Cubeo, Piapoco
Sejalito San Benito	Caño Fisto	104	Piapoco, Sikuani
Laguna Anguilla La Macarena	Berlin Dos	101	Sikuani
Laguna Negra Cacao	Laguna Negra	100	Curripaco, Puinave

Source: REDD+ Project RIU-SM, indigenous self-census 2018

In the Annex 1 of this document, the entire list of all communities of the RIU-SM is presented by Zone and Sector.

The Sectors of the RIU-SM and human settlements in them are the basis for activities of surveillance and control of the Indigenous Reservation territory and forests, the governance of ACATISEMA Association, and the establishing and developing of "Family Agri-food Production Units System" (FAPUS) and productive projects, mainly.

Land use and economic activities

Indigenous communities have practiced hunting, fishing, gathering wild fruits and traditional subsistence activities; recently incorporated in subsistence agriculture or as they called them, "conucos" or "chagras". Also, crafts are an important item in their economy, although on a very small scale. From all these indigenous activities they have achieved their self-sufficiency. This self-sufficiency has been lost as these communities are not immune to the economic dynamics of the modern market, which has meant the growing generation needs for goods and services, and that has meant the transformation of their modes of production, in some cases, drastically.

The economic forms that prevail in the indigenous communities of the *Selva de Matavén* are unequal relations with traders and settlers, which favor speculation in commercial and financial transactions. These settlers and traders incursion into the territory in order to develop activities such as logging, fishing, hunting of wildlife and illegal mining activities, generating constant pressure on natural resources, as have the means (technology, transport among others) and a relative disadvantage and vulnerability of indigenous against their interests; the boundary condition increases the difficulties, with heterogeneous users and

different conditions and institutional skills associated with care and control of these resources.

Consequently, the best-known work mode is the debt, that economic relationship in which the merchant advances goods, supplies or services in exchange of work rate and is paid always arbitrary and insufficiently to settle a debt, keeping so indefinitely a permanent reservoir of indigenous labor needed.

For its part, the local market does not absorb fairly generated surpluses for sale, due to their traditional way of production and use of natural resources. Indigenous communities sell the little surplus price imposed by the trader or broker, always being disadvantageous for communities.

Additionally, the above situation alters the vital relationship of indigenous peoples with the territory, since these communities conceive the territory from a holistic perspective. That is, not only understanding as the means of their livelihood but also is the source of their identity and worldview. So, the entry of other actors to exploit resources, could lead to food guarantee problems and damage to the sacred and vital areas for indigenous peoples.

The food guarantee of indigenous communities is violated by its dependence on products that complement their staple diet, the limited availability of financial resources to meet these demands and loss of traditional knowledge. In this purport, the production and cultivation of traditional products is increasingly limited, with a restricted number of crop species in their conucos with traditional practices or mismatched with the conditions of natural ecosystems offer.

Main economic activities

The main economic activities developed in the *Resguardo Indígena Unificado - Selva de Matavén* are agriculture, fishing, hunting, cattle ranching, and a small portion tourism and crafts, according to traditional common practices, recording as results of workshops and socioeconomic survey, by zones with captains, sector's authorities and community leaders (2013).

Consult more details in the validated PDD-VCS, Section "1.10.9 Social, cultural, economic and environmental aspects of the indigenous population / Main economic activities", page 106.

Socio-cultural information

In 2013 there were 12,814 indigenous people (of 6 ethnic groups: *Cubeo*, *Curripaco*, *Piapoco*, *Piaroa*, *Puinave*, and *Sikuani*) belonging to 2,517 families and 250 communities; in 2018 there were 15,943 indigenous people belonging to 3,591 families and 265 communities.

Next, Table 4 shows some information about indigenous people, presented according to Zones and Sectors of RIU-SM.

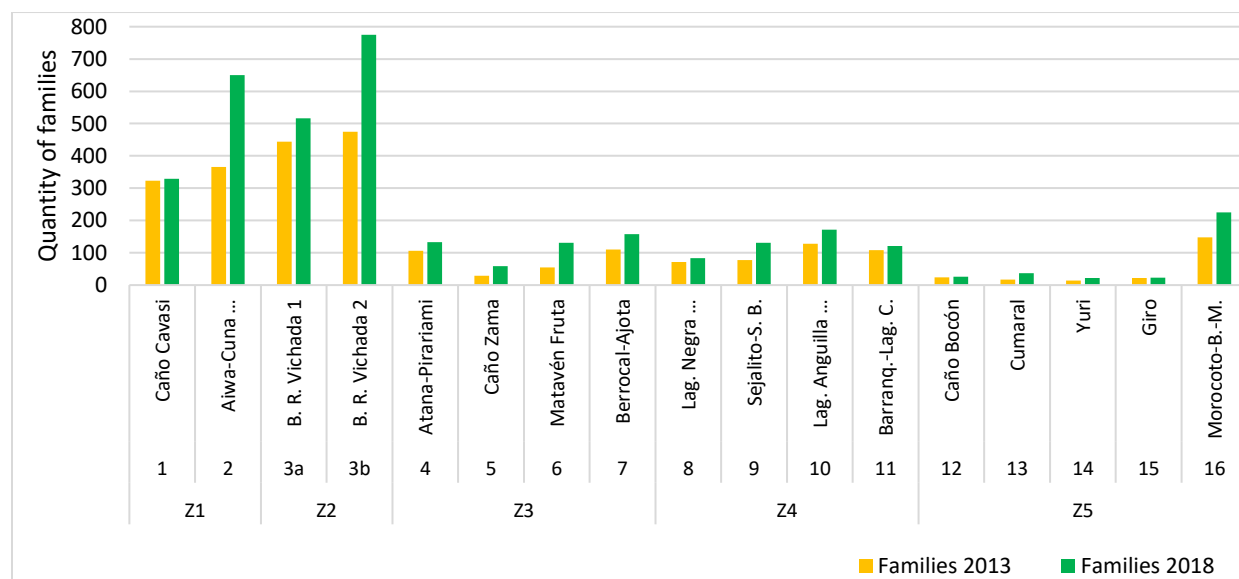
Table 4. Distribution of quantity of families and population in RIU-SM by Sectors, 2013 and 2018

#	Sectors	At Project start 2013			During Project 2018		
		Families	Population	% pop.	Families	Population	% pop.
ZONE 1: Vichada River Middle Zone							
1	Caño Cavasi	323	3,480	27.2%	329	1,616	10.1%
2	Aiwa-Cuna, Tsepajivo	366	1,259	9.8%	650	2,876	18.0%
	Subtotal Z1	689	4,739	37.0%	979	4,492	28.2%
ZONE 2: Vichada River Low Zone							

#	Sectors	At Project start 2013			During Project 2018		
		Families	Population	% pop.	Families	Population	% pop.
3a	Bajo Río Vichada 1	444	2,211	17.3%	516	2,249	14.1%
3b	Bajo Río Vichada 2	475	2,001	15.6%	775	3,090	19.4%
	Subtotal Z2	919	4,212	32.9%	1,291	5,339	33.5%
ZONE 3: Orinoco River Zone							
4	Atana-Pirariami	106	418	3.3%	133	631	4.0%
5	Caño Zama	29	50	0.4%	59	280	1.8%
6	Matavén Fruta	55	152	1.2%	131	587	3.7%
7	Berrocal-Ajota	110	450	3.5%	158	759	4.8%
	Subtotal Z3	300	1,070	8.4%	481	2,257	14.2%
ZONE 4: Guaviare River Zone – Brazo Amanavén I							
8	Lagunas Negra y Cacao	71	321	2.5%	83	315	2.0%
9	Sejalito –San Benito	77	293	2.3%	131	569	3.6%
10	Laguna Anguilla- La Macarena	128	516	4.0%	172	812	5.1%
11	Barranquito-Laguna Colorada	108	421	3.3%	121	515	3.2%
	Subtotal Z4	384	1,551	12.1%	507	2,211	13.9%
ZONE 5: Guaviare River Zone – Brazo Amanavén I							
12	Caño Bocón	24	53	0.4%	26	91	0.6%
13	Cumaral	17	256	2.0%	37	167	1.0%
14	Yuri	14	103	0.8%	22	105	0.7%
15	Giro	22	263	2.1%	23	141	0.9%
16	Morocoto-Buenavista-Manajuaire	148	567	4.4%	225	1,140	7.2%
	Subtotal Z5	225	1,242	9.7%	333	1,644	10.3%
	TOTAL	2,517	12,814	100%	3,591	15,943	100%

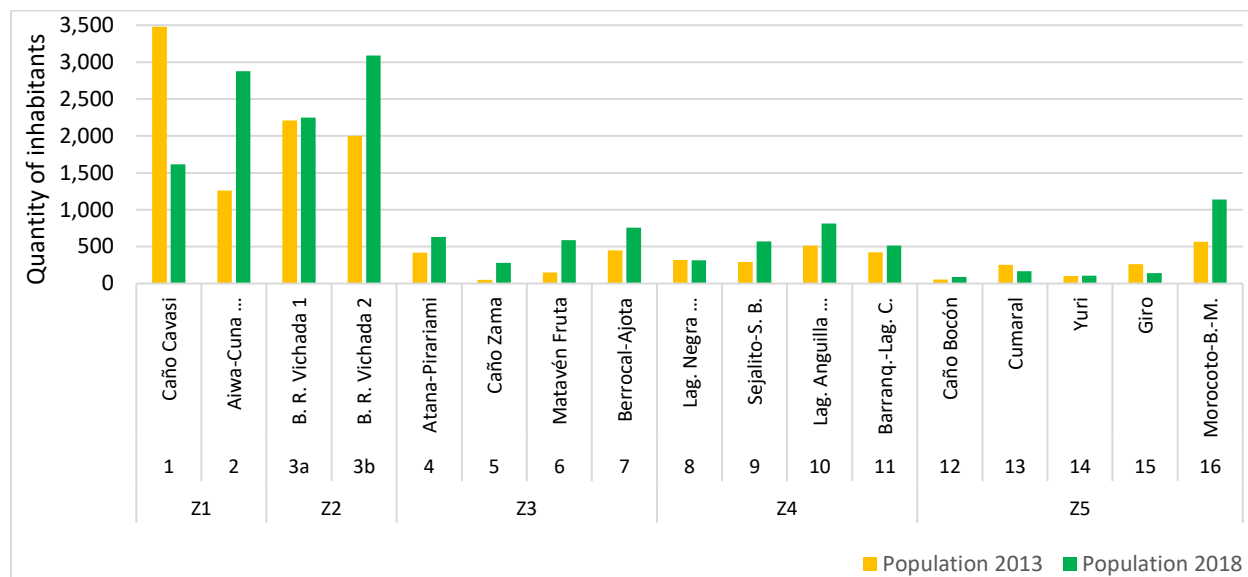
Source: REDD+ Project RIU-SM, socioeconomic survey 2013 and indigenous self-census 2018

Illustration 6. Distribution of quantity of families in RIU-SM by Sectors, 2013 and 2018



Source: REDD+ Project RIU-SM, socioeconomic survey 2013 and indigenous self-census 2018

Illustration 7. Distribution of quantity of population in RIU-SM by Sectors, 2013 and 2018



Source: REDD+ Project RIU-SM, socioeconomic survey 2013 and indigenous self-census 2018

Families have an average of 5 persons. It is easy to find in the living room houses grandparents, parents and children, affecting power relations that influence the differential access to resources and opportunities of each of the members; so, the distribution of resources is homogeneous or that the situation of one of its members may be indicative of the status of everyone else.

The concept of head of household is a subjective judgment about who is perceived as leader by all household members, regardless of the responsibilities or duties fulfilled; when at home there is a presence of a man (woman companion) he will be in charge.

The location of the rural population is due to the jungle and humid conditions prevailing in the area, hampering settlements inside the *Selva de Matavén*; location on the banks of rivers facilitates the transport, food and communication. Migration is one of the promising alternatives for some families in the city who see a possibility of improving their living.

The existence of six ethnic groups (*Cubeo, Curripaco, Piapoco, Piaroa, Puinave, and Sikuaní*) is an undeniable social fact in the region; according to the historical genesis, it has presented the process of settlement of various groups that can be classified as natives and settlers, and this factor is an indicator that identifies the degree of ownership of the territory of each of them.

Gender

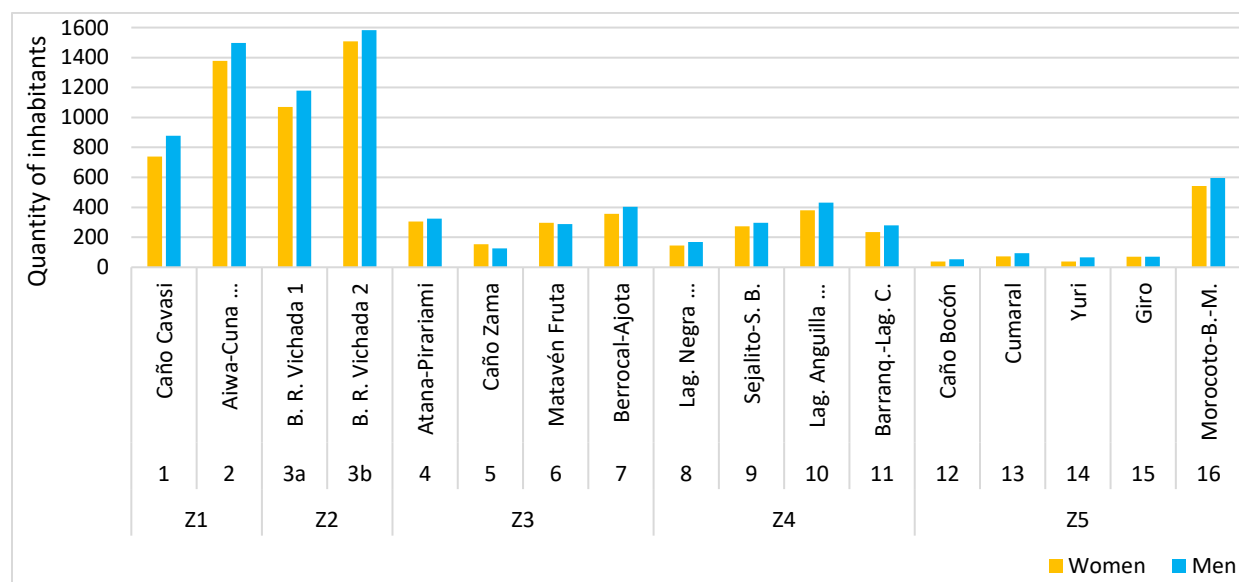
In the following Table 5 and Illustration 8, the distribution of population according to gender is presented.

Table 5. Distribution of population according to gender in RIU-SM

Zone	Sector	Women	%/sector	Men	%/sector	Total
Z1	1 Caño Cavasi	738	45.7%	878	54.3%	1616
	2 Aiwa-Cuna, Tsepajivo	1,378	47.9%	1,498	52.1%	2876
Z2	3a Bajo Río Vichada 1	1,070	47.6%	1,179	52.4%	2249
	3b Bajo Río Vichada 2	1,507	48.8%	1,583	51.2%	3090
Z3	4 Atana-Pirariami	306	48.5%	325	51.5%	631
	5 Caño Zama	153	54.6%	127	45.4%	280
	6 Matavén Fruta	298	50.8%	289	49.2%	587
	7 Berrocal-Ajota	356	46.9%	403	53.1%	759
Z4	8 Lagunas Negra y Cacao	146	46.3%	169	53.7%	315
	9 Sejalito –San Benito	273	48.0%	296	52.0%	569
	10 Laguna Anguilla- La Macarena	381	46.9%	431	53.1%	812
	11 Barranquito-Laguna Colorada	236	45.8%	279	54.2%	515
Z5	12 Caño Bocón	38	41.8%	53	58.2%	91
	13 Cumaral	72	43.1%	95	56.9%	167
	14 Yuri	38	36.2%	67	63.8%	105
	15 Giro	70	49.6%	71	50.4%	141
	16 Morocoto-Buenavista-Manajua	543	47.6%	597	52.4%	1140
	Total	7603	47.7%	8340	52.3%	15943

Source: REDD+ Project RIU-SM, indigenous self-census 2018

Illustration 8. Distribution of population according to gender in RIU-SM



Source: REDD+ Project RIU-SM, indigenous self-census 2018

In general, in RIU-SM the 47.7% of population are women and the 52.3% are men in 2018. In most sectors, the proportion of women is lower than the proportion of men (on average, in the RIU-SM Sectors 46.8%

are women and 53.2% are men).

Age

In the following Table 6 and Illustration 9, the distribution of population according to age and gender is presented.

Table 6. Distribution of population according to age and gender in RIU-SM

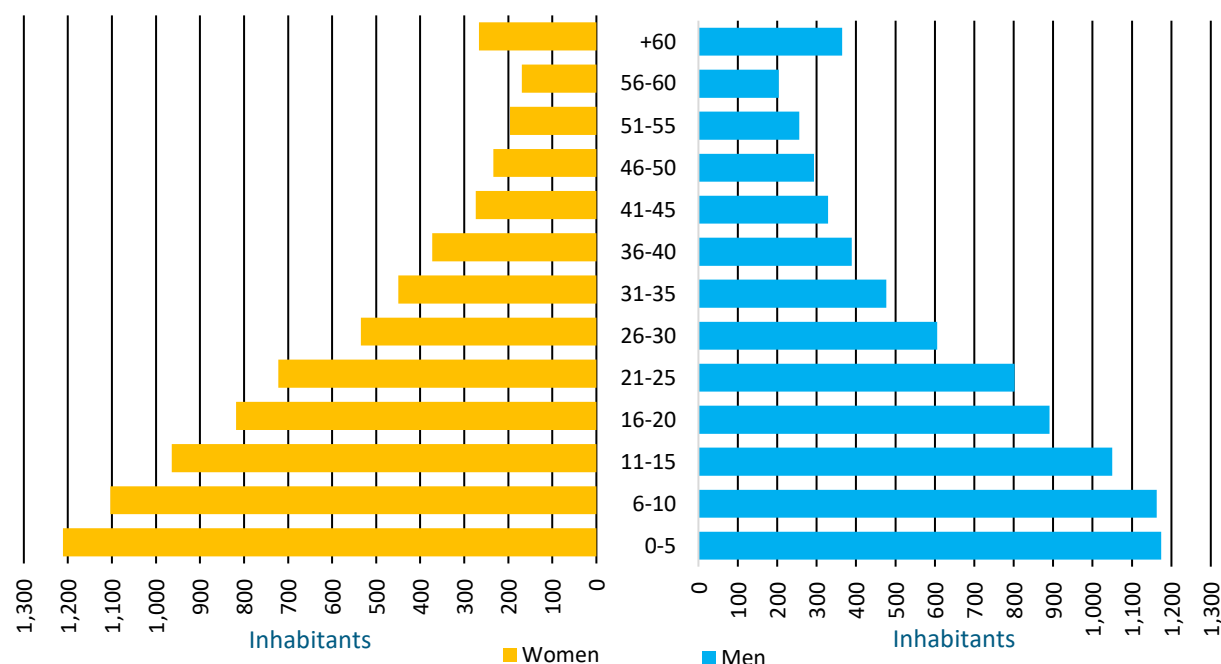
Age category	Women	%	Men	%	Total	%
0-5	1,211	15.9%	1,174	14.1%	2,385	15.0%
6-10	1,104	14.5%	1,163	13.9%	2,267	14.2%
11-15	964	12.7%	1,050	12.6%	2,014	12.6%
16-20	818	10.8%	891	10.7%	1,709	10.7%
21-25	722	9.5%	802	9.6%	1,524	9.6%
26-30	535	7.0%	606	7.3%	1,141	7.2%
31-35	450	5.9%	477	5.7%	927	5.8%
36-40	373	4.9%	389	4.7%	762	4.8%
41-45	274	3.6%	329	3.9%	603	3.8%
46-50	234	3.1%	293	3.5%	527	3.3%
51-55	196	2.6%	256	3.1%	452	2.8%
56-60	169	2.2%	204	2.4%	373	2.3%
+60	267	3.5%	365	4.4%	632	4.0%
No age recorded	286	3.8%	341	4.1%	627	3.9%
Total	7,603	100%	8,340	100%	15,943	100%

Source: REDD+ Project RIU-SM, indigenous self-census 2018



Families of the Piapoco ethnic group on the Uva river

Illustration 9. Distribution of population according to age and gender in RIU-SM



Source: REDD+ Project RIU-SM, indigenous self-census 2018

Almost a third of the RIU-SM population is up to 10 years old and 53.9% of the inhabitants are up to 20 years old, which makes the population tend to be young. In the following Table 7 and Illustrations 10 and 11, the distribution of population according to age is presented by Sectors.

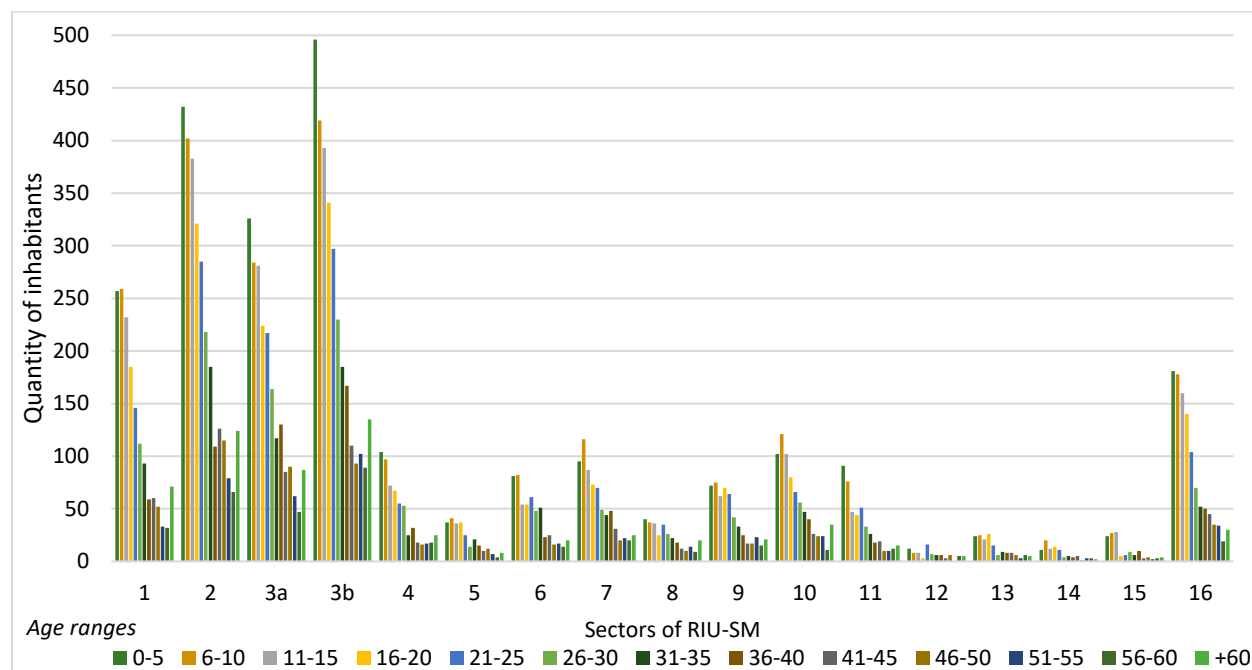
Table 7. Distribution of population according to age by Sectors

Sector	Age category															
	0-5	6-10	11-15	16-17	18-20	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	+60	Total
1	257	259	232	74	111	185	146	112	93	59	60	52	33	32	71	1,591
2	432	402	383	115	206	321	285	218	185	109	126	115	79	66	124	2,845
3a	326	284	281	89	135	224	217	164	117	130	85	90	62	47	87	2,114
3b	496	419	393	142	199	341	297	230	185	167	110	93	102	89	135	3,057
4	104	97	72	29	38	67	55	53	25	32	18	16	17	18	25	599
5	37	41	36	18	19	37	25	14	21	15	10	12	7	4	8	267
6	81	82	54	24	30	54	61	48	51	23	25	16	17	14	20	546
7	95	116	87	28	45	73	70	49	44	48	31	20	22	20	25	700
8	40	37	36	9	16	25	35	26	22	18	12	10	14	9	20	304
9	72	75	62	31	39	70	64	42	33	25	17	17	23	15	21	536
10	102	121	102	29	51	80	66	56	47	40	26	24	24	11	35	734
11	91	76	47	17	27	44	51	33	26	18	19	10	10	12	15	452
12	12	8	8		3	3	16	7	6	6	3	6		5	5	85
13	24	25	21	9	17	26	15	6	9	8	8	6	3	6	5	162
14	11	20	12	5	9	14	11	4	5	4	5	1	3	3	2	95
15	24	27	28	1	4	5	6	9	6	10	3	4	2	3	4	131

Sector	Age category															
	0-5	6-10	11-15	16-17	18-20	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	+60	Total
16	181	178	160	57	83	140	104	70	52	50	45	35	34	19	30	1,098
Total	2,385	2,267	2,014	677	1,032	1,709	1,524	1,141	927	762	603	527	452	373	632	15,316
	7,343															
	CHILDREN															

Source: REDD+ Project RIU-SM, indigenous self-census 2018

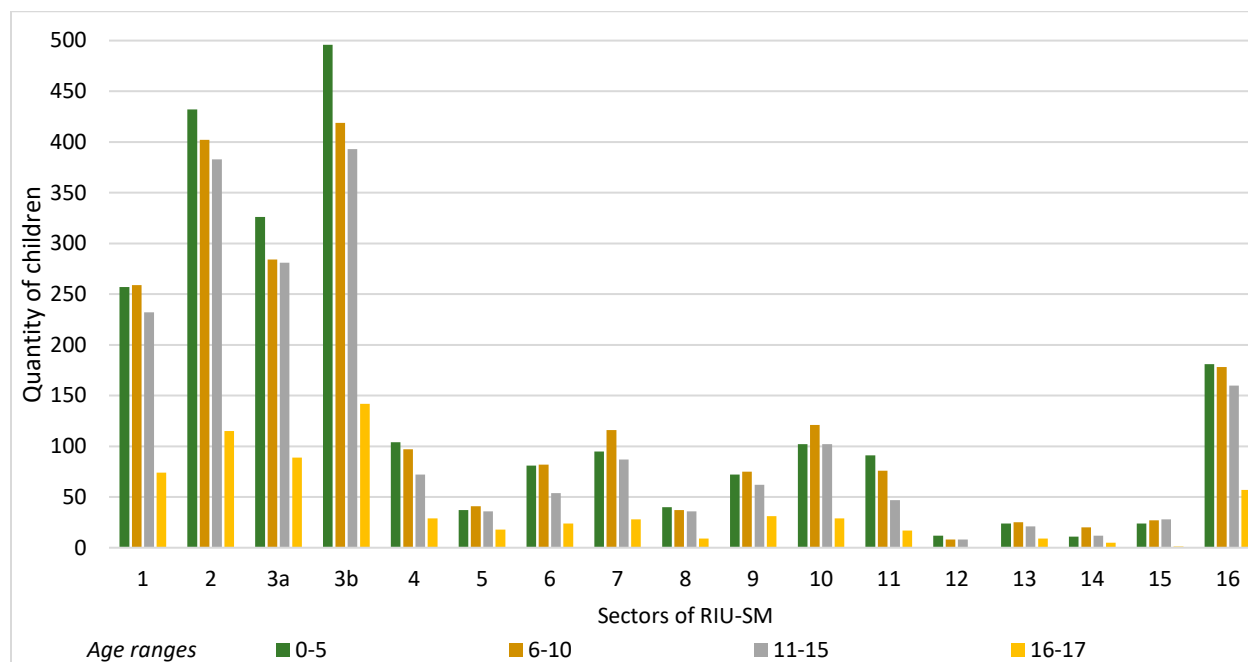
Illustration 10. Distribution of population according to age by Sectors



Source: REDD+ Project RIU-SM, indigenous self-census 2018

It is observed that the trend that the greater proportion of the population is oriented towards children is maintained across all Sectors of the RIU-SM, where the difference is more marked where there are more inhabitants. In fact, the child population is which has always received special attention. Below is a graph with their distribution, taking into account that they are minors until they reach 18 years of age.

Illustration 11. Distribution of children according to age by Sectors



Source: REDD+ Project RIU-SM, indigenous self-census 2018

Housing

In the region they are considered as indigenous natives only, not only for the time spent in the area (ancestral inhabitants), but to preserve their own forms of cultural identity. The mestizo settler group does not exhibit this same behavior and are due to other cultural patterns; the territory is not part of their identity but is a means of external productive exploitation of their social organization, thus becoming a form of survival or storage.

Consult more details in the validated PDD-VCS, Section “1.10.9 Social, cultural, economic and environmental aspects of the indigenous population / Housing”, page 96.

Education

In reference to the education of the population that lives in the area of the REDD+ Project RIU-SM, there is not study that shows the level of education receive in the indigenous communities. According to inquiries done by socioeconomic survey (2013), it has been possible to conclude that a high level of illiteracy exists and only a 5.9% of the population in RIU-SM have made it to high school.

Consult more details in the validated PDD-VCS, Section “1.10.9 Social, cultural, economic and environmental aspects of the indigenous population / Education”, page 98.

Health system

Institutional Structure of conformity with the information provided by the State, the municipality of Cumaribo has the infrastructure to service the health needs of its community taking into account the location and personal support.

Consult more details in the validated PDD-VCS, Section “1.10.9 Social, cultural, economic and environmental aspects of the indigenous population / Health system”, page 100.

Basic services in the RIU-SM

In the RIU-SM is not a network of drinking water. Population makes use of mechanisms to collect water through deep wells and rainwater as a base for daily consumption. Also, there is not sewer service, the indigenous people use latrines. About disposition of solid waste, there is not protocol for handling them, so, these wastes are disposed of in the woods and in the riverbeds. There is no electricity supply from Cumaribo and other cities to the communities in the RIU-SM, so in some communities make use of power plants, and wood or plant fuel are the most commonly used fuel for cooking.

Consult more details in the validated PDD-VCS, Section “1.10.9 Social, cultural, economic and environmental aspects of the indigenous population / Basic services in the RIU-SM”, page 104.

Poverty and development

In the rural zone in the municipality of *Cumaribo*, indigenous is the majority population, there is an alarming Unsatisfied Basic Needs (NBI by its acronym in Spanish), which is demonstrated by the data obtained from the *Departamento Administrativo Nacional de Estadística* - DANE (National Administrative Department of Statistics), where the NBI corresponding to 90.71% of the rural population and the 75.04% to poverty.

Consult more details in the validated PDD-VCS, Section “1.10.9 Social, cultural, economic and environmental aspects of the indigenous population / Poverty and development”, page 105, and in the page 110 there is some information about the nutritional conditions at the start of the REDD+ Project RIU-SM.

In conclusion, indigenous communities have been coexisting in a complex dynamic of multiculturalism and, as a result of contact with a large number of social situations that have occurred since the beginning of the 20th century, the indigenous peoples of the *Selva de Matavén* have been experiencing a gradual loss of their ancestral knowledge and their forms of cultural expression. An example of these dynamics are the disputes between indigenous people and settlers, the clash between traditional production systems and the market economy, and the processes of Catholic and Protestant evangelization, all of them generating situations that are alien to the culture of indigenous peoples.

2.1.5 Project Zone Map (G1.4-7, G1.13, CM1.2, B1.2)

The Project Zone is considered equivalent to the Reference Region for projecting Location of deforestation (RRL). This RRL comprises the Project Area (PA), the Leakage Belt (LB), and other non-forest areas, according to indications of Module VCS – VMD0007 (Annex 10 of validated PDD-VCS).

In the REDD+ Project RIU-SM the spatial boundaries are defined as following:

Project Area (PA): It is within the RIU-SM and is completely under the legal and territorial control of the Indigenous who inhabit the reservation. It is a forest area (in 2011) which is under threat of deforestation.

Leakage Belt (LB): It 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 Activities Project.

Reference Region for Projecting Deforestation Rate (RRD): In its whole is part of Cumaribo municipality and covers the north and west of the RIU-SM.

Reference Region for Projecting Location of Deforestation (RRL): It is required for localization forecasts deforestation in the baseline. It is a continuous area that contains forested and non-forested areas; the RRL Region contains the Project Area (PA) and LB.

Following Table 8 shows the areas of each spatial boundary by strata.

Table 8. Area (hectares) of Project spatial boundaries, by biomes

Spatial boundary	Area in Helobiome	Area in Peinobiome	Area in Litobiome	Area in Zonobiome	Total area (has)	
Project Area (PA)	174,516	326,058	116,099	533,538	1,150,212	
Leakage Belt (LB)	105,905	112,079	73,625	194,602	486,211	
RRD	230,435	333,195	158,752	722,424	1,444,805	
RRL (Project Zone)	391,909	579,288	293,615	763,627	2,028,439	PA + LB + 396,016 has of non-forest

Source: Based on Annex 16 of validated PDD-VCS, Tables 2-6 (pages 7-8)

Map of Project boundaries and Project Zone

The maps with the Reference Region for projecting Location of deforestation (RRL), that encompassing the Project Area (PA) and the Leakage Belt (LB) and other non-forest areas, are presented in Maps 7 and 8, which corresponds to Project Zone. It is observed how the indigenous communities are located in the perimeter of the Indigenous Reservation, which constitutes a unique characteristic that contributes to the protection of the Central Region (the Project Area).

The map with the general boundaries of *Resguardo Indígena Unificado – Selva de Matavén* (RIU-SM) are presented in the Map 9.

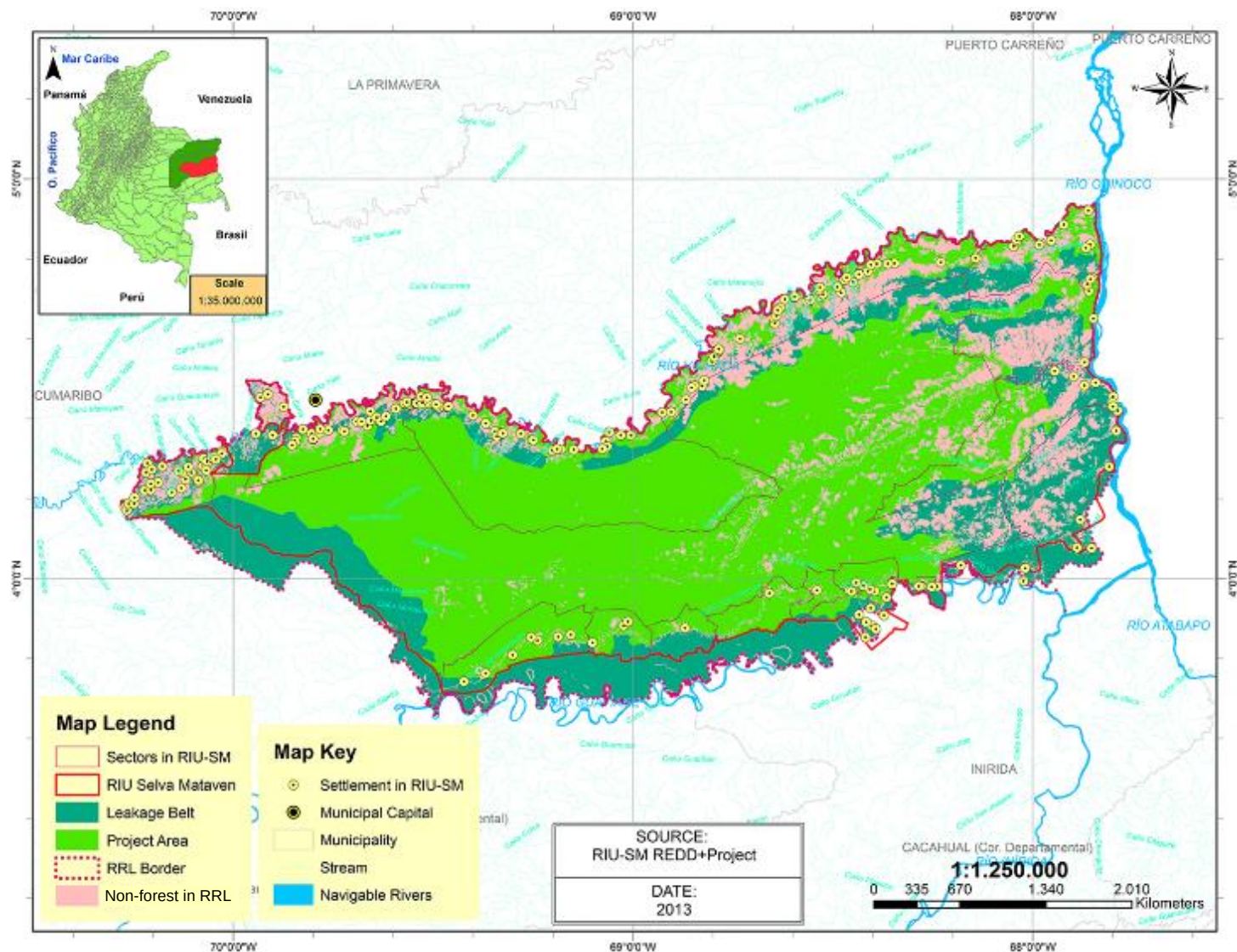
Map of location of communities

The map of the community settlements in the Indigenous Reservation is presented in the Map 10.

Maps of High Conservation Value (HCV) areas

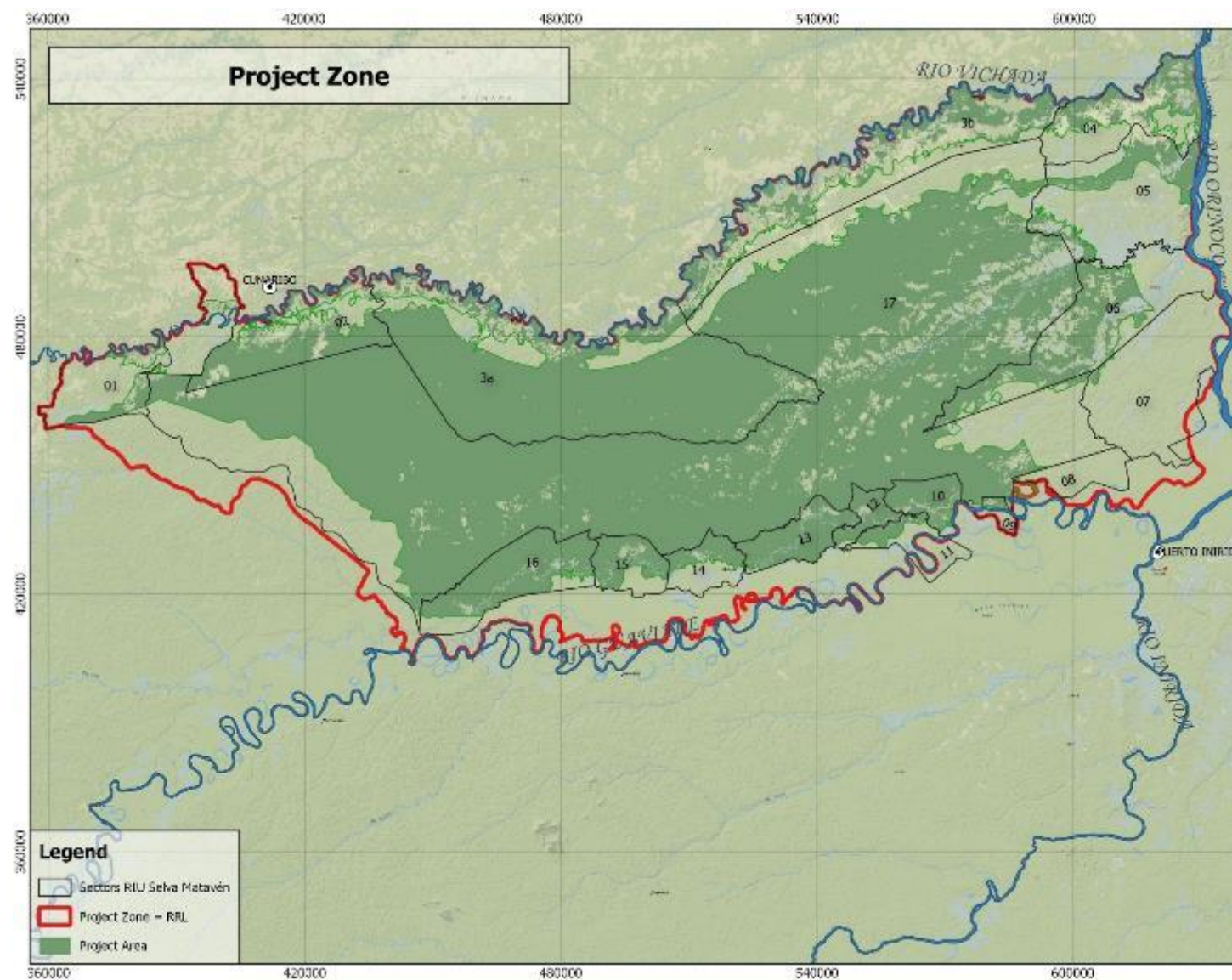
The maps with the location of the High Conservation Value (HCV) areas are presented next (Maps 11 - 17).

Map 7. Spatial boundaries of REDD+ Project RIU-SM: Project Area (PA), Leakage Belt (LB), and RRL in the RIU-SM (Project Zone)



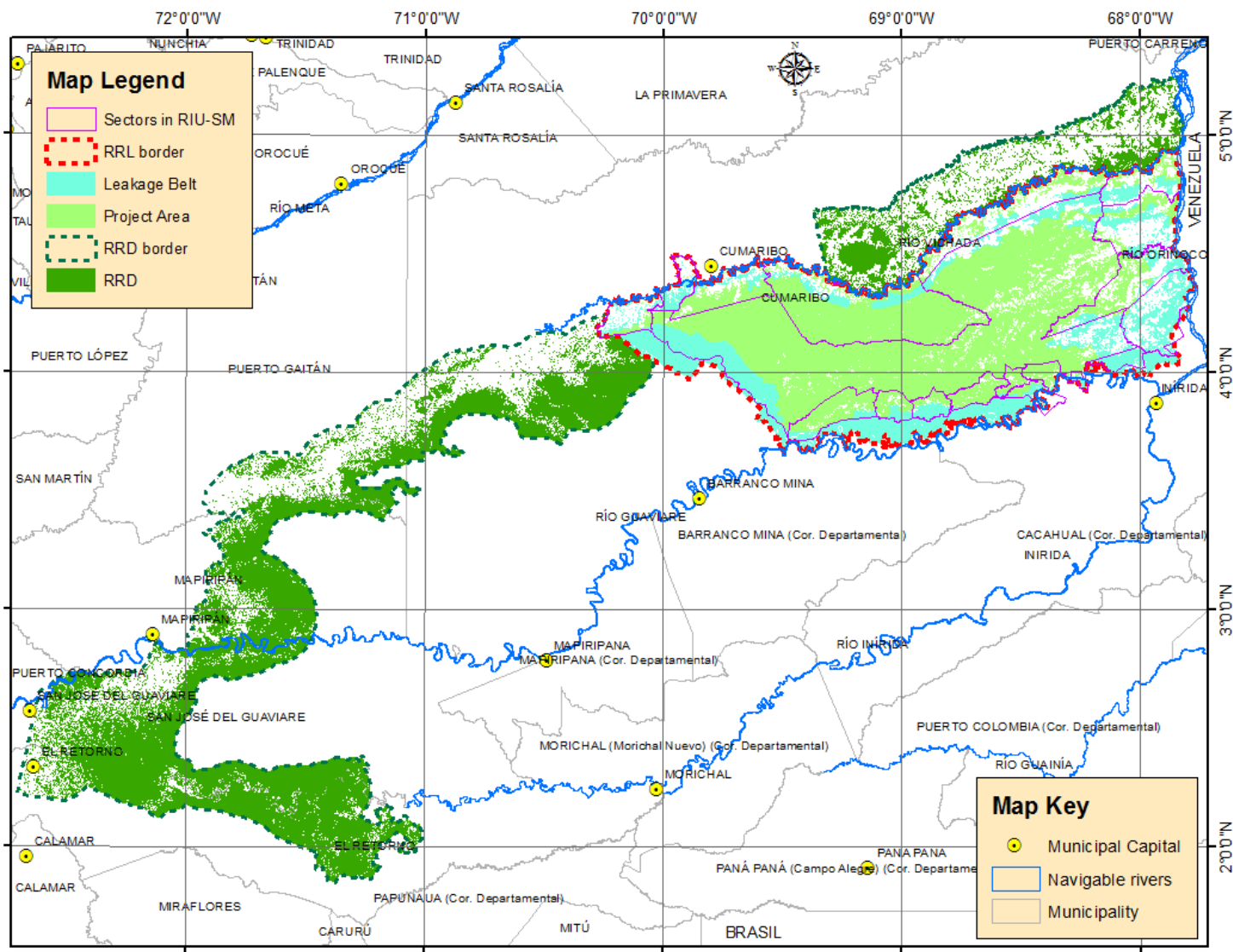
Source: REDD+ Project RIU-SM, GIS

Map 8. Project Zone



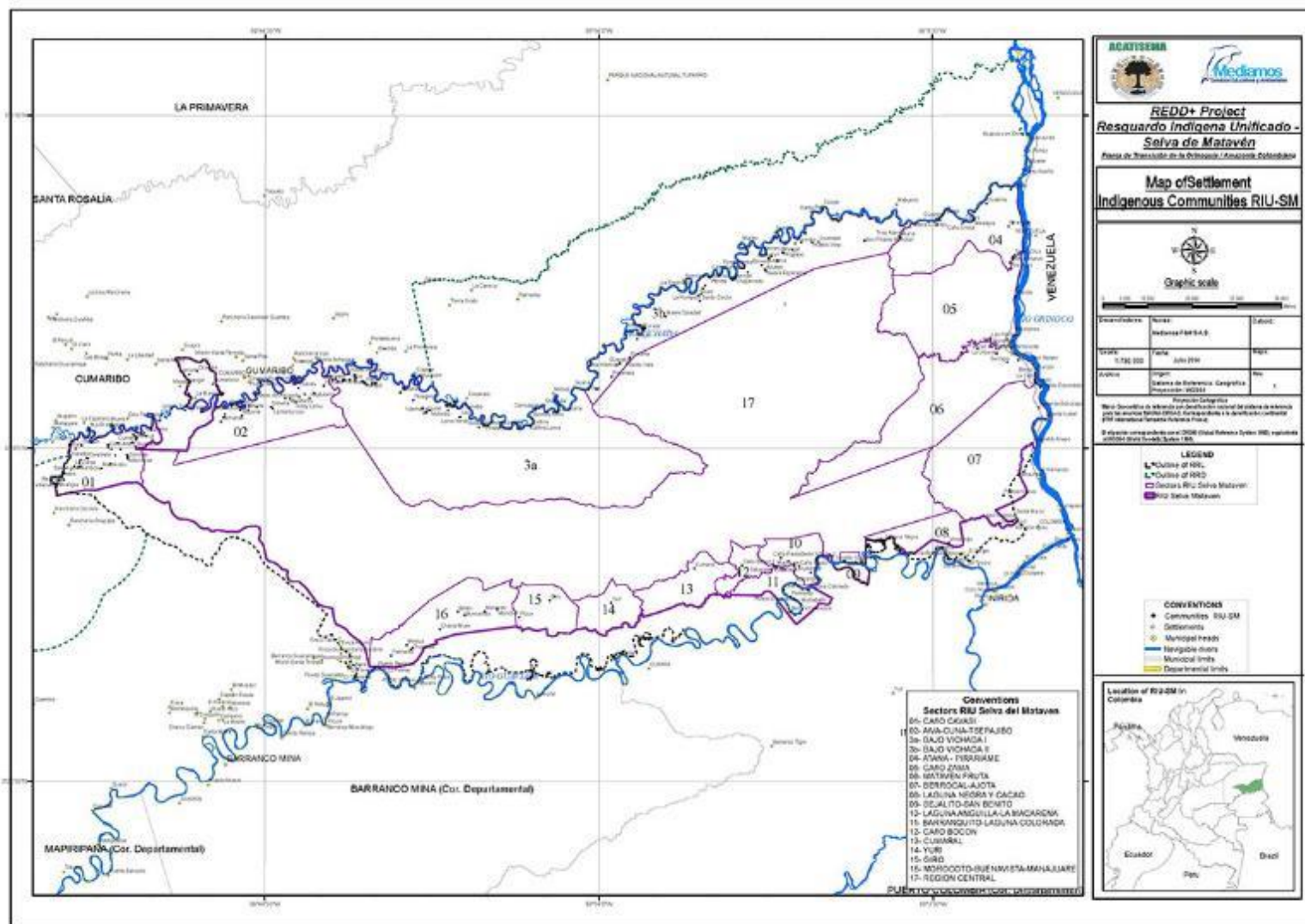
Source: REDD+ Project RIU-SM, GIS

Map 9. Location of Spatial Boundaries: RRD, Project Area (PA), Leakage Belt (LB), and RRL



Source: REDD+ Project RIU-SM, GIS (validated PDD-VCS, Map 8, page 136)

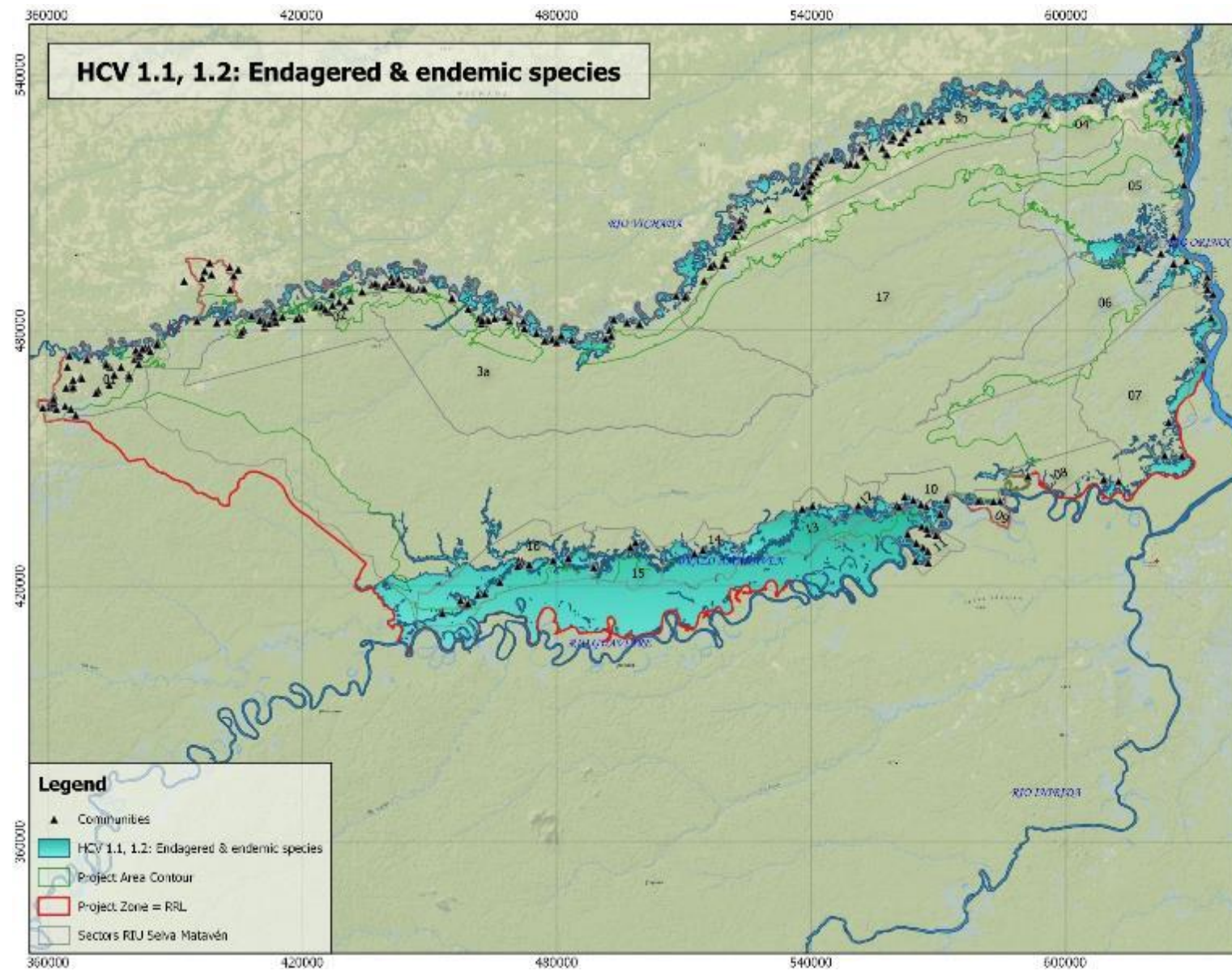
Map 10. Settlements/Communities in the RIU-SM



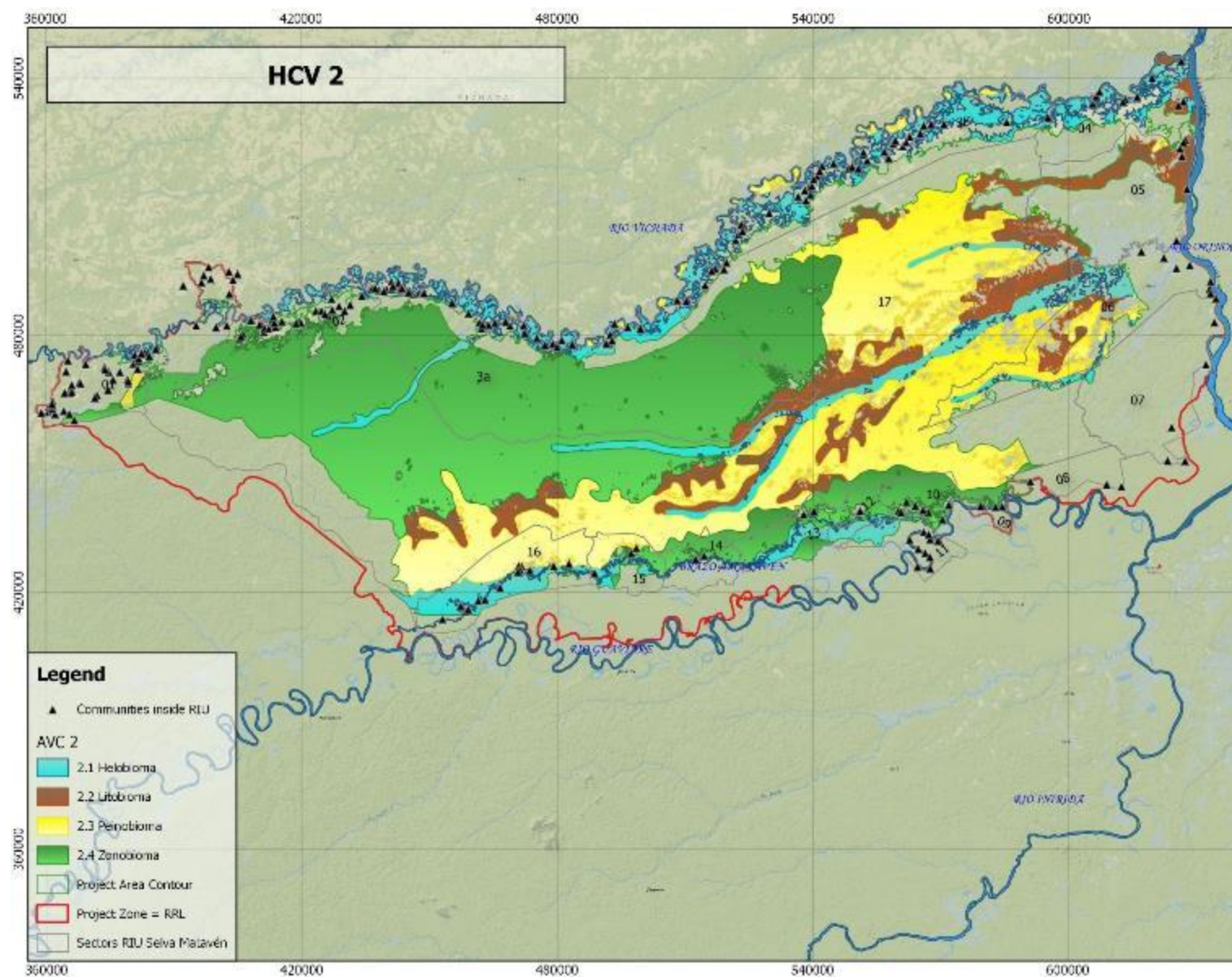
Source: REDD+ Project RIU-SM, GIS (validated PDD-VCS, Map 9, page 137)

Annex 17 of the validated PDD-VCS, contains the KML files with the spatial boundaries PA, LB, RRD, and RRL, and geodetic coordinates.

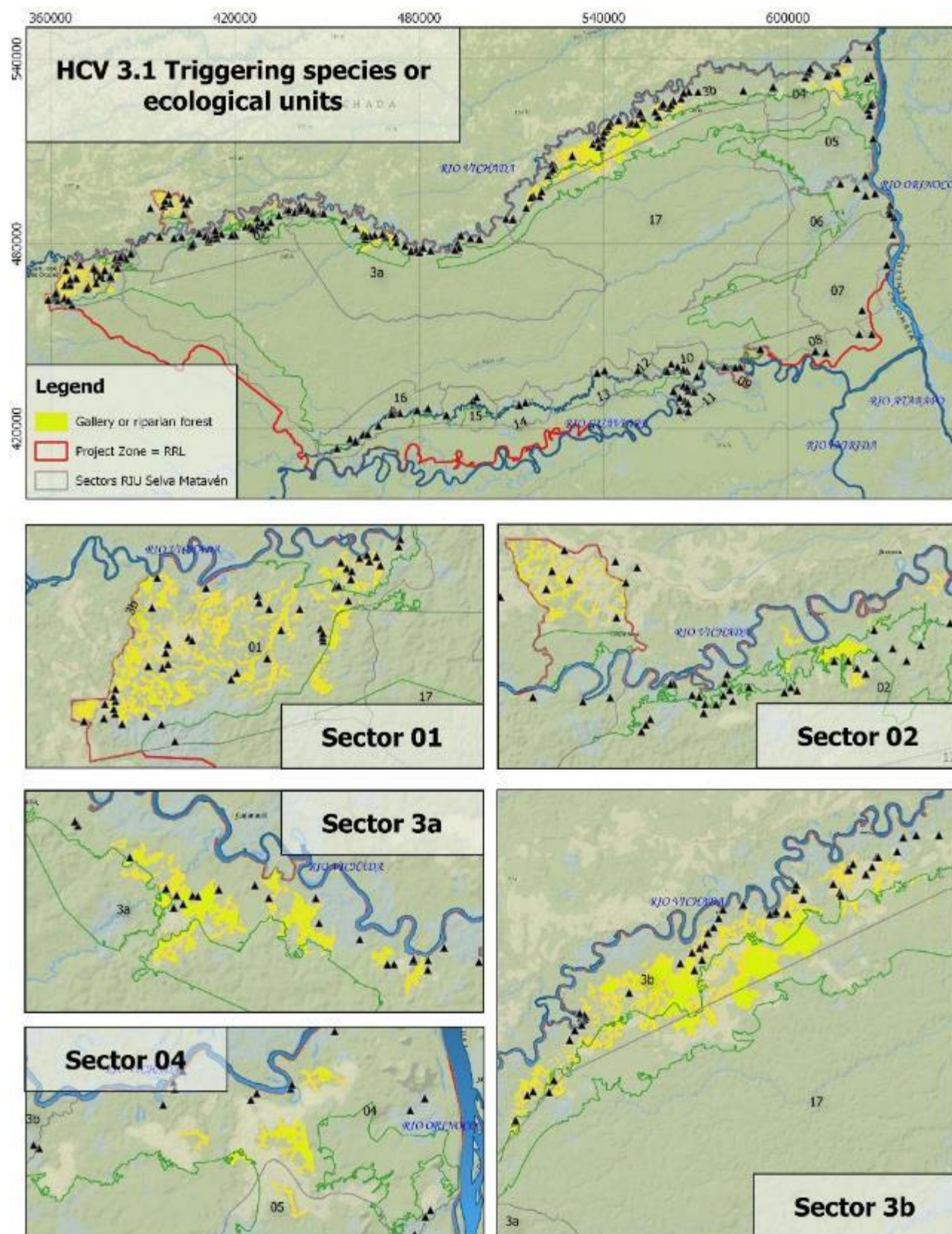
Map 11. Location of High Conservation Value – HCV 1: Species diversity



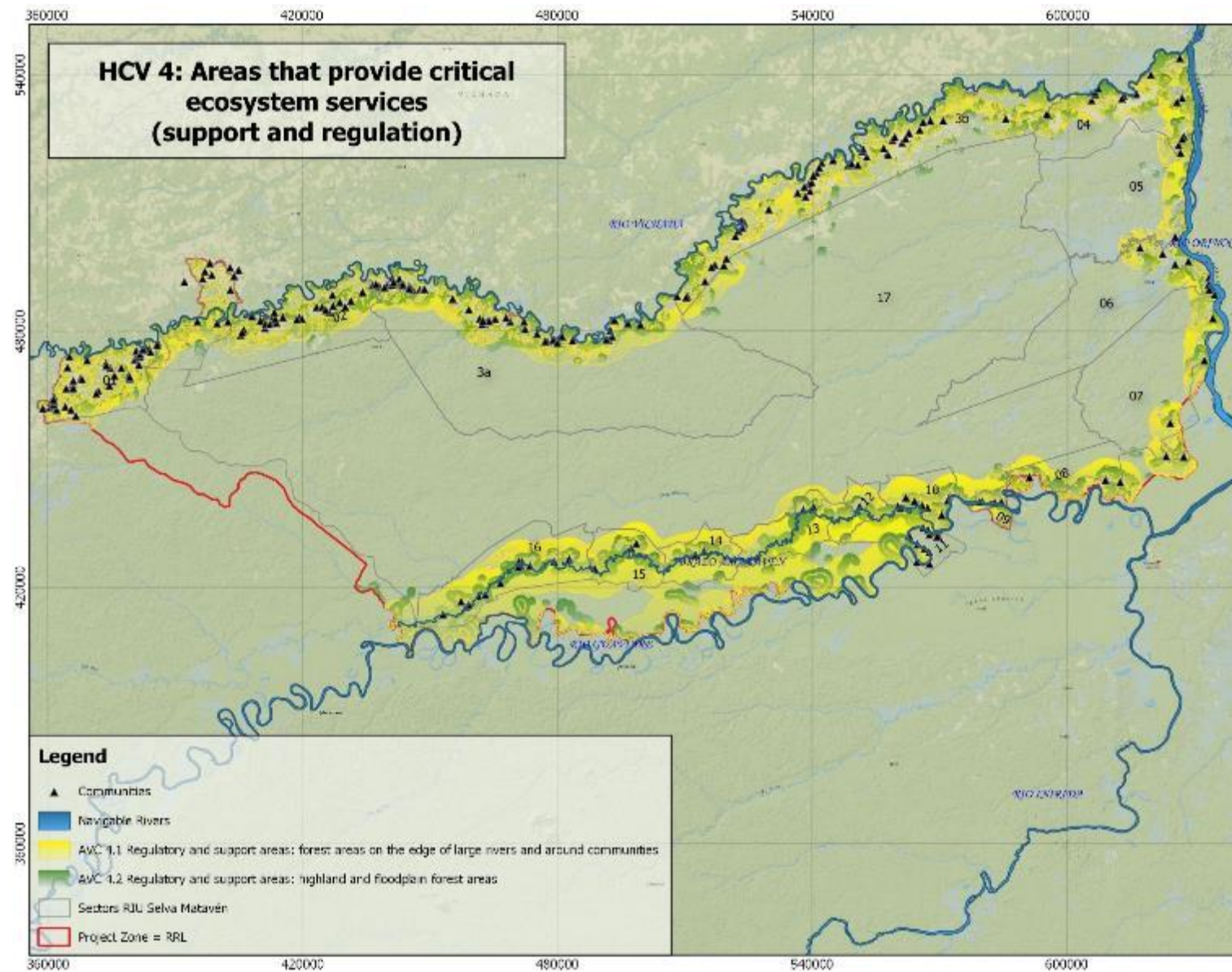
Map 12. Location of High Conservation Value – HCV 2: Landscape-level ecosystems and mosaics



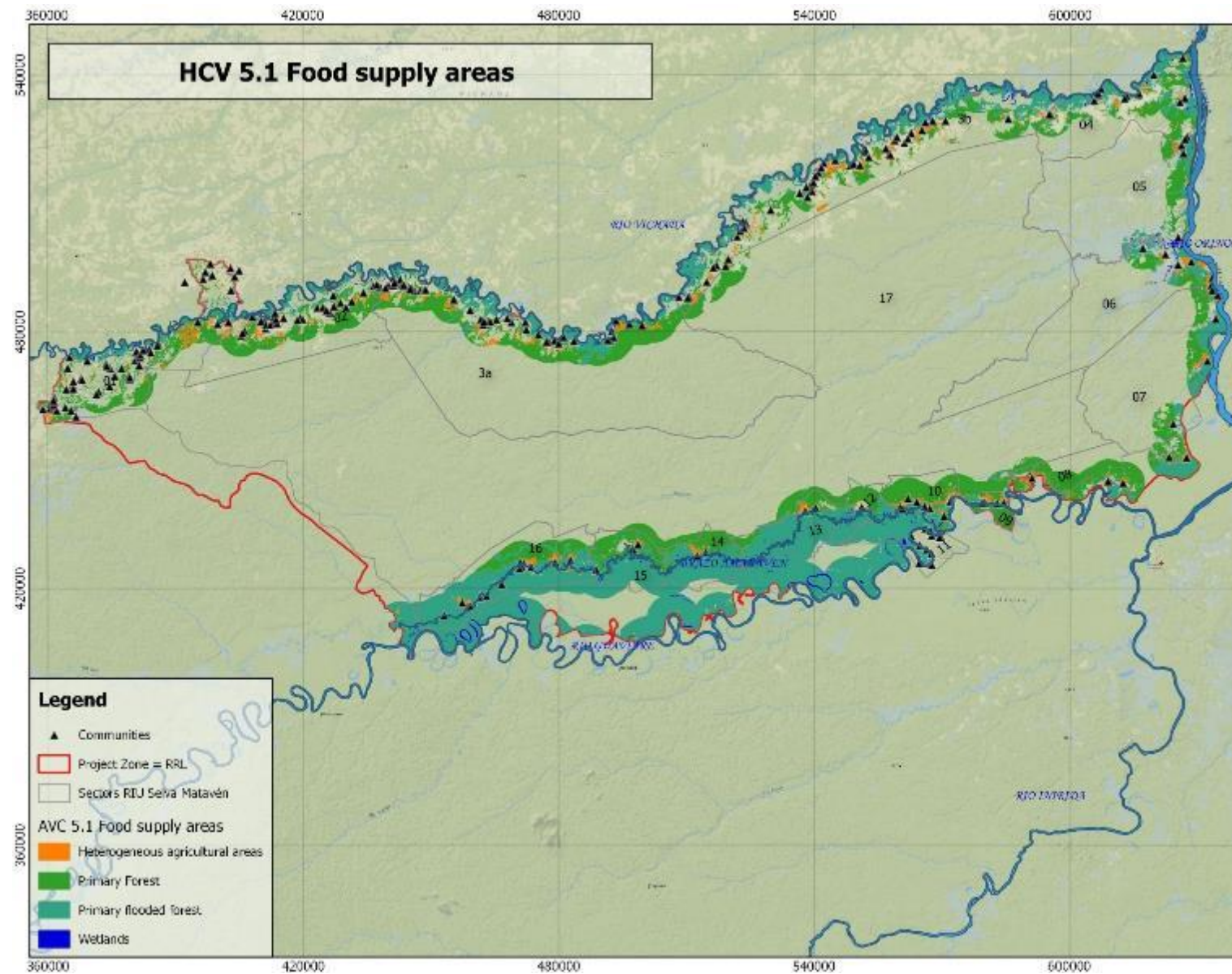
Map 13. Location of High Conservation Value – HCV 3: Ecosystems and habitats



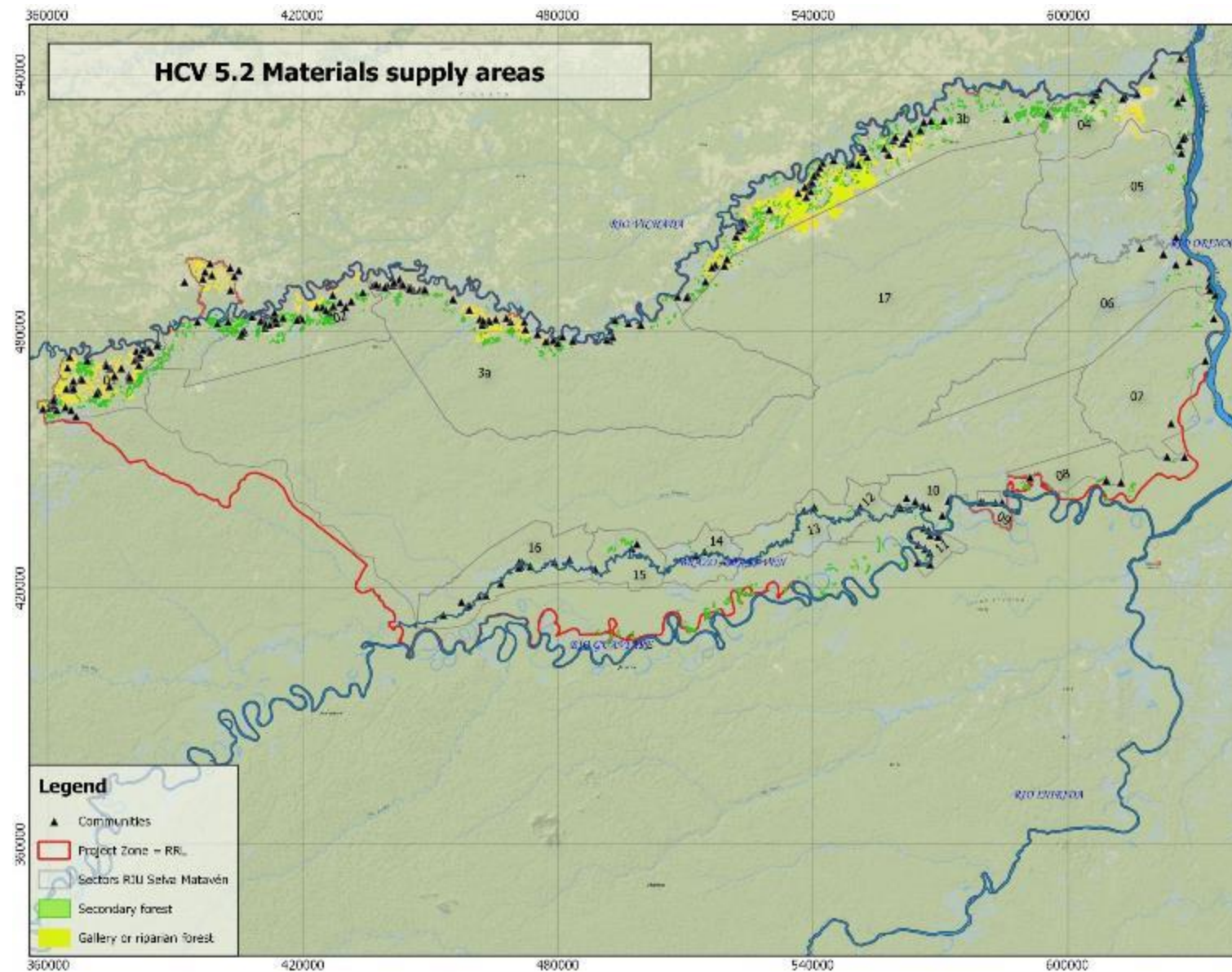
Map 14. Location of High Conservation Value – HCV 4: Ecosystem services



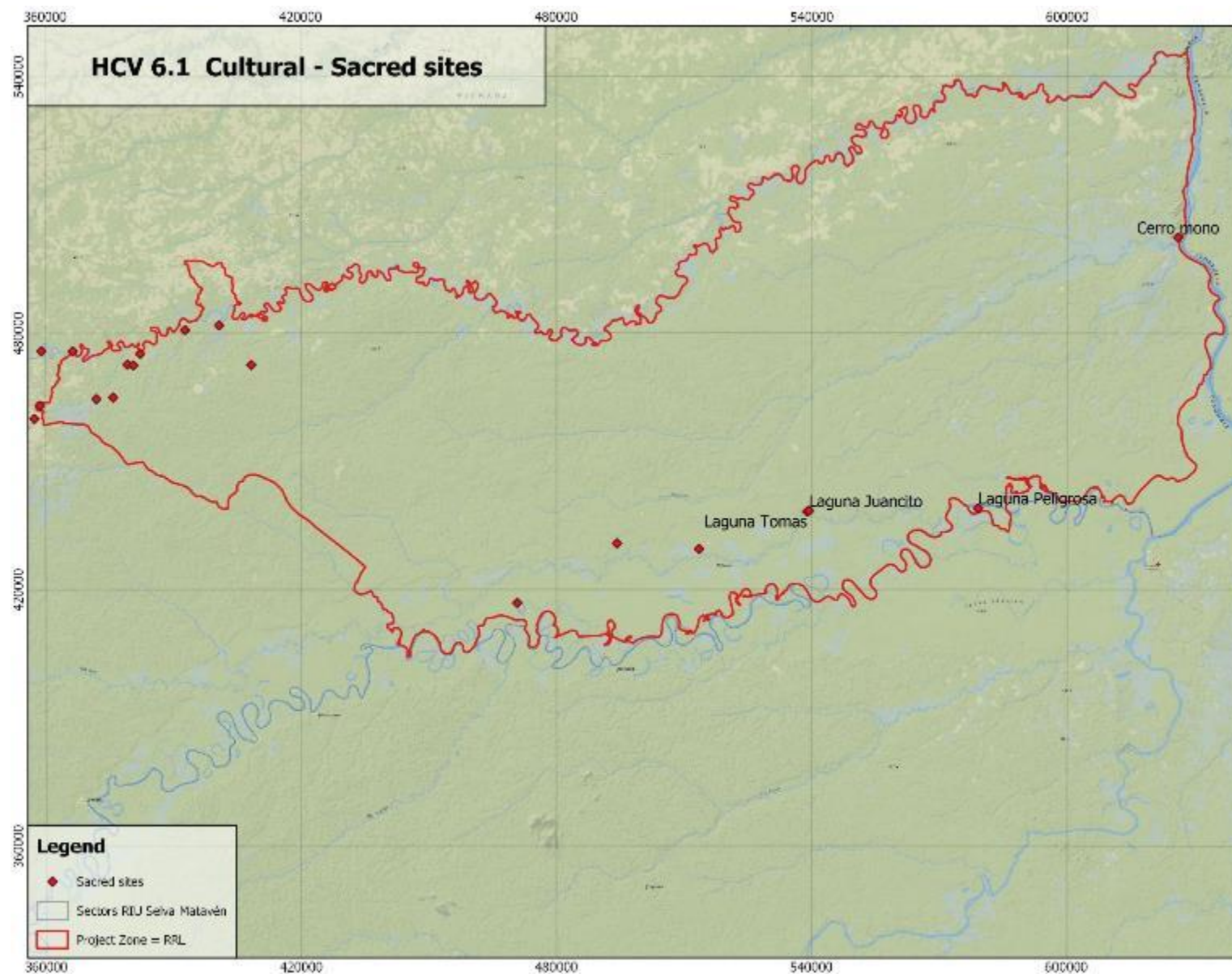
Map 15. Location of High Conservation Value – HCV 5: Community needs (5.1 Food supply areas)



Map 16. Location of High Conservation Value – HCV 5: Community needs (5.2 Material supply areas)



Map 17. Location of High Conservation Value – HCV 6: Cultural values



Source of HCV maps: they were prepared based on:

- *Common Guidance for the identification of High Conservation Values. A good practice guide for identifying HCVs across different ecosystems and production systems* (Brown, Lindhe, Muhtaman, Stewart, & Synnott, 2013).
- *“Territorio, cultura y paisajes Sikuani, Piaroa, Piapoco, Curripaco, Puinave”* (Ariza Vera, Polanco Ochoa, Yepes Guzmán, Suárez Navarro, & ACATISEMA, 2006).
- *“Caracterización de la biodiversidad de la Selva de Matavén”* : (Villarreal Leal , et al., 2009).
- *Primary information verified in workshops with captains, guided by the “Social Cartography” methodology. November, 2020.*

For more details about HCVs, consult:

Section “4.1.3 High Conservation Values” of this document, to see details about focal areas of HCV 4, HCV 5, and HCV 6 related with Community component.

Section “5.1.2 High Conservation Value” of this document, to see details about focal areas of HCV 1, HCV 2, and HCV 3 related with Biodiversity component.

Areas where offsite climate and biodiversity impacts are predicted

It is anticipated that the probable impacts of the Project offsite could be generated by the leaks that would occur outside the Leakage Belt (LB) due to the actions of protection, conservation and recovery of forests by the implemented Activities. However, in the REDD+ Project RIU-SM design stage, it has been determined, with the application of the methods indicated in Module VCS VMD0010 (Annex 12 of validated PDD-VCS), that the trend of deforestation outside the leakage belt is negative, that is, that the model indicates, in an ex-ante scenario, that this deforestation will not occur offsite, so it is considered that there would be no impacts on the Climate, Community and Biodiversity components outside the Project Zone.

Anyway, given the impact that would occur due to leaks in the without Project scenario, which is related to the projection of deforestation in Leakage Belt -LB- (which was spatially located in the Map 18 that is presented next), it has been defined that measures will be implemented to avoid a possible displacement of deforestation actions outside of this LB, measures that are related to the execution of the Sustainable Management Plan for Lands and Forests, the Project Activities and with other actions to provide benefits to the communities, which are described in Section " 2.1.8 Project Activities and Theory of Change" of this document.

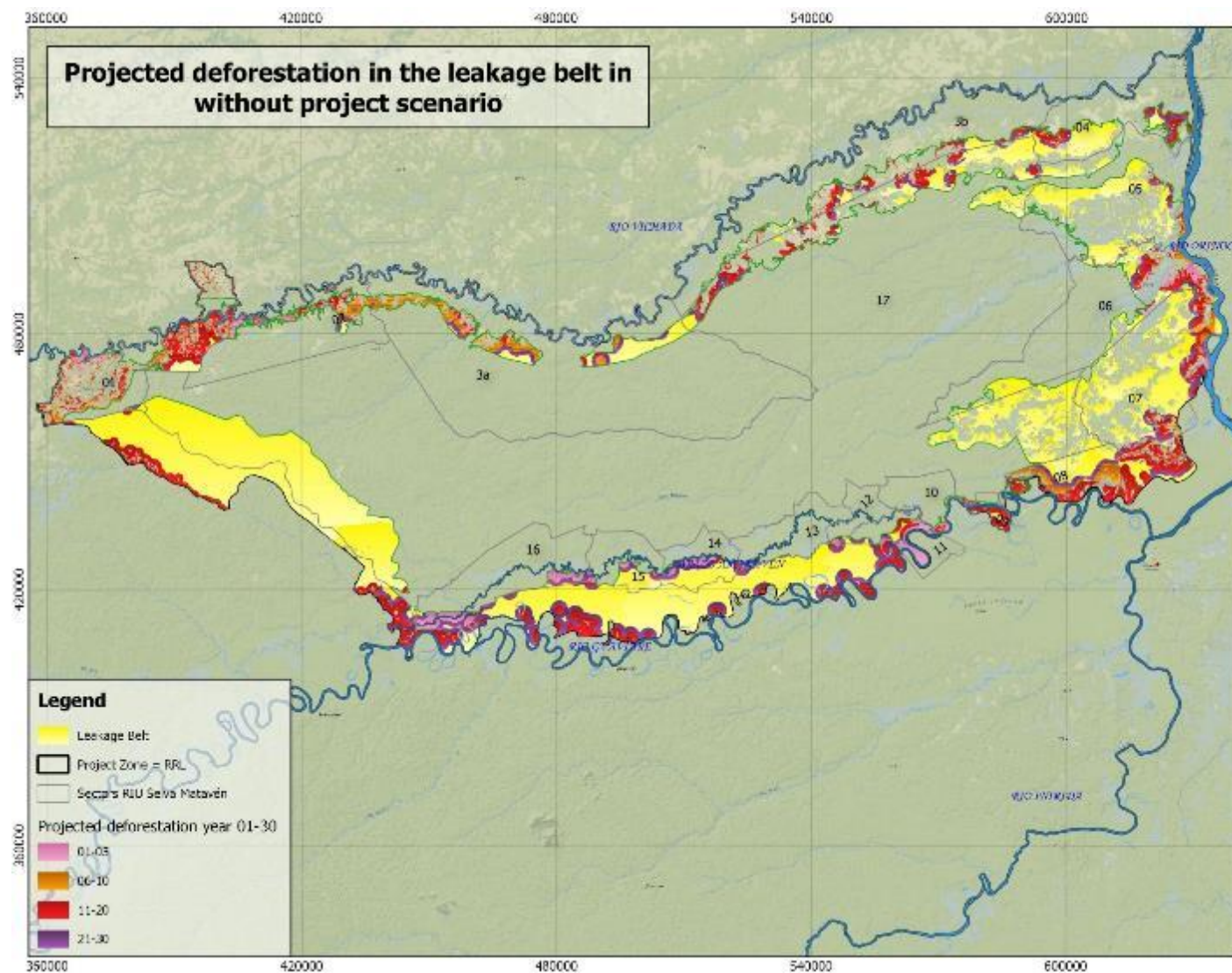
Areas where other stakeholders will be impacted

Other stakeholders, that be located on the Map 19, are the neighboring towns outside the RIU-SM, such as the *Cumaribo* municipality in the Vichada department, *Inírida* - capital of *Guainía* department, and some settlements as *Chupabe*, *Palmarito*, *Santa Rita*, *Puerto Nariño*, and *Ratón* (in *Vichada*), *Amanaben* and *Barranco Minas* (in *Guainía*) and *San Fernando Atabapo* (in Venezuela). So, other communities and people will benefit by the immediate environmental impacts, derived from the protection of forests, water sources, soils and species habitats, which also represent the means of subsistence of many indigenous and non-indigenous peoples outside the RIU-SM, as it is shown in Maps 19 and 20.

Other stakeholders would be local, regional and national entities whose jurisdiction is broader in the Colombian territory.

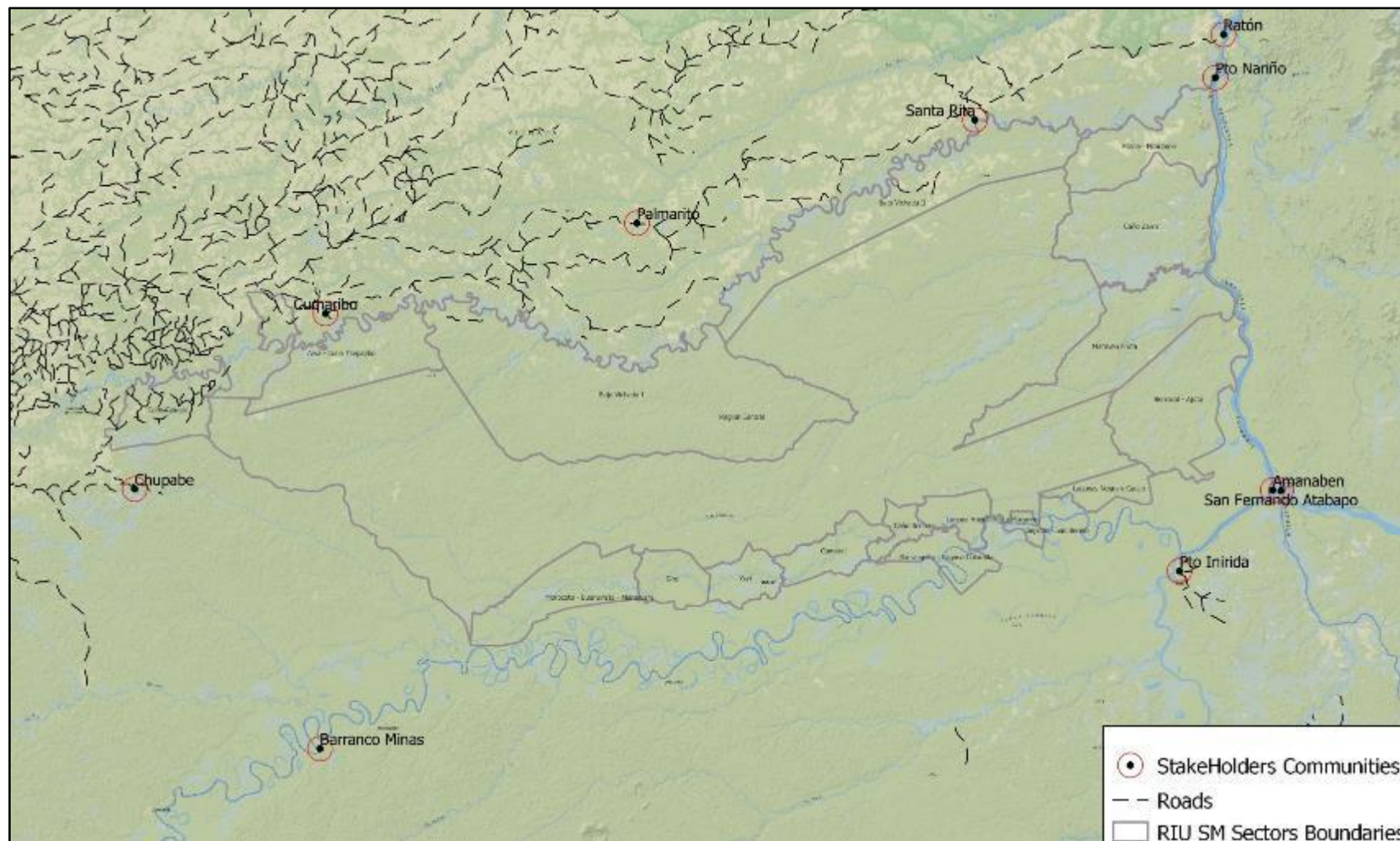
Nationally, the country will benefit by the contribution to the goal to avoid the deforestation, reducing CO₂ emissions and mitigating the effects of climate change.

Map 18. Projected deforestation in Leakage Belt, in the without Project scenario, by which mitigation measures will be implemented to avoid deforestation within LB and prevent leaks outside this LB



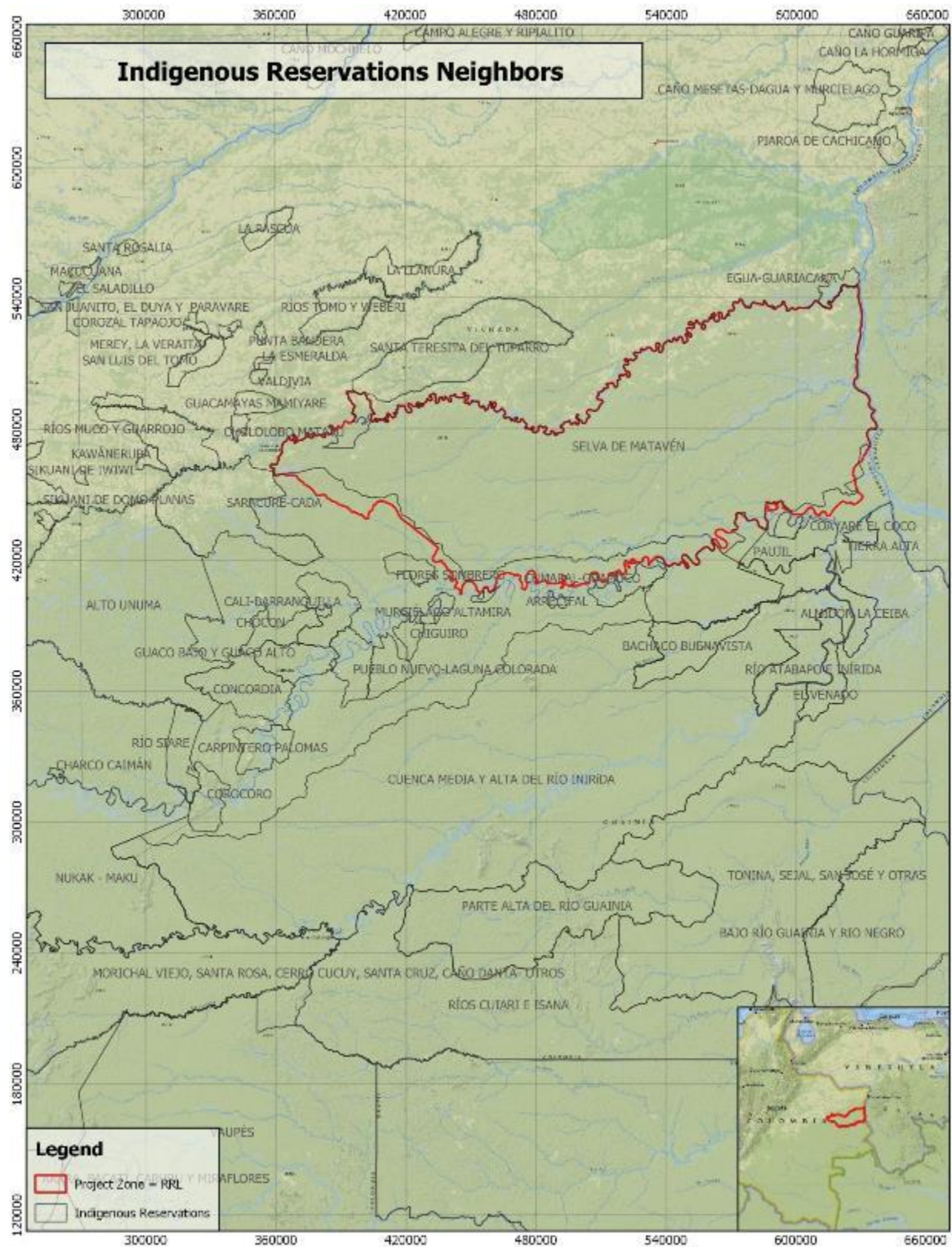
Source: REDD+ Project RIU-SM, GIS

Map 19. Locations where other stakeholders will be impacted (neighboring towns)



Source: REDD+ Project RIU-SM - GIS

Map 20. Indigenous Reservations outside the RIU-SM



Source: REDD+ Project RIU-SM - GIS

2.1.6 Stakeholder Identification (G1.5)

Stakeholder identification and analysis

The key/main local stakeholders are the 315 communities of the RIU-SM (according to the latest reports from the Captains who represent them, after the indigenous self-census carried out in 2018). As it is presented in the Section “2.1.4 Social Parameters” of this document, the human settlements (where the communities are situated) are located around the perimeter of the RIU-SM (as it is shown in the Map 10), constituting itself as a barrier around the heart of the Selva de Matavén, and they are the basis for implementation of Project Activities.

The Illustration 1 (Hierarchical Structure of ACATISEMA) of this document shows how the indigenous communities correspond to the base of the territorial and functional organizational structure of the indigenous reserve and the ACATISEMA association.

In the Annex 1 of this document, the entire list of all communities of the RIU-SM is presented by Zone and Sector.

These 315 communities comprise all the indigenous inhabitants of the RIU-SM, including the teachers of the schools and colleges within the indigenous reservation (who have been classified within the secondary stakeholders) and the community groups (women, men, youths, traditional indigenous authorities - shamans, doctors, healers, shepherds, Captains, Indigenous Guardians, and RIU-SM/ACATISEMA administrators-, and the same 6 ethnic groups).

The communities of RIU-SM are the main beneficiaries of REDD+ Project RIU-SM, identified according to indications in Social and Biodiversity Impact Assessment (SBIA) Manual for REDD+ projects (Richards & Panfil, 2011) – Part 1, considering that:

- It has been determined that the inhabitants of the RIU-SM coincide in that the territory constituted, unified, and extended in favor of the communities of 16 indigenous reservations (which had been previously recognized), according to Resolution 037 of July 22nd, 2003, issued by the INCORA (Annex 2.2.1 of validated PDD-VCS).
- Due to the above, they also share ownership of the territory and the uses of the land, their rights, natural resources and, in general, their wealth (from which they subsist and derive their well-being).
- The inhabitants of the RIU-SM belong to 6 indigenous ethnicities (*Cubeo*, *Curripaco*, *Piapoco*, *Piaroa*, *Puinave*, and *Sikuani*), being aboriginal peoples who have traditionally occupied this territory, and have all rights about it. In the Annex 1 of this document, the entire list of all communities of the RIU-SM also presents the ethnic group that predominates in each of them.
- In relation to the gender aspect, this has been a criterion by which two of the identified community groups were defined: women's and men's, taking into account the role that each one plays in the different phases of the productive sphere, in family responsibilities and, now, in the empowerment that is being promoted within the framework of the implementation of the REDD+ Project RIU-SM, in order to gradually achieve "gender equality" that is explained in the Section "Net Impacts on Women" of this document. Also, in the Section “2.1.4 Social Parameters” of this document, presents data about the characterization of the population according to its gender.
- The aspect of age has also been taken into account, in such a way that within the categorization of the community groups identified, the group of young people and traditional indigenous authorities (such as *caciques*, shamans, doctors/healers/knowers and pastors who are, generally, elderly) have been defined. On the one hand, it is the young people who are called to become the future leaders of the indigenous communities, and the traditional authorities are who contribute to the transmission of

ancestral knowledge and the training of these future leaders. Also, in the Section “2.1.4 Social Parameters” of this document, presents data about the characterization of the population according to its age.

- The role of organizational authority of the Captains, the Indigenous Guards and the officials who support the administrative aspect of the RIU-SM and ACATISEMA, whose work is relevant for the indigenous communities in their representation before the organs of the hierarchical structure (Illustration 1 of this document), the protection and management of the territory and the relations of the communities with natural resources of RIU-SM.

The same characteristics of the community groups identified make it possible to anticipate that the impacts/benefits on them are different, but the distribution remains as equitable as possible (for example, it is sought that the effects on women are the same for all women of all Zones, Sectors, communities, and ethnic groups).

These criteria could be analyzed using the information that is available about the indigenous reservation (previous studies provided by the leaders of the RIU-SM and obtained from other entities -described throughout the PDD-CCB- and formal documentation that ACATISEMA has) and in the different workshops and socialization, agreement and training meetings from the first approaches that were made to formulate the Project, events where members of all 6 RIU-SM ethnic groups participate.

Although the peoples of the 6 different indigenous ethnic groups of the RIU-SM present characteristics that allow defining their identity, such as their distribution in the territory, their history, their cosmovision, their families, their customs and culture, among other aspects, the fact of sharing the indigenous reservation has generated a certain degree of cohesion among them, for which they have achieved an organizational unit with common interests in governance, resource protection and sustainable development. This unit allows the impacts that are being achieved with the implementation of the Project to be distributed in the most equitable way possible, taking into account the needs, proposals and projects of the same indigenous communities, and the purpose of generating impacts on the climate components. and biodiversity.

It is important to mention that the 315 communities of the 6 indigenous ethnic groups are organized and represented by their authorities in the "*Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén – ACATISEMA*", which has the organizational structure (Illustration 1 of this document). This structure is formally and legally recognized by the Colombian State (Resolution 0177 of December, 2002 of *Ministerio del Interior* -Ministry of Interior-, Annex 2.1.1 of validated PDD-VCS) and has its own Statutes (Annex 2.1.2 of validated PDD-VCS) 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-). This structure, and its statutory regulations for its operation, have been respected and applied by every local community of the RIU-SM, since the constitution of the Association in 2002.

This is how the members of the Coordinator Committee of ACATISEMA, the *Cabildos* and the Captains of the RIU-SM determine, autonomously, the decisions regarding the distribution of benefits (reflected in the budget provisions and the execution of resources). Therefore, all ethnic groups have the authority to participate and the best opportunity for the impacts of the Project to reach the inhabitants equitably, taking into account that the population of each of the 6 ethnic groups is different, so the distribution is differentiated by this factor and by the way in which they themselves decide to invest their resources.

Thus, the identification of the main stakeholders has been direct and clear, and their analysis corresponds with many of the elements developed in Section 4 “Community” of this document.

Other stakeholders are identified according to relation with the territory of RIU-SM, use of natural resources and interactions with local communities: indigenous authorities, teachers, settlers, local, regional, and national authorities, other government and non-government institutions, and other indigenous communities.

Rights of the main stakeholders

Legally, only the communities (and its inhabitants), recognized by the own Indigenous Authorities of the *Selva de Matavén*, have rights over the *Resguardo Indígena Unificado – Selva de Matavén* and have the rights to use of environmental resources.

The RIU-SM is registered as property identified under Folio of Real Estate Registration No. 540-0005491 of August 4, 2008 (Annex 2.2.4 of validated PDD-VCS), issued by the Office of Public Records of *Puerto Carreño, Vichada*, based on the Resolution 037/2003 (Annex 2.2.1 of validated PDD-VCS), which was notarized by Deed No. 3798 of September 15, 2008, Notary 19 of *Bogotá D.C.* Circle (Annex 2.2.3 of validated PDD-VCS).

By Certification No. 263 of April 16, 2013 (Annex 2.2.6 of validated PDD-VCS), issued by the Ministry of Interior - prior consultation, it confirms that the *Resguardo Indígena Unificado – Selva de Matavén* (RIU-SM) belongs to the ethnic groups of *Guahibo [Sikuani]*, *Piaroa*, *Puinave*, *Curripaco*, *Cubeo* and *Piapoco*, inhabiting the 16 sectors, as established in Resolution 037/2003. The Reservation is collective, inalienable, and indefeasible property (Articles 63 and 329 of the Constitution of Colombia). The administration and management of these lands are subjected to uses and customs of the beneficiaries and Decree 1386 of 1994, Article 10 and Decree 2164 of 1995, Article 22.

In Annex 2 of validated PDD-VCS (ACATISEMA and RIU-SM information) this aspect can be detailed.

National laws determine the general rights of the indigenous people in Colombia.

Next Table 9 present the Stakeholders’ interests, needs, and relevance to the Project.

Table 9. Stakeholders: interests, needs, and relevance to the Project

Stakeholders	Interests / needs	Relevance to the Project
Key/Main stakeholders		
315 Communities of indigenous peoples of the RIU-SM (Annex 1 of this document contains the complete list of settlements according to self-census 2018).	• With unsatisfied basic needs. • Require basic resources for livelihoods threatened. • With a desire to implement long-term projects to ensure their development.	• With the increased interest in solving their objective to protect and conserve the natural resources of the RIU-SM, to their subsistence, which is consistent with the objectives of the Project.
Other stakeholders		
Teachers of primary and secondary	• With training needs in education about the sustainable management of natural	• Its important role in the formation of future citizens of the Indigenous

Stakeholders	Interests / needs	Relevance to the Project
education in Indigenous Reservation	resources. • In need of receive support (pedagogical media and strategies) to implement pedagogical interactions for the extension and socialization about climate change, the REDD+ Project RIU-SM, rights and duties of indigenous peoples, conservation of forests and maintaining biodiversity, for the management of sustainability in the territory and to guarantee human well-being.	Reservation, will enhance the results of the Project. • They will be trained to improve the use and management of natural resources.
Settlers	• They are persons that stay integrated within the indigenous families of RIU-SM. • As indigenous, many of them with unsatisfied basic needs.	• As part of indigenous communities, they have the same needs and require to participate in some Project activities to improve their practices and obtain benefits.
Government Institutions	• <i>Ministerio de Ambiente y Desarrollo Sostenible</i> - MADS (Ministry of Environment and Sustainable Development): - It defines the National Environmental policy and promotes the recovery, conservation, protection, planning, management, use and exploitation of natural resources. - With interest in contributing, in a sustainable manner, to the economic and social development of the country.	• The MADS is the entity that determines, at the national level, the policies that regulate the development of REDD+ projects.
	• <i>Dirección de Cambio Climático y Gestión del Riesgo</i> – DCCGR (Climate Change and Risk Management Directorate) attached to MADS: - It develops the technical and operational bases for climate change management, in partnership with local, national and international public and private actors. - It provides technical elements in the elaboration of public policies, plans, projects and programs on climate change.	• The DCCGR defines elements on climate change mitigation initiatives, which are determinant for the technical implementation of the Project.

Stakeholders	Interests / needs	Relevance to the Project
	- It establishes guidelines to prevent ecological risk; and guides the evaluation of biodiversity vulnerability impacts and ecosystem services due to the effects of climate change.	
	• <i>Instituto de Hidrología, Meteorología y Estudios Ambientales – IDEAM</i> (Institute of Hydrology, Meteorology and Environmental Studies): - It provides technical and scientific support to SINA, generating information on the state and dynamics of natural resources and the environment, to facilitate the definition and adjustment of environmental policies and decision-making by the public and private sectors and citizens in general. - With interest in generating and providing hydrological, meteorological and environmental information for the definition of public policies and decision making related to sustainable development and prevention of climate change effects.	• IDEAM provides technical and scientific information for the determination of climatic and forestry aspects, which are applied at the geographic level of the Project.
	• <i>Dirección de Asuntos Indígenas, ROM y Minorías</i> (Directorate of Indigenous Issues, ROM and Minorities, attached to the Ministry of the Interior): - It promotes the recognition of ethnic diversity, the exercise of their rights and guarantees the effective enjoyment of the Human Rights of indigenous peoples, among others. - It formulates, designs and implements public policies that guarantee respect for the rights of ethnic populations.	• This entity regulates the dynamics of the indigenous peoples in the country (of which the Project works with 6 ethnic groups), determines the formalities on their territories and monitors the respect of their rights.
	• <i>Departamento Administrativo para la Prosperidad Social - DPS</i> (Administrative Department for Social Prosperity): - It designs, coordinates and implements public policies for	• It offers social welfare programs (such as <i>Familias en Acción</i> and <i>Jóvenes en Acción</i>), to which the indigenous communities of the RIU-SM can apply to obtain support for families, youth and the elderly, and in

Stakeholders	Interests / needs	Relevance to the Project
	overcoming poverty and social equity. - With interest in eradicating extreme poverty and multidimensional poverty in the national territory.	areas such as food security, entrepreneurship and housing improvement.
	• <i>Corporación Autónoma Regional de la Orinoquía – Corporinoquía</i> (Regional Autonomous Corporation of the Orinoquia): - Environmental authority that plans and implements the environmental policies of the departments and municipalities under its jurisdiction, including the department of Vichada and the municipality of Cumaribo. - It administers natural resources and manages sustainable development, guaranteeing the supply of environmental goods and services through prevention, protection and conservation actions.	• It is the entity that establishes regulations, regional strategies and control measures for the protection of natural resources, and with which agreements can be established to jointly fulfill the environmental mission of the indigenous communities of the RIU-SM.
	• <i>Corporación para el Desarrollo Sostenible del Norte y el Oriente Amazónico</i> (Corporation for the Sustainable Development of the Northern and Eastern Amazon) - CDA: - It manages and executes, in a participatory manner, policies, plans, programs and strategic projects of environmental and economic development, to contribute to the knowledge, conservation, recovery, restoration and protection of the natural resources of the Northern and Eastern Colombian Amazon. - With interest in being a leader in sustainable management and consolidate a viable, prosperous, inclusive, equitable, adapted, safe and sustainable regional environmental model.	• This is the corporation that, like Corporinoquía, establishes regulations, regional strategies and control measures for the protection of natural resources, but in areas adjacent to the RIU-SM, with which agreements can also be established to reduce external threats that may affect the territory of the RIU-SM.
	• Government of Vichada: - It plans and promotes the integral development of Vichada, ensuring	• It is the governmental authority at the departmental level with which relationships can be established to

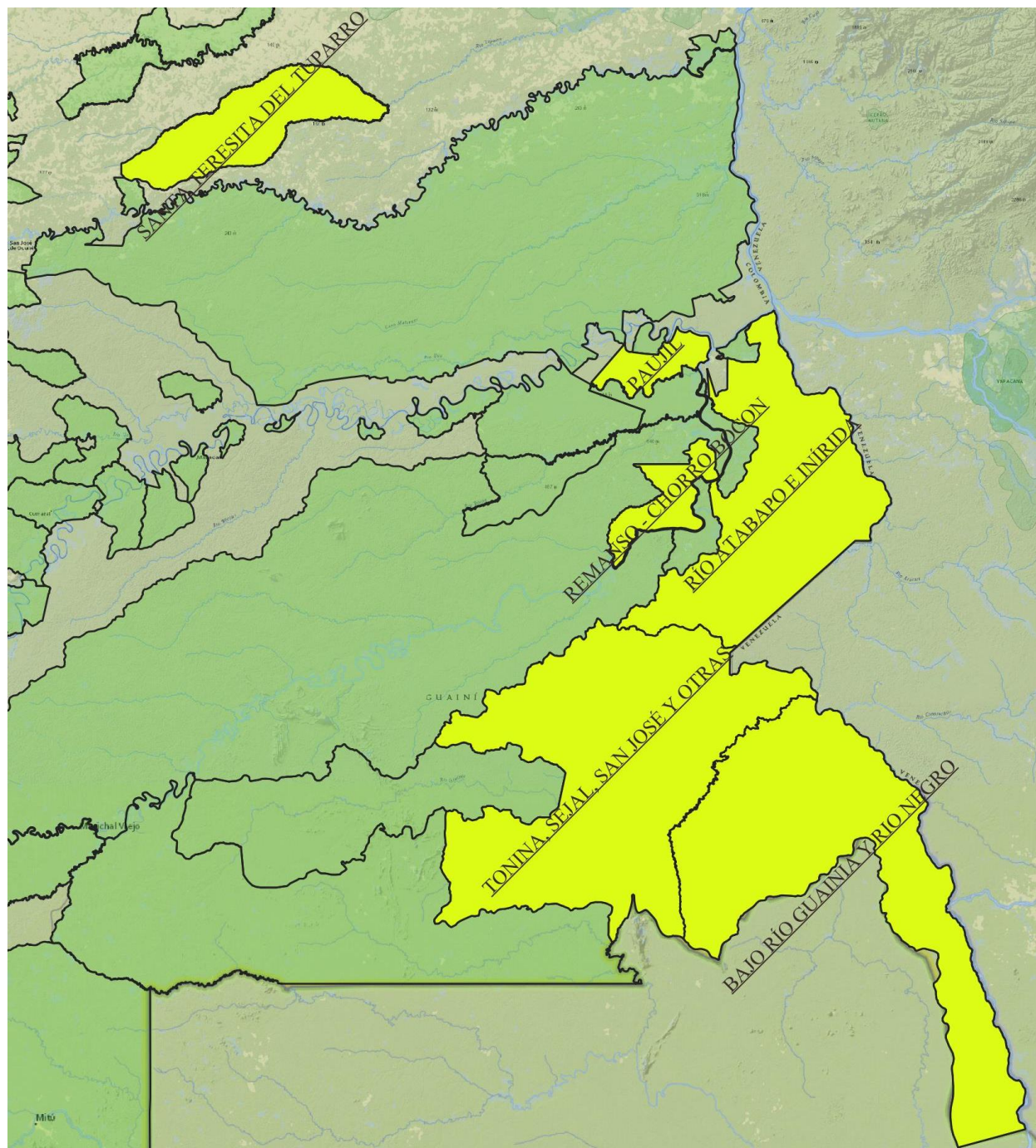
Stakeholders	Interests / needs	Relevance to the Project
	quality of life, social and economic well-being, integration of its municipalities and sustainable environmental, social and cultural use. - With interest in contributing to improve the quality of life, the conditions to generate development and sustainable economic growth and consolidate Vichada as a Department of Peace, competitive, inclusive and respectful of ancestral traditions and the environment.	facilitate the development of actions that bring well-being to the territory of the RIU-SM and its inhabitants, considering that the <i>Selva de Matavén</i> is an important asset for the department of Vichada.
	• Comptroller of Vichada: - It applies fiscal control to the subjects of control and individuals who manage public funds or assets, strengthening the mechanisms of citizen participation to take care of state resources for the benefit of the community of Vichada. - With interest in strengthening citizen participation and the proper use and destination of resources.	• It contributes to ensure that the programs and projects implemented at the departmental level are executed for the benefit, among others, of the indigenous communities of the RIU-SM.
	• Mayor of Cumaribo: - It manages, in a participatory manner, investments in an efficient, effective and sustainable way, for the development of the municipality. - With interest in modernizing the management, provision and evaluation of social services, infrastructure and public works, to give the municipality possibilities to improve in all investment sectors.	• It is the governmental authority at the local level with which relationships can be established to facilitate the development of actions that bring well-being to the territory of the RIU-SM and its inhabitants, considering that the <i>Resguardo Indígena Unificado - Selva Matavén</i> represents 28.5% of the area of the municipality of Cumaribo.
	• Office of the Ombudsman of Cumaribo: - It promotes the effectiveness of human rights and international humanitarian law of the inhabitants of Cumaribo, within the framework of the democratic, participatory and pluralistic social rule of law. - With interest in consolidating human rights through its dissemination,	• It contributes to ensure that the rights of the indigenous peoples of the RIU-SM, among others, are not violated in the development of programs and projects.

Stakeholders	Interests / needs	Relevance to the Project
	defense, promotion and modernization, and respond to demographic changes and rural and urban development; with technological and institutional modernization.	
	• SENA: - It trains Colombian workers in productive activities, in a professional and comprehensive manner, for the technological, social and economic development of people and the country. - With interest in contributing to employability, entrepreneurship and equity, meeting with relevance and quality the productive and social needs of the country.	• SENA contributes to the strengthening of the productive capacities of the indigenous peoples of the RIU-SM, through the training programs that it can provide to those aspiring to technical and technological education in various areas.
Non-governmental institutions	• Fundación NATURA: Civil organization whose mission is the conservation, use and management of biodiversity to generate social, economic and environmental benefits in the context of sustainable human development.	• It contributes with actions to achieve the conservation and management of the biodiversity of the <i>Selva de Matavén</i>.
	• Fondo ACCIÓN: Colombian non-profit organization with 20 years of experience in sustainable investments in environment and children. With an interest in promoting the participation of civil society and the private sector in the implementation of the country's public policies for environmental conservation, sustainable development, and the protection and development of children	• It carries out actions for the environmental conservation and sustainable development of the Matavén Rainforest; and for the protection and development of the children of the RIU-SM.
	• RAMSAR Convention on Wetlands: Promotes national actions and international cooperation for the conservation and wise use of wetlands and their resources.	• It develops actions, among other sites, in the <i>Estrella Fluvial de Inírida</i> (EFI) which covers areas of confluence of the Inírida-Guaviare, Guaviare-Atabapo and Guaviare-Ventuari rivers and includes the Laguna Negra community of the Laguna Negra and Cacao Sector of the RIU-SM.
	• Instituto Amazónico de Investigaciones	• It disseminates relevant technical

Stakeholders	Interests / needs	Relevance to the Project
	<i>Científicas</i> - SINCHI: Investigates the biological, social and ecological reality of the Amazon region, satisfying the needs and expectations of the communities of the region in a timely manner.	and scientific information about its area of jurisdiction, which includes the RIU-SM territory, being useful for the operation of the REDD+ Project RIU-SM.
	• WWF: Is the leading global nature conservation organization that creates conservation solutions, works with local communities, and ensures the delivery of innovative solutions to meet the needs of people and nature.	• It develops technical and scientific studies in the Orinoco River basin, which produce information on the richness of the Matavén Rainforest and the threats to its conservation, useful for the development of the REDD+ Project RIU-SM, and executes actions for the social benefit of the indigenous communities.
	• Omacha Foundation: Creates strategies to ensure the conservation and sustainable use of aquatic and terrestrial ecosystems and species.	• It conducts research in rivers such as the Orinoco, implementing programs for the protection of river turtles and pink dolphins, among other species (insigne species of the <i>Selva de Matavén</i>).
	• Alexander von Humboldt Biological Resources Research Institute: Conducts scientific research on biodiversity, including hydrobiological and genetic resources, and coordinates the National Biodiversity Information System (SIB Colombia) and the creation of the national biodiversity inventory.	• It generates important information on the biodiversity resources, among other places, of the Matavén Forest, which is essential for the identification and protection of the richness of the RIU-SM territory within the framework of Project implementation.
Other indigenous communities neighboring RIU-SM	• Indigenous reservations neighboring RIU-SM: - Santa Teresita del Tuparro - Paujil - Bajo Río Guainía y Río Negro - Medio Río Guainía (Tonina, Sejal, San José y otros) - Chorro Bocón have similar interests and needs as RIU-SM communities. (see Map 21)	• These indigenous reservations wish to implement REDD+ initiatives, taking as an example the working model developed in the REDD+ Project RIU-SM.

Stakeholders	Interests / needs	Relevance to the Project
Community groups		
Women	• With an interest in participating much more in the spaces traditionally managed by men and where the actions that may affect them and their families are determined. • In need of managing their own project initiatives that generate occupation and economic resources.	• This group is constituted as an important human capital, being, in most cases, the unifying nucleus of the families of the Indigenous Reservation, which is gaining more presence in the general aspects of the management of the territory of the RIU-SM, and, of course, the Project.
Men	• With interest to develop activities that allow them to improve the quality of life in their families and communities. • In need of support, in different areas (education, occupation, basic services), for the development of the RIU-SM.	• In first instance, they have the initiative to develop this type of Project.
Youths	• With interest and need to educational programs (basic and superior) to improve their capacities and be the leaders in the management of the RIU-SM territory.	• Given the educational training they receive, they are a group with an important role for the technical management of the different aspects of the Project.
Traditional indigenous authorities, shamans, doctors, healers and shepherds, Captains, Indigenous Guardians, and RIU-SM/ACATISEMA administrators	• As ACATISEMA, they are in need of organizational and governance strengthening. • With an interest in improving the protection and administration of the territory and natural resources. • With an interest in conserving the traditions and practices of indigenous peoples. • In need of providing more and better food (protein) for their families.	• They represent all the members of RIU-SM communities and, therefore, ensure the benefit of the inhabitants of the Indigenous Reservation and protection of natural resources by the implementation of the Project. • They are guarantors of traditional indigenous culture and, in many cases, in charge of imparting ethnic education to future generations of the RIU-SM, which is consistent with the purposes of the REDD+ Project RIU-SM in terms of the protection of cultural values.
6 ethnicities	• With interest to participate equitably in decision-making spaces. • In need of resources to design their life plans and implement measures to preserve their culture.	• They are an important human resource that must be conserved to avoid the extinction of the most vulnerable ethnic groups

Map 21, Indigenous reservations neighboring *Selva de Matavén* who have established contact with the indigenous authorities of the RIU-SM



2.1.7 Stakeholder Descriptions (G1.6, G1.13)

The following Table 10 presents the description of how each stakeholder was identified (including the main: indigenous communities, other stakeholders, and the community groups), as well as their relevance for the Project Activities.

Table 10. Stakeholders in the REDD+ Project RIU-SM: description, identification and relevance to Project Activities

Stakeholders	Description / How it was identified	Relevance to Project Activities
Main stakeholders		
Communities of indigenous peoples of the RIU-SM	• They live in the territory of the RIU-SM. • They are the main beneficiaries. • They have rights to the resources of the RIU-SM.	• They rooted in the collective territory. • They have the ancestral knowledge of RIU-SM. • They recognize the impact that is being caused to its territory. • They, and their leaders, participate in the development of the most Project Activities: surveillance and control of territory, communication / transportation, governance, FAPUS, educational programs, and productive projects. • They are subject to conditions to develop productive alternatives.
Other stakeholders		
Teachers of primary and secondary education in Indigenous Reservation	• They are responsible for providing education to the school population in the communities of the RIU-SM.	• They are molding the future leaders of integrated management of the territory, which includes the Project's objective: forest protection in the RIU-SM. • Involved in the development of Activity A2.2.
Settlers	• They are population (non-indigenous) within and in areas adjacent to the RIU-SM. • They are in relationship with the RIU-SM communities. • They derive their income from agriculture, livestock, forest clearing and artisanal mining. • With a few opportunities to participate in activities that give them sustainable benefits	• Their participation will be done by proper coordination, consultation and strategic contacts with indigenous communities to improve relations, make agreements for the responsible use of the territory, conservation and protection of biodiversity and ecological units of the landscape.
Government Institutions	• They are entities that at the national, jurisdictional, and regional level lead the adequate management of the environment and renewable natural	• Some regulate legal aspects of REDD+ initiatives and control the environmental aspects. • They can generate participatory spaces

Stakeholders	Description / How it was identified	Relevance to Project Activities
	resources, and promote actions to regulate the planning and defining national policy. Public entities that advise the national level, prepare and propose the formulation of public policy in favor of indigenous peoples within the framework of the defense, support, reinforcement and consolidation of ethnic and cultural rights.	and scenarios to make agreements to help improve the management and protection of the territory of RIU-SM. They can provide institutional support with the civil and armed authorities, in activities to protect resources and indigenous communities.
Non-governmental institutions	They are entities linked to the area of influence of REDD+ Project RIU-SM or that have supported the implementation of studies and rural development activities.	- They have valuable experience working with special communities, as indigenous. - They can generate participatory spaces and scenarios to make agreements to contribute to improving knowledge and practices for management in the territory and the collective conservation of biodiversity.
Other indigenous communities neighboring RIU-SM	They are neighboring communities and very close to the RIU-SM, with similar characteristics.	They would seek to articulate participatory spaces and scenarios by convening other indigenous communities, to help improve joint management and conservation of natural resources, in order to multiply social and ecological benefits in the region.
Community groups		
Women	- They constitute almost half of the population of the RIU-SM. - Traditionally they were relegated by the male figure, but today they are playing a more representative role for the social organization of the RIU-SM.	- They are decisive in the implementation of productive projects that are in charge of them. - They are very committed to the development of their families through the execution of the Project Activities.
Men	They were the ones who welcomed the needs, priorities and proposals of the indigenous communities and turned them into a proposal to develop the REDD+ Project RIU-SM.	They are in charge of most of the actions that are developed within the framework of the Project, sharing responsibilities with women.
Youths	They are the population with the greatest potential to manage the Project in the future. They participate	They participate in the implementation of the Project Activities with the aim of being in charge of it in the future.

Stakeholders	Description / How it was identified	Relevance to Project Activities
	in meetings and training workshops and have the greatest capacity to lead the RIU-SM.	
Indigenous authorities, shamans, traditional doctors, healers and shepherds	• They are the representatives of the inhabitants of the RIU-SM at different levels: Captains at the community level, <i>Cabildos</i> at the Sector level, the Coordinator Committee and the Board of Directors at the ACATISEMA Association level. • They were the first to contact the MEDIAMOS F&M S.A.S. company to design a project to protect the forests of the Selva de Matavén. • They are very important for their traditional role in indigenous culture, being referents of authority for their knowledge and life experiences.	• They participate in the implementation of the Project Activities and in their proper execution, ensuring compliance with the actions designed to meet the proposals and needs of the indigenous communities. • They participate and benefit from the Project Activities in the areas that correspond to each group, such as holding cultural events, improving the conditions to provide health care and actions to guarantee food guarantee.
6 ethnicities	• The territory of the RIU-SM belongs, legally, to the peoples of these 6 ethnic groups.	• The social organization in ethnic groups contributes to an equitable distribution of resources and benefits derived from the REDD+ Project RIU-SM. • They participate, as groups, in decision-making for the well-being of their groups and the Indigenous Reservation in general. • Their distribution contributes to determining the focal points for the implementation of the Project Activities.

2.1.8 Project Activities and Theory of Change (G1.8)

Description of Project Activity

The proposed Sustainable Management Plan for Land and Forest and Project Activities were derived from the following analysis of the problem: The "Diagnosis of the problem" and the diagram "Problem Tree".

Diagnosis of the problem

The diagnosis of forestry in Colombia concludes that is one of the sectors with the greatest potential for economic, social and environmental growth, given the advantage of the country for its tropical location with natural forest coverage of the highest biodiversity (55%) of its territory. The country contains 10% of biodiversity in less than 0.8% of the land surface of the planet, a figure that places the country as the second most biodiverse in the world. This comparative advantage provides opportunities to develop production projects, conservation and generation of ecosystem services, which also contributes to the conservation of biodiversity, improves the living conditions of indigenous, peasant and black communities. However, this

advantage has not been exploited properly. By contrast, in regions such as the Colombian Orinoco, where the RIU-SM are, activities have generated progressive alterations of the natural environment as:

- The destruction and deterioration of the primary forest and land use change resulting from the improper exploitation and undirected colonization and its consequences in the increase of the emissions of GHG.
- The limited availability of suitable land for agriculture, with a superficial organic layer, in most cases non-existent.
- The deterioration of water sources.
- The low level of transformation of forest products that generate low purchase costs of intermediaries and force to increase the number of felled trees to keep the logger incomes.
- The modification of the landscape and vegetation with the reduction of biodiversity.

Also, many areas with forestry potential are isolated, have a weak institutional presence, a low management capacity, high levels of corruption and lack of basic infrastructure and services, creating an overall picture of poverty and marginalization, aggravated by the presence of illicit crops and public order problems.

Given this type of situation has the challenge of, on the one hand, forest policies need to be addressed within a framework of regional development strategies, as well as boosting incentives at the local level, supporting the integration of remote regions that have remained aloof from the benefits of economic and social progress experienced in other areas of the country and, moreover, is required to promote and to support projects like those mentioned above, in which a direct participation of the communities involved is guaranteed, particularly in the establishment of plans for sustainable management of forests and lands, adopting a holistic approach, understanding that it is the combination of the application of different measures aimed at the causes of these problems, allowing the conservation of forest habitats and their benefits in the sustainability of the territory, local communities, climate and biodiversity, and, in particular, by avoiding deforestation and degradation forest and the consequent increase in GHG emissions.

(validated PDD-VCS, Section “1.10.10 Diagnosis of the problem”, page 111)

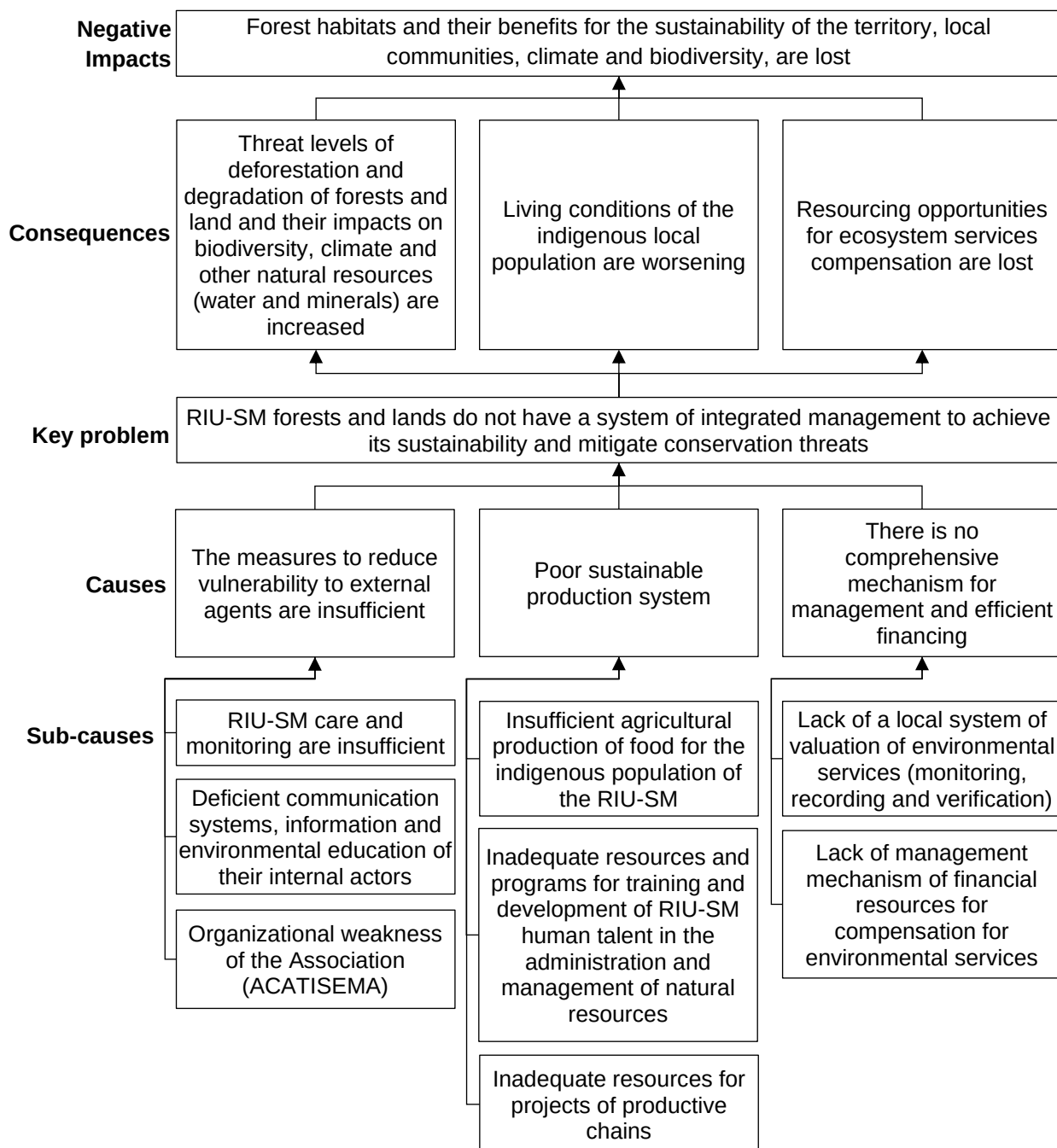
The specificity of the problem

The situation described above is applicable to forests and land in the territory of the referenced area and the RIU-SM, identifying as a key problem the lack of an integrated management system to achieve its sustainability and to mitigate conservation threats, highly related with the factors that determine the fragility of the social and cultural conditions being experienced by communities, in terms of the loss of values and traditions linked to ethnic identity, situation that limits the ability of participation, management and control of the territory by the communities, affecting the conditions of governance and security in the area.

Consult more details in the validated PDD-VCS, Section “1.10.10 Diagnosis of the problem / The specificity of the problem”, page 111.

The situation described in the validated PDD-VCS can be summarized in a specific scheme of problem tree for RIU-SM. This “Problem Tree” diagram, for the Project, is as follows:

Illustration 12. Problem Tree



Source: REDD+ Project RIU-SM (validated PDD-VCS, Illustration 28, page 116)

Bottlenecks in the forestry sector that Project helps to solve (regional and national)

Bottlenecks, in regional and national levels, are related to:

- The ability to implement projects that protect, preserve and recover the forests and land and others associated to forest carbon through the adoption of Sustainable Management Plan for Land and Forest with new approaches, processes and practices, in order to increase the value added of eco-systemic

services and forest products.

- The valuation of forest ecosystem services and products, focused on the integration of economic benefits and costs in the financial analysis of forest management and the inclusion of more products and services from the forest.
- The availability and improvement of basic and thematic information, particularly relating to national and international markets for environmental services, which facilitates investment in forestry sector.

(validated PDD-VCS, Section “Bottlenecks in the forestry sector that Project helps to solve (regional and national)”, page 49)

The solution

In solving the key problem, the topics to address with this project, respond to the needs and interests of the indigenous communities of *Selva de Matavén*, while being part of the priority identified by the Government for this area. It aims to manage the lands and forests of this region, establishing measures to reduce vulnerability to external agents, to set self-sustaining production systems and to manage a funding mechanism.

This alternative solution is justified because it requires an integration of actors, inputs and resources. It is a forest innovation to adapt a Sustainable Management Plan for Land and Forest with new approaches, processes and practices to achieve adequate economic, social and environmental sustainability.

Also, it is important to note that is necessary the positioning of ecosystem services as an alternative source of services and management of natural resources that enable communities to find complementary and viable alternatives to improve their quality of life.

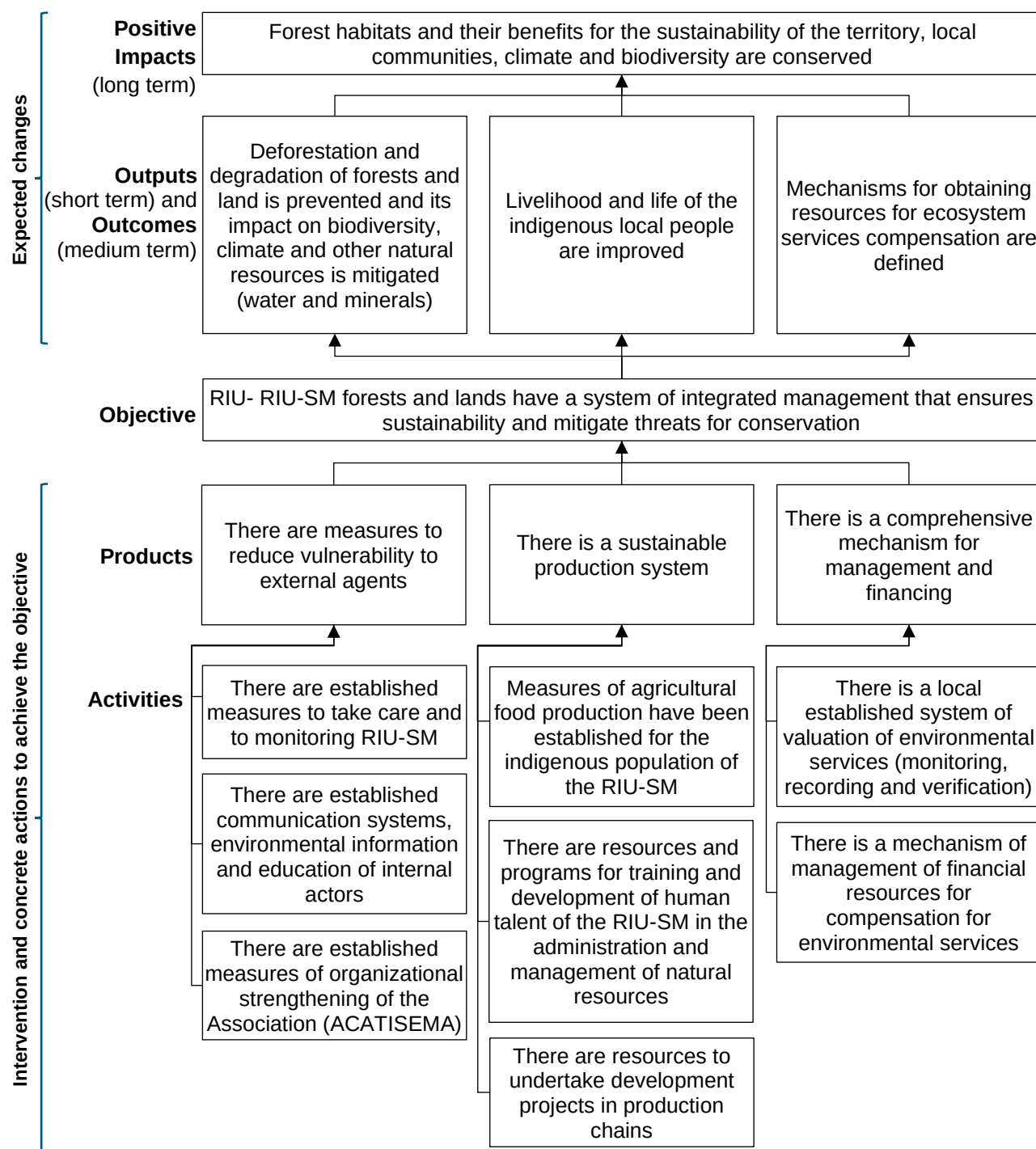
It is essential to overcome the implementation of partial actions (scattered in time, resources and space) unable to achieve sufficient impacts to mitigate the consequences.

The statement of *Resguardo Indígena Unificado – Selva de Matavén* (RIU-SM) constitutes not only a response to the right of indigenous groups to own their traditional lands, right stated in the Constitution, but also with the aim of ensuring the protection and timely conservation of this territory of the greater biodiversity in the region. The Reservation can and has contributed to the protection of biodiversity and its resources, for what is needed those indigenous communities and authorities have the technical and legal instruments and necessary funding mechanisms to achieve it.

The central strategy that integrates the activities carried out in the Project is the Sustainable Management Plan for Land and Forests, as described in Annex 4 of validated PDD-VCS).

Based on the Problem Tree presented above, the following Objective’s Tree was defined:

Illustration 13. Objective tree - situation with project, where the changes are expected



Source: Based on REDD+ Project RIU-SM (validated PDD-VCS, Section “1.8 Description of the Project activity”, Illustration 9, page 44)

Planned Actions

The measures to be implemented by the REDD+ Project RIU-SM, to obtain the benefits in the components of Climate, Community, and Biodiversity, are the establishment of Sustainable Management Plan for Land and Forest of RIU-SM and the implementation of Project Activities.

With the implementation of the Sustainable Management Plan for Land and Forest of RIU-SM and the Project Activities seeks to reduce pressure on the flora and fauna, which also allows an increase in the biomass contained in forests, establishing corridors for the movement of biodiversity and favoring the exchange of species between the biomes that make up the territory (exchange of germplasm).

Sustainable Management Plan for Land and Forest, and Strategies

The Sustainable Management Plan for Land and Forest of RIU-SM includes the implementation of seven strategies that seek the protection and conservation of the flora, fauna, waters and soils of the territory, and to provide benefits for the local communities (as it is explained in Annex 4 of validated PDD-VCS). The strategies and their purposes are:

- **Strategic 1:** Stop deforestation in primary forests in the Project Area (PA).

It is expected to protect the 1,150,212 ha. of forest that were defined within the Project Area (PA), within the Indigenous Reservation, during the Project life cycle (at least the 90% in the first two years, the 92% in the third and fourth years and the 95% in the subsequent years), benefiting communities of non-timber products and environmental services derived from this forested area.

The protection of these forests is the primary basis for the GHG emissions reductions. It is expected to reduce the emission of 108,670,562 tCO₂-e in the Project Area during the Project's life cycle and 8,361,293 tCO₂-e in 2018 & 2019.

- **Strategic 2:** Gradually stop deforestation of primary and secondary forests in the areas outside the Project Area (PA).

When necessary, communities will use the lower impact of these forest areas within the indigenous reservation of non-timber products and environmental services derived from this forested area will also benefit.

Primary forests of this area can be a source of wood suitable for building homes, canoes and boats that are needed for the life of the communities and have these wood products as inputs dimensions.

It is expected to protect the 486,211 ha. of forest in the Leakage Belt (LB) and 320,000 ha. of forest outside PA and LB.

- **Strategic 3:** Managing secondary forests in a way that can be transformed into primary forests, enhancing carbon stocks.

These forests can be a source of small timber for building houses, fences, barns and other facilities that are required by the communities and having as inputs wood products.

It is expected to keep most of the 11,000 ha. of secondary forests, which would increase the biomass stocks and the productivity of the RIU-SM biomes.

- **Strategic 4:** Implement actions for food guarantee of communities in heterogeneous agricultural areas (HAA) y grasslands (known in the RIU-SM as "conucos") in areas of savannah and in some areas of natural regeneration.

These actions can be combined with those of Strategic 5, 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.

It is expected that the RIU-SM communities manage to produce enough food in quantity and quality (at least 4,000 tons of food annually) to reduce, gradually, their dependence on forest products and fauna resources, contributing to its conservation, although the consumption of wild fruits would be maintained.

- **Strategic 5:** Implement actions to develop projects in production chains to generate income for communities.

It is expected to develop the pilot production projects that have been prioritized by the interested parties:

- Agro-forest project with cocoa, corn, plantain and abarco (Colombian mahogany).
- Agro-silvo-pastoral project.
- Community nature tourism.
- Ornamental fish production project (self-sufficient integral community farms).
- Cassava cultivation project to obtain *mañoco*.
- *Panelera* cane production project.
- Minor species (hens) production project.
- Crop fish in floating cages (fish farming for food safety).
- Training and accompaniment in handcraft processes.
- Cooperative.

It is expected that 200 families develop these productive projects and that those consisting of crops contribute to increasing the content of biomass (although it is not the purpose of the REDD+ Project RIU-SM to measure increases in biomass content in land coverage other than forests).

Additionally, it is expected that the communities can begin to establish an economic system among the indigenous peoples and even with the cities (*Cumaribo* and *Inírida*).

- **Strategic 6:** Implement sustainable fish stocks in wetlands to contribute to food guarantee of communities.

The actions about surveillance and control of territory include the care of water sources and aquatic fauna, from which part of the diet is derived.

In addition, the ornamental fish production project includes training about the proper management of the populations of this resource, in such a way that it is not depleted.

The purpose is that fish populations do not become extinct, and that indigenous communities can make sustainable use of this resource.

- **Strategic 7:** Mitigate the pressures and effects related to the use and occupation of the lands and forests of the RIU-SM, which impact both the ecological integrity and sustainability of the HCVs, as well as the provision of ecosystem services from the RIU-SM lands and forests (This seventh strategic element has been established as a new complement to the Sustainable Management Plan for Land and Forest in the RIU-SM).

It is expected to maintain and improve fauna and flora resources, which is presented in the Section

“5.2.1 Expected Biodiversity Changes” of this document.

The following Table 11 shows the specific actions to achieve the expected management objective in relation to Strategic 7.

Table 11. List of actions that aim to conservation and taken into account for the formulation of monitoring

Management objective (target)	Maintain consultation processes with the indigenous communities of the RIU-SM that make traditional and permanent use of the resources of the Matavén Forest, for the signing and implementation of use agreements, which contribute to the reduction of pressures on the high values of conservation prioritized from the REDD+ Project RIU-SM.			
Action	Tasks (action steps)	Products	Approach type of strategy	
Five (5) use and management agreements established and implemented 1. Agreement for the conservation and sustainable management of land and forests. 2. Conservation agreement for the artisanal fishing resource. 3. Conservation agreement for triggering and/or endemic birds. 4. Trigger Terrestrial Mammal Conservation Agreement. 5. Trigger Aquatic Mammal Conservation Agreement.	a) Characterization and participatory diagnosis of the uses and actors involved. b) Generation of information spaces, construction, agreement and socialization of the agreements. c) Protocolization of the agreements. d) Follow-up of agreements.	a) Characterization and diagnosis document. b) Report on socialization activities with a visual record of meeting spaces and meeting attendance lists. c) Signed agreements. d) Agreement follow-up reports.	Behavior change: - Unplanned burning and felling in tropical forest. - Unfriendly agriculture in tropical forest. - Livestock activity in tropical forest. - Irresponsible fishing in pipes and rivers.	

Annex 2 of this document present the detailed strategic element 7 of Sustainable Management Plan for Land and Forest.

Objectives, Products and Activities according the Matrix of Logic Structure (MLS)

On the other hand, the Matrix of Logic Structure (MLS) of REDD+ Project RIU-SM is presented in validated PDD-VCS, Section “1.8 Description of the Project activity”, page 45, according with the Sustainable Management Plan for Land and Forest, and containing Objectives, Products and Activities, with their own indicators, means of verification and assumptions, as follows.

Objectives

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.

For **Impact indicators, Means of Verification, and Assumptions**, consult validated PDD-VCS, Section “1.8 Description of the Project activity / Objectives”, page 49.

Description of Project interventions - Products and Activities

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.*

In general, it is expected to protect and manage 1,470,000 ha. of forest in the indigenous reservation, protecting them 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 includes the implementation of the following actions:

- Development of surveillance and control of the forests and lands of the RIU-SM to avoid deforestation. This consists in the implementation of 37 surveillance and control routes in the RIU-SM territory, executed by 315 Indigenous Guardians, who are trained and equipped with the necessary elements to fulfill their tasks (compensations, endowment, uniforms, tools, means of transport -boats, engines, fuel-, control stations, information hoardings).
- Participation of Captains, indigenous leaders and community members in the task of guard the territory and its natural resources. They report to indigenous authorities about events that can affect the RIU-SM and, if it is necessary, the civil authorities are informed to obtain support to attend the incidents.
- Review of early warnings issued by the IDEAM on areas susceptible to forest fires within RIU-SM, to know and prevent the possible events that affect the territory, especially in the natural savannahs. These reports are consulted at least four times by month.

- *Activity A1.2: Develop and implement a system of communication and information at the RIU-SM.*

It is expected that RIU-SM communities will be interconnected, gradually, by means of communication and transportation and will keep informed about the progress in the different actions that are implemented, including what is related to early warnings of events that may produce adverse effects on natural resources, so that actions can be taken to prevent damage. This activity includes the implementation of the following actions:

- Compilation of the requirements of the communities in terms of communication and transportation needs.
- Systematization and divulgation of results about the implementation process of the REDD+ Project RIU-SM.
- Execution of the measures to implement the communication, information, and transport systems:
 - Management to develop at least 1 socialization meeting by Sector annually.
 - Logistics (transport, food, places) to develop meetings of indigenous leaders of RIU-SM (*Cabildos*, members of Coordinator Committee, Captains, etc.).
 - A complete tour of leaders through territory of RIU-SM (generally the Project Co-Director and assistant, Zonal Coordinators, supervisors, and/or the Fiscal Observer make tours informing and verifying

compliance of tasks).

- Construction of offices in the main cities (*Cumaribo* and *Inírida*).
- Construction of community headquarters in the Sectors.
- Provision of office supplies.
- Construction of bridges.
- Improvement of community roads.
- Provision of fluvial transportation services to leaders, students and community members.

● *Activity A1.3: Develop and implement a governance for development and sustainability system of ACATISEMA Association.*

Strengthen the governance system for the development and sustainability of RIU-SM and ACATISEMA. It is expected that the Association will improve its administration skills, (through training in organization, rights and duties, in constantly developing workshops; application of specific environmental regulations; community participation; development of better infrastructure and incorporation of professionals specialized in different areas) and that it will have the capacity to execute the budget corresponding to the actions carried out in the territory of the RIU-SM, including the several actions to manage and protect the natural resources in the territory of the RIU-SM. This activity includes the implementation of the following actions:

- Logistics to develop meetings of indigenous leaders of RIU-SM.
- Management of the normative and regulatory aspects of ACATISEMA.
- Support to formulation and review of 6 Life Plans of ethnic groups in RIU-SM.
- Support to management of the boundaries and resolution of conflicts.
- Implement measures related to ACATISEMA headquarters, in *Cumaribo*, *Inírida* and the Sectors, as well as sports facilities.
- Implement measures related to remuneration of authorities, Indigenous Guard, and FAPUS activities by Captains.
- Implement measures to provide economic support to students.
- Supervision of the execution of the established measures to provide economic support to students.
- Implement measures to offer transport services in RIU-SM.
- Logistics to develop autochthonous games and cultural events.
- Management special affairs: military situation, service of graduates, socialization of Project, alliances, census, gender approach, government system, indigenous jurisdiction, oversight, exchange with other indigenous organizations, native culture, pastors, step home in main cities (*Cumaribo* and *Inírida*).
- Perform internal financial audit.



Indigenous Guard in training workshop (Caracol Community, Zone 1) 2018

Product 2: Implemented sustainable production system

• *Activity A2.1: Establish and to develop a Family Agri-food Production Units System (FAPUS).*

Implement actions for food security of communities through a family agricultural production system. It is expected that the RIU-SM communities manage to produce enough food in quantity and quality (at least 4,000 tons of food annually) to reduce, gradually, their dependence on forest products and fauna resources, contributing to its conservation, although the consumption of wild fruits would be maintained. This activity includes the implementation of the following actions:

- Review and adjustment of the design and planning of the Family Agrifood Production Units System (FAPUS) (maps, endowment, crops, minor species, orchards, pisciculture, plantain, cassava).
- Execution of the established measures to develop the FAPUS (tools, equipment -cassava grater for each indigenous community, farm machinery-, supplies -cookware-, technical support to develop crops).
- Financial support for all the 315 Captains of the RIU-SM.
- 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 to develop a training program plan to administration and management of natural resources of the RIU-SM.*

Knowledge about the environment and its care, about exercising indigenous governance and about technical aspects to strengthen their governance and the administration of the natural resources of the RIU-SM are essential conditions to achieve benefits in CCB. It expected to develop training and education program plan for the protection and administration of natural resources of the RIU-SM and that high school graduates develop technical and professional skills to support the indigenous reserve and the association. This activity includes the implementation of the following actions:

- Management of special educational aspects: provide school kits and libraries, educational and sport endowment, and new classrooms and dining room to elementary school students. It is expected to benefit 6,500 children and 12 schools in the indigenous reservation.

- Develop training programs to that 315 Indigenous Guardians, 315 Captains, and community leaders (at least in the majority of the settlements) to be trained in environmental management and preservation actions.
- It expected that at least 80 students develop programs in superior education in areas that the indigenous reservation and the association require to meet their goals.
- Training to 200 families in the execution of productive projects to provide technical support in the in the correct implementation of community initiatives.
- As already mentioned, it is expected that 6 training workshops will be held annually, aimed at 315 Indigenous Guardians and 315 Captains, in which environmental issues such as environmental legislation, management and sustainable use of natural resources, conservation and protection of flora and wildlife are discussed. With the help of maps, conflicts and threats to natural resources are identified and solution activities are planned. The *Regional Autonomous Corporation of Orinoquia - Corporinoquia* will be part of these workshops in order to strengthen knowledge of legislation and management of environmental governance.
- *Activity A2.3: Manage resources for project design and establishment of production chains.*
 - It is expected to develop the pilot production projects that have been prioritized by the interested parties:
 - Agro-forest project with cocoa, corn, plantain and abarco (Colombian mahogany).
 - Agro-silvo-pastoral project.
 - Community nature tourism.
 - Ornamental fish production project (self-sufficient integral community farms).
 - Cassava cultivation project to obtain *mañoco*.
 - *Panelera* cane production project.
 - Minor species (hens) production project.
 - Crop fish in floating cages (fish farming for food safety).
 - Training and accompaniment in handcraft processes.
 - It is expected that 200 families develop these productive projects and that those consisting of crops contribute to increasing the content of biomass (although it is not the purpose of the REDD+ Project RIU-SM to measure increases in biomass content in land coverage other than forests).
 - Implementation of the measures related to development of 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.*

This activity includes the implementation of the following actions:

- 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.).
- Execution of validation process according to review and adjustment of the design of the REDD+ Project

RIU-SM under CCB Standard.

- *Activity A3.2: Verify Project and to register units of forest compensation for avoided deforestation.*

This activity includes the implementation of the following actions:

- Planning of verification process of the REDD+ Project RIU-SM.
- Execution of verification process of the REDD+ Project RIU-SM.
- 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.

Theory of change to explain how the activities will achieve the project's predicted climate, community, and biodiversity benefits

According to indications in SBIA Manual for REDD+ projects – Part 1 (Richards & Panfil, 2011), a causal relationship over time between Project Activities and outputs (short-term) / outcomes (mid-term) and impacts (longer-term) have been determined.

In the “*Diagnosis of the problem*” and “*The specificity of the problem*”, issues have been identified and prioritized, as well as the focal problem (flow diagram in Illustration 12), about the general situation in the RIU-SM, which cover themes of the Climate, Community and Biodiversity components. The expected result or future condition for each issue is shown in the Objective Tree (flow diagram in Illustration 13).

A comparison between Problem Tree and Objective Tree determines the flow about cause-and-effect analysis. The respective flow diagrams show the logic about how the expected results will be achieved by the Project.

In the following Table 12 the causal chains from Project Activities to short-term Outputs, from Outputs to Outcomes, and from Outcomes to Impacts is shown.

Table 12. Theory of change in relation to REDD+ Project RIU-SM Activities

Act.	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
A1.1	The indigenous guard of RIU-SM is strengthened to improve the surveillance and control of the RIU-SM territory.	- Indigenous guards have better tools to carry out the surveillance and control of the RIU-SM territory. - A communication with authorities (police / army) has been established to have their support in cases of emergency.	The indigenous guard is consolidated as the main body of surveillance and control of the territory.	- Surveillance and control of RIU-SM territory are essential to protection of natural resources, including the forests. - The protection of forests allows to fulfill the objective of stop deforestation and obtaining compensation for the environmental services provided. - It is a 100% participatory Activity, pertinent within the commitments to mitigate external pressures on the primary forest of the RIU-SM and its biodiversity.
	Captains, zonal coordinators and members of the indigenous communities are trained about, among other aspects, in the protection of the resources of the RIU-SM and activation of the bond with the people with the territory.	- Captains, zonal coordinators and members of the Indigenous Reservation applied environmental knowledge in the RIU-SM. - Members of the indigenous communities are more committed to the objectives of the Project.	- The authorities of the indigenous reservation support the tasks for surveillance and control. - The communities participate in the protection of natural resources, and the link and commitment increase significantly to almost 100% of the population.	
	The conditions of biodiversity and ecological units are increasing and improving.	Pressure and threats on biodiversity are reduced through participatory monitoring.	The populations of HCVs species of biodiversity are stable and a participatory monitoring system is maintained.	
A1.2	More urgent means of communication, information and transportation are provided according to the needs of	- Communication, information and transportation systems in the RIU-SM are implemented massively. - The community has useful material to	Communication, information and transportation systems serve as support, among other activities, the protection of natural resources and forests	The improvement in means of communication, information and transportation is

Act.	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
	the communities.	spread the message of collective responsibility acquired with the Project and to multiply and increase their participation. Divulgence products are generated to inform about the Project results and multiply the participation of communities.	of the RIU-SM, according to the needs and interests of the indigenous communities. The community is well communicated, to such an extent that the media allow the activities, scope, commitments and results of the Project to be socialized.	important to develop the processes of surveillance, governance, education, trade, work and emergency care, among others. This Activity allows the establishment of communication mechanisms and strategies, which favor participatory scenarios, multiplication exercises and information dissemination mechanisms of the REDD+ Project RIU-SM.
	Indigenous guard and zonal coordinators use the means of information, communication and transportation, most urgently required.	Indigenous guard and zonal coordinators, captains and other authorities use the communication, information and transportation systems to a greater extent.	Several indigenous authorities, leaders and members of the communities operate the communication, information and transportation systems.	
	The communication mechanisms established are effective to learn about the issues of climate change, conservation of natural resources (forest, biodiversity, ecosystem services) and commitments to the Project.	The dissemination of the importance of climate, community and biodiversity aspects allows the possibility of multiplying and increasing the social bond in the Project.	Communication is strengthened and the community understands almost 100% about the problem of climate change and the solution approach of the REDD+ Project RIU-SM.	
A1.3	Governance is strengthened by supporting the Association authorities in principle.	Members of the Coordinator Committee, <i>Cabildos</i>, zonal coordinators and captains apply knowledge in the statutory and	The governance system is stable and guarantees the management and administration of the RIU-SM's	The improvement in governance in the territory of the RIU-SM is necessary for the

Act.	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
		organizational aspects. Indigenous communities, in general, achieve a greater understanding of aspects of governance, the ACATISEMA Statutes, rights and duties.	natural resources.	management of natural resources and the control of deforestation. - Without the development of governance by indigenous authorities and communities, it would not be possible to advance adequately in conservation management, since it is the indigenous peoples themselves who carry out the tasks to achieve this objective. - It is essential to strengthen governance schemes to provide sustainability to all actions of the REDD+ Project RU-SM.
	Indigenous communities understand that institutional support with state entities and NGOs is important for the development of the indigenous peoples of the RIU-SM.	 The ACATISEMA Association establishes contact with entities (Mayor's Office, Government, <i>Corporinoquía</i>, <i>Ministerio de Ambiente y Desarrollo Sostenible</i> - Ministry of Environment and Sustainable Development- and <i>Ministerio del Interior</i> -Ministry of Interior-) that can enhance their activity in the RIU-SM.	 ACATISEMA is recognized at the local, regional and national level for the adequate management it does for the indigenous communities of the RIU-SM and for the natural resources of the <i>Selva de Matavén</i>.	
	A direct control to make decision is possible, such as managing actions climate, community and biodiversity from the Association.	 Actions are directed for the implementation of the Project Activities, periodic monitoring and evaluation of impacts on climate, community and biodiversity.	 The Association maintains the capacities installed for decision-making about climate, community and biodiversity aspects; following as a navigation route the land and forest management plan and the monitoring program in the RIU-SM.	
A2.1	Diagnosis of production and status of food guarantee in the RIU-SM.	 The Family Agri-food Production Units System (FAPUS) is established.	 In the RIU-SM the food guarantee of its inhabitants is guaranteed.	Guaranteeing food guarantee in the RIU-SM is to cover one of

Act.	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
	Strategies to improve agricultural practices are raised among the community and their implementation begins, hoping to get the first results.	- The FAPUS helps to organize the land for agricultural crops and supports the improvement of the quantity and quality of food for the population. - Improvement of agricultural conditions for food guarantee and to reduce hunting and its impact on biodiversity. - The number of families linked to improve soil conditions in the FAPUS for food guarantee and reduce logging and burning of new conucos increases.	- The goal of providing quality food in the quantity projected for the inhabitants of the RIU-SM is achieved. - Alternatives, such as to raise animals that provide nutritional elements, are being implemented. 100% of the families are linked to improve soil conditions in the FAPUS, to guarantee food guarantee and reduce the felling and burning of new conucos.	the most important basic needs, which allows concentrating efforts on protection and reducing pressure on forests and fauna, since indigenous communities are managing the lands and resources they use for production and food in a better way. It allows to improve the conditions of the soils discarded by third use and to offer alternatives for phytosanitary and bio-geophysical improvement of FAPUS.
	Project will seek to implement the Food guarantee Network Program (RESA by its acronym in Spanish) of the <i>Departamento para la Prosperidad Social</i> - DPS (Department for Social Prosperity).	Indigenous communities understand and take steps to apply to participate in the RESA Program.	The RESA Program contributes elements to support the food supply in the RIU-SM.	
A2.2	- The needs in formal education are established. - Training workshops are held for the RIU-SM population on:	The indigenous authorities and leaders of the RIU-SM understand the general aspects of the Project and apply their improved knowledge about the protection of natural resources of RIU-SM territory,	All aspects of the execution of the REDD+ Project RIU-SM are understood by the community of the RIU-SM.	The management of the territory of the RIU-SM and natural resources will be possible having people and professionals from the

Act.	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
	- Climate change - REDD+ projects - Protection of natural resources, particularly the forests, soils, fauna and HCVs. - Surveillance and control of natural resources of the RIU-SM territory - Governance - Agricultural practices - Compensation for environmental services	including the identified HCVs.		same indigenous reservation who are well trained. • This management of the territory of the RIU-SM is essential to avoid deforestation and provide the environmental services.
	• Community members participate in trainings.	• Indigenous guard apply their environmental and territorial knowledge for the surveillance and control of the RIU-SM.	• The indigenous authorities of the RIU-SM and the Association have the sufficient capacities to manage the execution of the Project Activities in the territory of the indigenous reservation.	
	• Basic education students at RIU-SM receive endowment, implements, supplies and adequate facilities to develop their education process. • Higher education needs are determined for high school graduates, according to the profiles	• High school students of RIU-SM participate in training and educational programs for the integral-sustainable management of forests and lands of the RIU-SM. • The first higher education students receive support to advance their studies at the <i>Servicio Nacional de Aprendizaje</i> - SENA (National Learning Service), technology	• Students are developing higher education programs in different areas related to the management of the territory and its natural resources. • Indigenous professionals trained in technical, environmental, administrative, engineering and law areas contribute to the management	

Act.	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
	required by the indigenous reservation and the Association.	centers and universities.	of natural resources at RIU-SM	
A2.3	• The potential projects that can be implemented by the communities in the RIU-SM are determined. • The indigenous communities of the RIU-SM present their proposals to develop productive projects. • Productive projects increase expectations and open horizons for indigenous communities, as a compensation factor for the participatory efforts to the conservation of the forest and the biodiversity of the <i>Selva de Matavén</i>.	• Indigenous communities participate in training about productive projects. • Alliances with other expert institutions in the proposed projects are contacted to receive support for the execution of the initiatives. • Pilot projects proposed by the communities are started to develop productive activity. • Productive projects generate incentives that strengthen the adaptive capacity of communities that depend on natural resources for their subsistence. • Economic income for indigenous communities will start to generate, to make sustainable to the productive projects.	• The projects are implemented in productive chains, that is, fulfilling the stages of production, transformation and commercialization by the indigenous people themselves. • Projects in productive chains brings greater development and work in different areas to indigenous people. • A greater number of the population is interested in sustainable productive projects, to the point that the local communities understand, from the experiences obtained, the benefits of keeping the RIU-SM in perfect condition on the climate, the community and biodiversity. • The strengthening of production chains poses a more participatory scenario within the territory, which favors all the beneficiaries of the Project with basic elements	• Occupation and compensation opportunities can be provided to families involved in productive initiatives, to improve food guarantee conditions by offering the possibility of acquiring other products necessary for the diet (and that are not generated in the RIU - SM) and, in general, improve living conditions and well-being. • It favors the reduction of the subsistence needs for activities of hunting and capture of biodiversity (flora or fauna), increases the local possibilities of subsistence and favors the equality of conditions of the

Act.	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
			of survival and maintenance, at the same time that it favors the positioning and visibility of products that can be commercialized at the local regional, national and even international level.	indigenous communities of the RIU-SM, to participate in spaces of market. • It improves the cooperative marketing conditions of the beneficiary communities and open up the expectations of trade in certified local products.
A3.1 A3.2	• The REDD+ Project RIU-SM is designed, complying with international standard (VCS). • The strategies for the protection of natural resources are assigned and the elements for measuring the good health of the lands and forests of the RIU-SM are installed.	• Consolidation of the REDD+ Project. • Good forestry practices are implemented through the application of the Sustainable Management Plan for Land and Forest of the RIU-SM, to avoid the degradation of forests, which can be evaluated. • Indigenous communities are committed to ensuring the reduction of greenhouse gas emissions and the participatory conservation of biodiversity, avoiding deforestation of forests • Validation and first verification processes are completed.	• Indigenous communities are empowered by sustainability issues in the territory, they are focused on maintaining the quality of their ecosystem services, for making land use decisions, sustainable use of nature's products and trained to validate the intentions of institutions that seek to carry out interventions in their territory. • REDD+ Project RIU-SM will achieve solidity and recognition, and comply with other verification processes. • Achieve the certification of the REDD+ Project RIU-SM under	• This activity is relevant because it allows validating and verifying, in a participatory way, of the collective efforts to maintain good practices and responsible behavior with the natural resources of the RIU-SM. • The validation of the Project and, mainly, the verification of results and certification of emission reduction provide the resources for the implementation of the Activities.

Act.	Expected climate, community, and/or biodiversity				Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)		
				VCS + CCB.	

In the same purpose, within the framework of the Project's implementation, other actions are being carried out that provide additional benefits, as follows:

- Program of provision of health services.
- Program of water supply and basic sanitation.
- Program of housing construction and improvement.
- Program of attention to special population (children, women, elderly).
- Center of Indigenous Environmental Thought of the Selva Matavén.
- Attention to aspects of domestic calamity.

Decisions about how these actions are implemented are left to the discretion of the indigenous communities of the RIU-SM.

2.1.9 Climate, Biodiversity and Community Benefits Assessment Period (G1.9)

Project Crediting Period

The REDD+ Project RIU-SM crediting period corresponds to the GHG emission reduction crediting period, that applies to the Climate, Community and Biodiversity components: started on January 1st, 2013 and will end on December 31st, 2042. So, the Project Crediting Period is 30 years.

In Annex 1.4.6 of validated PDD-VCS is the minutes of Start Project.

Communication addressed by the Board of the Association and the Board of *Cabildos* of ACATISEMA, about life and the crediting period of the project. (Annex 2.1.13 of validated PDD-VCS)

"The Directive Association Board and the Board of Cabildos 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 accreditation period is 30 years.

The various documents and in particular the PDD (Project Description Document) shall record this joint decision by ACATISEMA and MEDIAMOS, which is also entered in the Strategic Partnership Agreement for the Protection, Conservation and Recovery of Natural Forest in the Unified Indigenous Reservation - Matavén jungle.

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 Partnership Agreement for the Protection, Conservation and Recovery of Natural Forest Unified Indigenous Reservation - Matavén Jungle.

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

Omar Augusto Briceño Chipiaje

ID 18.262.305

According the Strategic Alliance Agreement ACATISEMA-MEDIAMOS (Annex 2.1.11 of validated PDD-

VCS), Clause 12, Paragraph 2, ACATISEMA decides to continue with the implementation of REDD+ Project RIU-SM activities for another cycle (30 additional years), after the end of the first project accreditation cycle, to keep with the protection and maintenance of carbon deposits, based on which credits for reduction of GHG emissions are issued.

Time period for monitoring changes in GHG emissions, climate change adaptive capacity and resilience, biodiversity and community well-being resulting from Project Activities

As the Project has applied the VCS Standard since its inception (January 1st, 2013), it has carried out Monitoring processes from 2013 to 2019 exclusively under that standard.

Now, by applying CCB & VCS, the Project seeks to complete the monitoring of changes in GHG emissions, climate change adaptive capacity and resilience, biodiversity and community well-being resulting from Project Activities under the CCB Program for 2018 & 2019, and under CCB & VCS from the year 2020 to the year 2042.

2.1.10 Differences in Assessment Periods (G1.9)

Differences between the GHG emissions accounting, climate adaptive capacity and resilience, community, and/or biodiversity assessment and periods

As it was explained above, the Project Crediting Period is from 2013 to 2042 (related with GHG emissions accounting) and the assessment of CCB aspects will be carried out from 2018. The first Verification event under CCB Program will contain an assessment of climate, community, and biodiversity adaptive capacity and resilience, in 2018 & 2019. Then, since 2020 the Verifications events will be carried out under CCB & VCS.

2.1.11 Implementation Schedule (G1.9)

The main milestones in the development and implementation of the REDD+ Project RIU-SM are presented below, in the Table 13. The main events are included, among others, such as all the meetings held since 2012 with the indigenous communities (training and socialization workshops, meetings to support the Project), are found in Annex 1 of validated PDD-VCS and in Monitoring Reports - VCS.

Start and End Dates for each Project Activity

The Project Activities are developed permanently in each year, by executing sub-actions called "Tasks". Sometimes, some Activities have more intensity than others.

This schedule is established in each Yearly Plan of Operation – YPO and is evaluated in the respective Progress Reports. In the Annex 3 of this document, the detail schedules for years 2013 to 2017 (from YPOs) are presented.

Table 13. Main milestones in the Project's development and implementation

Milestone(s) in the Project's development and implementation	2012 Design	2013	2017	2018	2020	2021	2022	2023	2024	2026	2028	2030	2032	2033	2034	2036	2038	2040	2042	2043
2012/07/06: Initial meeting of the Board of Directors of ACATISEMA and representatives of MEDIAMOS. Support: Annex 1.1.1 of validated PDD -VCS.	X																			
2012/07/06: First agreement for the establishment of a Strategic Alliance between ACATISEMA and MEDIAMOS to offer environmental services to preserve, improve and manage natural forest and to restore territories with existing forest land in the RIU-SM. Support: Annex 1.9.1.1 of validated PDD -VCS.	X																			
2012/07/22-2012/12/04/05: Meetings to socialization, training and consultation process with indigenous communities and their leaders. Support: Annexes 1.1, 1.4, 1.5.1-1.5.3 of validated PDD -VCS.	X																			
2012/07/22: Countersigned agreement for the establishment of a Strategic Alliance between ACATISEMA and MEDIAMOS. Support: Annex 1.9.1.2 of validated PDD -VCS.	X																			
2012/12/01: Agreement for initiation of REDD+ Project RIU-SM Activities to January 1, 2013. Support: Annex 1.4.6 of validated PDD -VCS.	X																			

Milestone(s) in the Project's development and implementation	2012 Design	2013	2017	2018	2020	2021	2022	2023	2024	2026	2028	2030	2032	2033	2034	2036	2038	2040	2042	2043
2013/01/01: Project Start Date. Support: PDD-VCS, Section "1.5.2 Start date".		X																		
2013/01/01: Implementation of Sustainable Management Plan for Land and Forest in RIU-SM and Project Activities. Support: Annex 4 of validated PDD - VCS.		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2013/05/31: Strategic Alliance Contract between ACATISEMA and MEDIAMOS to implementation of REDD+ Project RIU-SM. Support: Annex 1.9.1.3 of validated PDD -VCS.		X																		
2013/11/22: Strategic Alliance Agreement between ACATISEMA and MEDIAMOS F&M S.A.S. for the Protection, Conservation and Recovery of Natural Forest of the <i>Resguardo Indígena Unificado – Selva de Matavén</i> . Support: Annex 1.9.1.4 of validated PDD -VCS.		X																		
2017/05/30: The Project Design Document of the REDD+ Project RIU-SM is issued, including the first Monitoring Report - VCS 2013 & 2014-2015. Support: Validated PDD-VCS https://registry.terra.org/...			X																	
2017/06/10: Validation and Verification process (2013 & 2014-2015 periods) under VCS Program, with VVB			X																	

Milestone(s) in the Project's development and implementation	2012 Design	2013	2017	2018	2020	2021	2022	2023	2024	2026	2028	2030	2032	2033	2034	2036	2038	2040	2042	2043
ICONTEC. Support: Validation/Verification Report https://registry.verra.org/...																				
2017/07/14: Project registration. Support: Verra Registry / Event Information / "Project ID 1235 Status changed to Validated - Project Proponent to Upload Verification Documents and Create Issuance Request on 14/07/2017 20:11 by VCSA Administrator – 1".			X																	
2017/08/02: VCU issuance for marketing. Support: Verra Registry / Event Information / "Updated Project Emissions and Credits Data for project "VCS1235 - REDD+ Project Resguardo Indigena Unificado Selva de Mataven (RIU SM)": Project Type: Agriculture Forestry and Other Land Use; Type of Transaction: VCU Issuance".			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2018/11/19: Second Verification process (2016-2017 period) under VCS Program, with VVB EPIC Sustainability Services Pvt. Ltd. Support: Verification Report https://registry.verra.org/...				X																
2020/11/10: Third Verification process (2018 & 2019 periods) under VCS Program, with VVB EPIC Sustainability Services Pvt. Ltd. Support: Verification Report https://registry.verra.org/...					X															

Milestone(s) in the Project's development and implementation	2012 Design	2013	2017	2018	2020	2021	2022	2023	2024	2026	2028	2030	2032	2033	2034	2036	2038	2040	2042	2043
Validation process under CCB Program with VVB ICONTEC, to obtain the Gold Level in Climate, Community, and Biodiversity. In progress.						X														
Verification process (2018 & 2019 periods) under CCB Program with VVB ICONTEC. In progress.						X														
Validation of baseline update.								X						X						
Subsequent Verification process under CCB & VCS Programs.							X		X	X	X	X	X		X	X	X	X	X	X

Start and End Dates for the GHG accounting period

In general, GHG accounting period started on January 1st, 2013 and will end on December 31st, 2042. So, the Project GHG accounting period is 30 years (validated PDD-VCS, Section “1.6 Project crediting period”, page 38).

Monitoring schedule, verification schedule

Duration of Monitoring Period: The first Monitoring Period was annual, and the second Monitoring Period was biennial.

The first Monitoring Period annual: 2013

The second Monitoring Period biennial: 2014-2015

A Monitoring Process was developed to achieve the Verification 2013 & 2014-2015.

(validated PDD-VCS, Section “1.6 Project crediting period”, page 38).

The third Monitoring Period was biennial: 2016-2017 and the respective Verification was achieved.

The fourth and fifth Monitoring Periods were annual: 2018 & 2019 and the respective Verification was achieved under VCS Program.

Monitoring and Verification Processes are expected to take place biennially.

Until now (2013 - 2019), the monitoring and verification processes have been carried out based on the VCS Program. For the year 2018 & 2019 it is expected to carry out the monitoring and verification process also based on the CCB Program and from 2020 onwards it is expected to do so based on CCB & VCS.

2.1.12 Risks to the Project (G1.10)

The Adaptive Management Plan -AMP- (validated PDD-VCS, Section “4.3.3 Mitigation Measures and Monitoring actions”, page 280) have specifically monitored, documenting learned lessons or corrections necessary and incorporating them in Project decisions on progressive monitoring periods. This AMP is based on Assumptions (risk factor) which are evaluated about the level of probability of their occurrence, the mitigation measures / comments / documentary evidences, the monitoring actions and the relationship with the Project Activities are determined.

About the risks on climate benefits, 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.

Now, in this instance of application of the CCB Standard, below are the *Identified Risks*, the “*Potential impact of risk on community and biodiversity benefits*”, and the “*Actions needed and designed to mitigate the risks*” (Table 14).

Table 14. Project risks about Climate, Community and Biodiversity (short term 5 to 7 years, medium term 8 to 20 years, and long term 21 to 35 years)

Identify of Possible Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Risk 1. Loss of forest areas in deforestation processes due to unplanned burning and illegal extractive activities.	When, for example, unplanned burning or illegal logging occurs, it increases the possibility of deteriorating survival conditions related to climate, community and biodiversity, as it hinders the maintenance of the quality of the forest's environmental services in the territory.	• Carry out at least 2 control and surveillance routes of the indigenous guards and Captains, per Zone, per year. • Develop surveillance routes accompanied by previous training sessions (at least 1 per year). • Include materials designed for the indigenous guards and Captains to share arguments (1 printed map per Zone and Sector; 1 meeting in control station; provide basic dotation for the indigenous guard). • Develop analysis and elements of judgment about the problem, to increase and gain more followers and more people to commit to the Project's Activities (calculated with an indicator who shows at least 80% of new indigenous guardians involved on the project activities, per year, measured with the reports submitted and the management of events that occurs in the RIU-SM).
Risk 2. Families that have doubts about the Project and do not adopt enough friendly practices to improve the conditions of their <i>conucos</i> .	If understanding and awareness is not achieved among families and indigenous communities to improve their agricultural practices in their <i>conucos</i> (as part of the FAPUS), the negative impact on the forest continues and the purpose of the REDD+ Project RIU-SM would not be fully achieved, causing emissions from burning and deforestation.	• Implement best practices in the agricultural activity of the indigenous communities, to demonstrate the yields by applying the FAPUS strategy, improving the production conditions of the <i>conucos</i> in the 5 zones of the RIU-SM, with the 10% of <i>conucos</i> in short term, 50% in medium term, and 100% in long term (in relation to <i>conucos</i> in use). • Implement Agri-food Project to provide sustainability and food guarantee, leaving installed capacities in the beneficiary families and greater motivation given the retribution for the efforts of conservation of the natural forest in 10% of communities in short term, 50% in medium term, and 100% in long term.
Risk 3. Failure to sufficiently protect and conserve the natural resources of the RIU-SM	Failure to sufficiently address the protection and conservation of the RIU-SM forests results in the loss of the quality and quantity of ecosystem	• Develop participatory forest monitoring and surveillance of the most threatened places to protect 100% of the Project Area by the surveillance routes. • Contribute to the generation of occupational options benefits that provide socioeconomic resilience through the compensation derived from the

Identify of Possible Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
territory (including the forest).	services for humans, animals, plants and all the ecological units found in the <i>Selva de Matavén</i> .	environmental services provided in the 5 zones of the RIU-SM, with the 10% of families in short term, 50% in medium term, and 100% in long term.
Risk 4. Doubts about the application of friendly and sustainable practices to implement projects in production chains.	The hesitation of local producers to adopt friendly and sustainable practices for productive projects has a negative impact on the resources of the RIU-SM territory, because they continue with habits that do not protect resources such as soil and do not generate productivity, which would require more consumption of natural resources.	• Carry out at least 5 talks per year, 10 technical visits per year and leave installed capacities (5 practical workshops per year and equipment, materials and other logistic needs) about friendly techniques and informative material for the promotion of sustainable productive initiatives and food guarantee. • Increased, at least, the 10% of traditional production with sustainable techniques, seeking transformation, self-consumption, and marketing of surpluses. • Implement, at least, 1 productive project in each of the zones on 10% of communities in short term, 20% in medium term, and 40% in long term.
Risk 5. The beneficiary families do not make visible improvements in their economic conditions since the implementation of the productive projects.	If better socioeconomic conditions are not visible with the implementation of productive projects, there will be demotivation and desertion, increasing the possibility of returning to the initial scenarios without the presence of the Project, where the sustenance and food of the indigenous communities comes from the extraction and consumption of products of nature, and the agri-food activities that traditionally involve the burning and cutting of the forest to form the <i>conucos</i> , generating, once again, impacts on the climate, the community and biodiversity.	• Carry out, at least, one adequate participative diagnosis of the most suitable productive projects, per year. • Develop at least 3 training workshops per year to train producers in the best practices and techniques for the respective projects. • Implement and leave installed capacities in administrative skills in 10% of productive projects in short term, 50% in medium term, and 100% in long term. • Develop 1 cooperative project to assist and participate permanently in the monitoring and evaluation of economic conditions.

Identify of Possible Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Risk 6. Doubts about participating in production chains and food guarantee.	The hesitation to participate in production and food guarantee chains creates barriers and social gaps that weaken the evolution of the solidarity economy.	• Encourage and invite programmed technical visits with specialists who will conduct at least 3 workshops per year about productive and commercial improvement. • Develop 1 cooperative project to support alternatives, strategies and solidarity-economy strengthening. • Motivate the generation of economic circuits and the distribution of benefits in an equitable manner in 10% of communities in short term, 40% in medium term, and 80% in long term.
Risk 7. Doubts in the face of adaptive change to reduce the direct consumptive use of some species important to the functionality and sustainability of the RIU-SM ecological units.	Doubts about the adaptive change of reducing the use of direct consumption of some species important for the functionality and sustainability of the ecological units of the <i>Selva de Matavén</i> , would generate negative impacts on ecosystem services for plants, animals and human well-being.	• Conduct, at least, 6 workshops per year about environmental education and conservation, involving the 100% of indigenous community as co-researchers and socializing the results of monitoring established on the threats to the RIU-SM prioritized HCVs (species and/or ecological units).

2.1.13 Benefit Permanence (G1.11)

There is a legal contractual agreement to maintain the management practice beyond the project lifetime.

According the Strategic Alliance Agreement ACATISEMA-MEDIAMOS (Annex 2.1.11 of validated PDD-VCS), Clause 12, Paragraph 2 “...*For a second cycle of the PROJECT ..., ACATISEMA being completely free to design and execute it*”. In this way, it is already being considered that ACATISEMA will continue with the Project Activities for a second cycle (of another 30 years: 2042 - 2071), with which it can be guaranteed to maintain and enhance the climate, community, and biodiversity benefits beyond the current project lifetime (2016 - 2042).

2.1.14 Financial Sustainability (G1.12)

The REDD+ Project RIU-SM applied the steps outlined in the VCS Tool, VCS VT0001, “Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities” to demonstrate the additionality of the project. This tool includes the “Investment analysis”, where aspects about “Financial Sustainability” are presented in the validated PDD-VCS, Section “2.5.1 Step 2 Investment analysis (VT0001)”, page 167, where topics are described, such as:

- 2.5.1.1 Sub-step 2a Determine appropriate analysis method
- 2.5.1.2 Sub-step 2b – Option I. Apply simple cost analysis
 - Cash Flow of the REDD+ Project RIU-SM
 - Steps taken to find the breakeven point
 1. Quantification of costs incurred from January 1st, 2013 until March 31st, 2016
 - Cost valuation of activities REDD+ Project RIU-SM
 - Origin of resources
 2. Estimation of costs to develop activities in 2016 and following years
 3. Projections and sales of VCUs certified
 - Years of VCUs sales
 - Ability to fund the cost of the activities, to ensure that the Project will reach the breakeven point
 - Cash flow
 - Distribution of incomes by sales of VCUs

And, according to Forest Trends, in 2018 the average price of tCO₂e was USD 3.0 and in 2019 was USD 4.3 ¹³.

On the other hand, in the Section “2.5.7 National and Local Laws” of this document is explained that the baseline must be adjusted according to the most updated FREL that Colombia has presented to the UNFCCC, in compliance with Resolution 1447/2018 (Article 41, paragraph 2) issued by the Ministry of

¹³ <https://www.forest-trends.org/>

Environment and Sustainable Development (*Ministerio de Ambiente y Desarrollo Sostenible – MADS*), from the year 2020 (2 years before the stipulated by the applied VCS methodology) and that this generates a drastic impact reducing the results in emission reduction calculated for the Project until the end of the crediting period and, therefore, in the resources that could be achieved by compensation. Given this, spaces have been sought to dialogue with the MADS and carry out a technical review of both the Resolution and the FREL (and achieve compliance with the requirements of the VCS Standard), in such a way that the impacts to the Project can be reduced. Even, through the Colombian Association of Carbon's Market Members (ASOCARBONO), proposals for adjustments to this Resolution have been submitted since December 2018, at the end of 2021 in workshops that MADS led to assess what the ASOCARBONO partners considered should be adjusted in Resolution 1447/2018, and also recently in 2022 by MADS statements about the publication for public consultation of new regulations, so that this Ministry takes the proposals into account.

Since the issuance of Resolution 1447 in 2018, it was already anticipated that this provision would affect the financing capacity of the Project, so some measures were taken and future strategies were established to ensure that resources can continue to finance the implementation of the Project Activities and providing the benefits in the Climate, Community and Biodiversity components, as follows:

- Inform the indigenous communities of the RIU-SM about this situation, so that they are aware that the budget execution must be adjusted in the future, in order to continue fulfilling the objective of the Project.
- Prepare reserves of resources obtained by the compensations of the verified periods 2016 to 2019 to respond to the budget execution of the next years and manage to finance the Project Activities until the year 2025, preserving the scope that is currently being achieved.
- Allocate the resources obtained from the compensation of the future verification periods 2020 to 2025 to finance the Project Activities until the year 2028, maintaining the scope that is currently being achieved.
- Release emission reductions deposited in the Verra Buffer account to reinforce the number of certified and tradable VCUs, which represents an additional item of economic resources.
- Validate and verify the REDD+ Project RIU-SM under the CCB Standard, which would give a greater economic value to the VCUs from the 2018 periods onwards.
- Adjust, as of 2028, the annual budgets, in such a way that a redistribution of resources is achieved and the scope of some Project Activities is reduced, for which it is already possible to leave an installed capacity and manage external support, as follows:
 - Activity A1.1 - Control and surveillance of the RIU-SM forests: This Activity is already achieving an installed capacity consisting of training, means of transportation, the design of 37 surveillance routes and the installation of control stations along the of the entire territory (some floating), which allows that in the future the investment consists only in the provision of equipment and economic support for the indigenous guards.
 - Activity A1.2 - Communication: In relation to this Activity, different means and transportation infrastructure have been acquired and installed (boats with motors, motorcycles, bicycles, river route services, roads, bridges) for each Sector and Zone, elements that facilitate communication between the indigenous communities of the RIU-SM. In addition, equipment has been provided that contributes to strengthening the management of information within the RIU-SM and ACATISEMA. It is considered that the largest investment in this Activity has already been made, so it is expected that the financing required in the future will be much less, for maintenance and updating purposes.
 - Activity A1.3 - Strengthening of governance: This Activity has succeeded in strengthening the work

of the authorities of the RIU-SM and its association ACATISEMA, providing constant training (according to the rotation that occurs in the positions of representation and management), infrastructure facilities, staffing, logistics for holding events (meetings, workshops and assemblies) and administrative management. The Project will continue to provide the resources to strengthen training, the holding of events, and the administrative staffing and operation, considering that high financing will not be required for the construction of locative facilities.

- Activity A2.1 - Strengthening the food security of the communities: Through the implementation of *Family Agri-food Production Units System (FAPUS)*, the indigenous communities are already establishing better food production practices and have endowment, supplies, tools, machinery and initiatives proposed by themselves, all supported by the Project. It is expected that FAPUS will continue to be implemented in the future, where financing is mainly represented by the provision of endowment and supplies, reducing the investment effort.
- Activity A2.2 Training: This is an important Activity that has supported the education of children, youth, women and men (at different educational levels, including support for students to enroll in higher education and some with economic support) and achieved the training of indigenous authorities and leaders for the administration of the RIU-SM resources. This Activity will continue to be promoted and financed by the Project.
- Activity A2.3 - Projects in productive chains: Productive projects have been developed throughout the 5 zones of the indigenous reserve, proposed by the same indigenous communities of the 6 ethnic groups, who are interested in improving food production in terms of variety, quantity and quality, and developing activities that represent economic income. The projects are:
 - Agroforestry project of 100 hectares of cocoa, banana, corn and *abarco*, with 100 families in Zones 4 and 5, to provide food and create a production chain with the harvest and processing of cocoa beans.
 - COOMATAVEN Cooperative Project through which strategies are generated, such as the establishment of cooperative stores in the indigenous communities and a collection center for the storage, sale and distribution of the products harvested in the RIU-SM (in the city of Inírida, with an area of influence, so far, for Zones 3, 4 and 5 of the indigenous reserve).
 - Project for the structuring of the commercial fishing activity for ornamental fish in three communities in Zone 3 and two in Zone 2, with 30 participating families, where the survival of captured specimens is being improved and extraction in natural areas is reduced.
 - Community nature tourism project, in which 40 families participate and the Community Indigenous Tourism Council has been formed, an eco-lodge (ecological accommodation) is being built in each community, an interpretive trail and training communities in good tourism practices and management of tourism products.
 - Self-sustainable Comprehensive Farms Project, establishing two farms of 5 hectares each, facilitating agrosilvopastoral production, forage production, community gardens, organic fertilizer production and recovery of the fertility of the soils of the conucos and increasing the rotation time.

Finally, it is sought that these productive projects, and others that the indigenous communities wish to formulate in the coming years, become self-sustaining and even generate resources that will constitute income for the families, for which a strong effort is already being made. investment in the early stages, to later reduce the financing by the REDD+ Project RIU-SM.

- Establish contact with government authorities and institutions and enter into agreements with NGOs to establish alliances and develop actions that allow continuing to bring benefits to the most vulnerable

communities, in matters of education, housing, health, attention, drinking water and production, and to continue achieving positive impacts on the natural resources of the territory through their protection.

In this way, the REDD+ Project RIU-SM can face the effects of the reduction of resources due to the application of the regulations in force in the country and ensure positive net benefits in Climate, Community and Biodiversity.

2.1.15 Eligibility Criteria for Grouped Projects (G1.14)

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

2.1.16 Scalability Limits for the Grouped Projects (G1.15)

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

2.1.17 Risk Mitigation Approach for Grouped Projects (G1.15)

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

2.2 Without-project Land Use Scenario and Additionality

2.2.1 Land-Use Scenarios without the Project (G2.1)

Potential land-use scenarios and associated drivers for the land use changes most likely to occur within the Project Zone in the absence of the Project.

The following alternative land use scenarios, and associated drivers, were identified for the Project:

Scenario 1: Continuation of the pre-project land use (deforestation to produce food without proper soil management and impacts from threats to the territory, as described in Section " 2.1.8 Project Activities and Theory of Change / Diagnosis of the problem" of this document.). The following Map 22.

Scenario 2: The conditions of scenario 1 (pre-project land use) plus arising from the implementation of the National Development Plan (Congreso de Colombia, 2015) specifically what corresponds to the political and economic definition in CONPES 3797 of 2014 (DNP, 2014) which aims to create social and economic conditions for inclusive and sustainable development of Mountain Plateau based on the construction of a model region and the Law 223 of 2015 (Congreso de Colombia, 2015) (ZIDRES) by which areas of interest in regional economic and social development are established.

Scenario 3: Project activities occurring without being registered as a VCS Project.

(validated PDD-VCS, Section "2.4.2.1", page 146).

In validated PDD-VCS, Section "2.4.2.2", page 166, the consistency of credible land use scenarios with enforced applicable laws and regulations is presented.

Mapa de Deforestación en el Área de Manejo del Río Mucuna

Map Legend
 Deforestation in groups of years PA
 1 - 5
 6 - 10
 11 - 20
 21 - 30
 Sectors in RIU-SM
 Project Area

Map Key
 Municipal Capital
 Municipality
 Stream
 Navigable Rivers

SOURCE:
 RIU-SM REDD+Project

DATE:
 2013

Scale:
 1:1.250.000

Scale Bar:
 0 335 670 1.340 2.010 Kilometers

v3.0

The General Baseline Scenario is described as following:

- For Climate component: validated PDD-VCS, Section “2.4 Baseline Scenario”, page 146.
- For Community component: Section “4.1 Without-Project Community Scenario” of this document.
- For Biodiversity component: Section “5.1 Without-Project Biodiversity Scenario” of this document.

2.2.2 Most-Likely Scenario Justification (G2.1)

The most-likely baseline scenario was defined as “Scenario 2” (see previous Section), considering “*which has been occurring throughout the Colombian rainforest where the implementation of roads generates the immigration of people, some of them perform harvesting and burning forests for agricultural and livestock activities on a small scale. Governments do not employ their resources in meeting the requirements of environmental standards, given its limited budget, significant levels of corruption, operational inefficiencies, and scenarios evidenced through different documents*” (validated PDD-VCS, Section “2.4.2.3”, page 166).

In the Section “4.1.4 Without-Project Scenario: Community” of this document, the expected changes in the land use scenario are presented without the execution of the Project in the Community component.

In the Section “5.1.1 Existing Conditions” of this document, the threats to biodiversity are described, and in the Section “5.1.3 Without-project Scenario: Biodiversity” of this document, the scenario of land use without a project is presented according to the conditions of biodiversity and the effects that could occur.

2.2.3 Additionality (G2.2)

How Climate, Community and Biodiversity project benefits would not occur in the absence of the project

According to analysis of additionality indicated in the validated PDD-VCS Section “2.5 Additionality” (page 167), and according to analysis of baseline scenarios in Sections “4.1.4 Without-Project Scenario: Community” and “5.1.3 Without-project Scenario: Biodiversity”, the conditions present in the absence of the Project would not allow to achieve the benefits in Community and Biodiversity, so that the RIU-SM could not count on:

- A strengthened indigenous guard that would protect the natural resources and the population of the communities, to guarantee the presence of the indigenous authority in the territory, providing greater security to avoid the deforestation in the RIU-SM (Activity A1.1), with the consequent impacts on communities and biodiversity.
- A communication, information and transportation system to bring the population closer to each other and facilitate contact between communities of any kind, share data, report actions, notify alerts, etc. (Activity A1.2).
- An indigenous organization and the ACATISEMA association strengthened in aspects of governance and administration, which allows the growth of the Indigenous Reservation for the benefit of communities and natural resources (Activity A1.3).
- A strategy to implement an agricultural production system based on families, to guarantee the food guarantee of the population in the communities, with better tools and endowments for improve the

production tasks (Activity A2.1).

- A training program for indigenous leaders in various aspects of the REDD+ scheme, environmental protection and management of natural resources, as well as investment to improve the educational conditions of basic education students and support so that more than 100 higher education students can develop their studies and be trained as the future professionals of the RIU-SM (Activity A2.2) (benefits that in no way would be achieved without the resources provided by the compensation derived from the REDD+ Project RIU-SM, since there is not enough support from the State in this regard).
- Possibilities to implement productive projects (pilots in the first instance) that become alternatives to generate occupation for the indigenous population of the RIU-SM, products for self-consumption and for commercialization, in order that they become sustainable projects that provide economic resources for communities (Activity A2.3).
- An activity that is consistent with indigenous principles, that provides protection for the natural resources and population of the RIU-SM and, simultaneously, generates financial resources to implement development actions for the benefit of indigenous communities (Activities A3.1 and A3.2).
- The benefits that the implementation of the "ACATISEMA Reserves" generates for indigenous communities, in health care, supply of treated water, housing improvement, attention to special population (such as children, the elderly and the disabled), and attention to calamities.

In general, it is clear that the Community and Biodiversity project benefits are positive with the implementation of the REDD+ Project RIU-SM.

Existing laws, regulations, and governance arrangements, or lack of these, would likely affect land use in the absence of the project

Although the rights of possession of the territory and customary use of the resources of the *Resguardo Indígena Unificado - Selva de Matavén* is recognized and guaranteed by Resolution 037 of 2003 issued by the INCORA (Annex 2.2.1 of validated PDD-VCS), over time there have been initiatives to develop agricultural and livestock production projects, of mining and large-scale fuel extraction that violate the protectionist purpose of the indigenous peoples of the RIU-SM. The REDD+ Project RIU-SM has been established as an initiative that manages to provide a kind of shielding over the territory to counteract such threats and avoid their adverse effects on natural resources and the human population.

Project activities would not have been implemented under the without-project scenario due to significant financial, technological, institutional or capacity barriers

The Activities that the Project is promoting could not be implemented and the benefits could not be achieved due to the lack of economic, technical and technological resources and the weak management capacity of the indigenous authorities without the support to develop adequate governance in the territory in the RIU-SM in the event that the REDD+ Project RIU-SM is not implemented.

Due to this initiative, the financial resources for its sustainability have been guaranteed, as explained in Section "2.1.14 Financial Sustainability" of this document, in such a way that without the initial financial effort and the resources obtained as compensation, it would not be possible implement the actions to protect the natural resources and support to communities. Likewise, the Project has provided elements that have improved the technological, operational, logistics, and administrative capacities in the RIU-SM and for the ACATISEMA association, with the investments that support the achievement of the Project Objective.

Project activities are required by law, but that pertinent laws are not being enforced

Although in Colombia there is a national regulatory framework in relation to the protection of natural resources (in particular forests and those related) and of special and vulnerable populations, such as indigenous people.

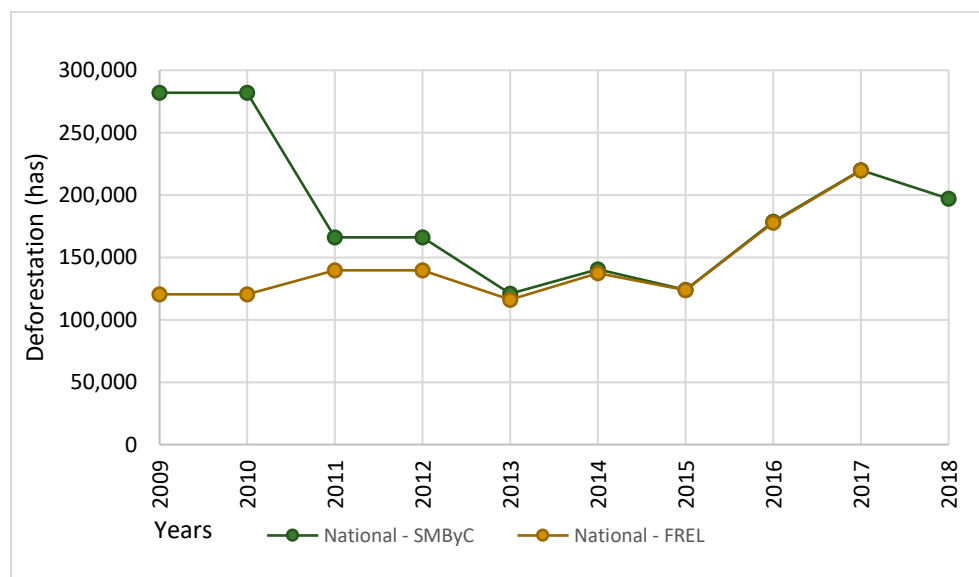
In the validated PDD-VCS, Section “1.11 Compliance with laws, statutes and other regulatory frameworks”, page 117, the regulations about the issues of forest protection, sustainable development and mitigation/adaptation to climate change are presented, and other, as following:

- The most recent reform to the Penal Code, with the Law 1453/2011, through which articles were modified and introduced that sharpen the punishment of environmental crimes against natural resources and the environment.
- The Resolution 3438/2011 by which the National Unit of Prosecutors for Crimes against Natural Resources and the Environment was created.
- The Decree 1257/2017 “By which the Intersectoral Commission for the Control of Deforestation and Comprehensive Management for the Protection of Natural Forests is created and other determinations are made”.
- The Document CONPES 4021/2020 about “National policy for the control of deforestation and the sustainable management of forests”.
- The Document CONPES 4023/2021 about “Policy for reactivation, re-potentialization, and sustainable and inclusive growth: A new commitment for the future of Colombia”.

But these norms do not have sufficient effects on the territory of the RIU-SM, considering that they are not being fulfilled in an adequate and enough measure.

Historically, deforestation in Colombia has suffered from fluctuations in its dimensions, with years in which the loss figures (which are still worrisome) have been lowered to other years where the problem increases again, with the tendency not to achieve a substantial decrease sustainable over time (illustration 14).

Illustration 14. Distribution of national deforestation 2009-2018 (SMByC and NREF)



Source: Based on <http://smbyc.ideam.gov.co/MonitoreoBC-WEB/reg/indexLogOn.jsp> and https://redd.unfccc.int/files/02012019_nref_colombia_v8.pdf

In addition, in recent years efforts to stop deforestation have focused on some special areas, especially in the Amazon, actions that have not reached the territory of the RIU-SM, which is why the REDD+ Project RIU-SM is constituted as the initiative to develop protection and conservation activities¹⁴.

2.2.4 Benefits to be used as Offsets (G2.2)

The REDD+ Project does not seek to generate any other credit for emission reduction under any other certification mechanism; it is only registered in the VCS Program and seeks to generate VCUs.

In this same purport, no product, result or benefit derived from the Project Activities and related to the community and biodiversity components implement under CCB Program seeks any compensation in the form of carbon credit. Community and biodiversity benefits only seek to improve the conditions of these two components that are so sensitive for the population and the environment in the territory of the RIU-SM.

2.3 Stakeholder Engagement

2.3.1 Stakeholder Access to Project Documents (G3.1)

The complete documentation about REDD+ Project RIU-SM (related to design of project, its validation and its verification processes) is in the offices of ACATISEMA in *Cumaribo* and *Inirida*, and in the offices of MEDIAMOS in *Cali*, in digital format and (if required) in printed format, which is available for consultation by any indigenous authority or members of the communities. The indigenous authorities may share, at their discretion, the documentation with persons or entities outside the RIU-SM and with the national authorities that request it.

On the one hand, the technical documentation of the Project is available in Verra Registry, under ID 1566 (<https://registry.verra.org/app/projectDetail/VCS/1566>), where it is completely accessible to the general public and to any stakeholder.

2.3.2 Dissemination of Summary Project Documents (G3.1)

The Project Activity A1.2 is about improving the means of information, communication and transportation, which includes tasks of disseminating data and results of the Project achieved by the execution of all Activities, year after year, between the members of the indigenous reservation and the ACATISEMA Association.

Through socialization workshops, the details about the REDD+ Project RIU-SM are explained to the communities. This includes design aspects, benefits, and implementation of every Project Activity, as well as the results of the validation and verification processes.

Through newsletters and brochures, written and graphic information with the different aspects and results

¹⁴ <https://visionamazonia.minambiente.gov.co/content/uploads/2018/04/Infografia-Proyectos-Indi%CC%81genas-Visio%CC%81n-Amazoni%CC%81a.pdf>

of the Project are provided, what the Zonal Coordinators, Sectorial authorities - *Cabildos*, Captains, leaders, and community members disseminate to the indigenous population of the RIU-SM, and orally in each language, in a way that is more understandable to the general indigenous population.

Through webpage <https://www.selvamatavenredd.org> and in the social media (<https://www.facebook.com/selvamatavenredd/>, <https://www.facebook.com/mataven.redd.mas>, <https://www.linkedin.com/company/mataven-redd-project/>, <https://www.instagram.com/matavenredd/>), the general public is being permanently informed about the evolution of the Project Activities.

2.3.3 Informational Meetings with Stakeholders (G3.1)

Annex 1 of validated PDD-VCS contains information about the process of socialization and training on aspects of the implementation of REDD+ strategy and consultation process, that support to this initiative, that has occurred in the stages of REDD+ Project RIU-SM. This Annex consists in evidences of participatory process and concerted actions that have been placed in several workshops, during the design, in the Project start, in the signed of Strategic Alliance Agreement ACATISEMA - MEDIAMOS F&M S.A.S. (Annex 2.1.11 of validated PDD-VCS), in the implementation of Activities and all subsequent meetings where indigenous communities have received information about the progress of the Project.

In these events for the socialization of information and training on Project issues, there are materials to guide the topics covered, such as climate change, REDD+ scheme, threats to the forest, strategies to control deforestation, pertinent legislation, rights and duties of indigenous peoples on the issue of protection of natural resources and governance, among others.

These workshops are the opportunity for members of the indigenous communities to know and understand all aspects related to the implementation of the REDD+ Project RIU-SM, and to resolve all the concerns that arise. Likewise, some leaders are in charge of being aware of the queries and needs that arise after carrying out the information and training meetings.

Finally, it is sought to have an installed capacity for the same indigenous authorities to hold informational meetings within the framework of the execution of the Project Activities.

Regarding the other stakeholders, approaches are made with local, regional and national authorities, who know the Project and have their position according to their functions. The Cumaribo Mayor's Office and the Vichada Government serve the indigenous leaders, who present the results of the Project and the requirements they have for the State to comply with its duty to support the indigenous peoples of the RIU-SM. Other entities such as the *Ministerio del Interior* (Ministry of the Interior), the *Ministerio de Ambiente y Desarrollo Sostenible* (Ministry of Environment and Sustainable Development), and *Corporinoquía* also receive indigenous leaders to proceed with the fulfillment of their functions. In the same purport, meetings are held to which different entities of the State and other ONGs are invited.



Captains in training and socialization workshop (Urba Morichal community, Zone 2 Bajo Río Vichada)

2.3.4 Community Costs, Risks and Benefits (G3.2)

In the multiple socialization and training workshops, in the consultation process, and in other informational meetings about the progress of the REDD+ Project RIU-SM (Annex 1 of validated PDD-VCS), the leaders and members of the indigenous communities (in the first instance with the members of the Coordinator Committee of ACATISEMA and the members of the *Cabildos* Board of the RIU-SM, then community Captains and, finally, the community members) are informed about the characteristics of the Project, the benefits that are obtained by implementing this initiative, as well as the commitments that are acquired with the implementation of the Activities designed to achieve the objective. and indigenous leaders also raise these issues on benefits and responsibilities at the ACATISEMA General Assembly, which is held every three years.

In these meetings and workshops, that are carried out periodically, the leaders and members of the indigenous communities are informed how the effects on the population and biodiversity are positive with the implementation of the Project, and that it is they themselves who will carry out the Activities, so they must allocate time and efforts to participate in this execution, also considering the cost in economic resources incurred with the budget execution to Project development.

Regarding the risks, it is explained what the Adaptive Management Plan (validated PDD-VCS, Section "4.3.3 Mitigation Measures and Monitoring actions", page 280) and the that described in the Section "2.1.12 Risks to the Project" of this document, include the risk analysis about community aspects.

In particular, the following items can be considered as community costs, which is socialized with RIU-SM population:

- Investment of time for training.
- Investment of time to support the execution of the Project Activities, that are closely related to their uses and needs.

- Change in some habits, with which it is sought to improve traditional practices, such as agricultural activity.

About the socio-economic impacts, one of the main objectives of REDD+ Project RIU-SM aims to improve the living conditions of indigenous communities, especially women, children and youth in the region, who do not have the opportunities in the areas of education, health, employment and protection. Life plans developed by communities go hand in hand with the concepts that the REDD+ Project RIU-SM manage.

Consult more details in the validated PDD-VCS, Section “5.2 Socio-economic impacts”, page 316 and Annex 22 of validated PDD-VCS: “Potential socioeconomic impacts”.

In view of the positive balance of the impacts on the community, the indigenous authorities, once they made their own evaluation, decided to start the Project as of January 2013.

Through webpage (<https://www.selvamatavenredd.org>) and in the social media (<https://www.facebook.com/selvamatavenredd/>, <https://www.facebook.com/mataven.redd.mas>, <https://www.linkedin.com/company/mataven-redd-project/>, <https://www.instagram.com/matavenredd/>), many of the community members are being permanently informed about the results of the Project Activities and the benefits that are being achieved.

In general, it is considered that the main expected risk would be related to the non-participation and commitment of the communities in the REDD+ Project RIU-SM and failures in the communication system, for which, precisely, measures have been established to promote participation. In meetings and workshops for socialization and the strengthening of information, communication and transport systems with Activities A1.2 and A1.3.

2.3.5 Information to Stakeholders on Validation and Verification Process (G3.3)

As part of the process of the REDD+ strategy and the certification of the Project to achieve compensation due environmental services, indigenous authorities and leaders of RIU-SM had known that a Validation process is required and that several Verification processes must to be carried out to demonstrate the reduction of GHG emissions, from the signing of the Strategic Alliance Agreement between ACATISEMA and MEDIAMOS F&M S.A.S. for the Protection, Conservation and Recovery of Natural Forest of the *Resguardo Indígena Unificado – Selva de Matavén* (Annex 2.1.11 of validated PDD-VCS), Clause 1: “... obtain income from the compensation of environmental services through the commercialization of the Verified Carbon Units (VCUs) that are assigned to the PROJECT in the **validation** and **verification** stages of its cycle, corresponding to thirty (30) years, described in the Project Design Document (PDD) ...”.

In several training and socialization workshops, the details of this Agreement are informed to communities, expanding explanations about the meaning of Validation and Verification processes and the responsibilities that were being generated with the Certification Program before the auditors.

Also, the information about Validation and Verification processes is diffused in particular meetings and workshops, and indigenous leaders, Zonal Coordinators and members of communities collaborate with the preparation and logistics to develop these processes.

So, the measures taken correspond to actions about development of periodic meetings and workshops, and the communication means are based on information given to participants and written materials that indigenous leaders should disseminate in the communities.

The results of the Validation and Verifications processes are accessible in the public documents in the Verra Registry (<https://registry.verra.org/app/projectDetail/VCS/1566>). So, other stakeholders can access to that information.

About the databases of national entities such as, for example, the *Ventanilla Integral de Trámites Ambientales en Línea* - VITAL (Comprehensive Window of Online Environmental Procedures) and the recent *Registro Nacional de Reducción de Emisiones de Gases Efecto Invernadero* - RENARE (National Registry of Reduction of Greenhouse Gas Emissions), the provisions of the national environmental authority are being met, recording the requested information from the Project.

2.3.6 Site Visit Information and Opportunities to Communicate with Auditor (G3.3)

In each verification event, including the validation event, the reservation authorities are informed about the requirement that the Certification Program makes for a team of auditors to visit the area where the REDD+ Project RIU-SM is being implemented.

The Zonal Coordinators and members of communities are in charge of organizing all the logistics for the site visit and determining the communities that are offered to receive the auditors.

A schedule is always prepared from the stage of agreement with the VVB, and this, in turn, is shared with the indigenous authorities, the Zonal Coordinators and the communities.

The auditors always have on their agenda to conduct personal interviews with members of the indigenous communities, for which they have all the spaces they require and the freedom to communicate with the inhabitants of the indigenous reservation. In cases where the auditors are foreigners and do not speak the Spanish language (which is spoken by the majority of indigenous people), persons are always provided to help in the translation from one language to another and from Spanish to the native languages.

In the Validation and Verification Reports, in their respective Sections “2.3 Interviews” and “2.4 Site Inspections”, the auditors present the details about the direct communication that they can establish with the indigenous communities.

2.3.7 Stakeholder Consultations (G3.4)

As previously mentioned, meetings and training and socialization workshops are held with the indigenous authorities, leaders and communities of the RIU-SM (Annex 1 of validated PDD-VCS), where spaces are also opened to answer all the concerns that arise and to exchange information, since the indigenous people are the ones who know their territory, the dynamics of the jungle, the behavior of the rivers, the seasons of occurrence of events of interest, etc. Without their consent and company, traveling through the territory would not be possible.

Indigenous communities are the primary source of fundamental information for the design of the Project, to make an accurate diagnosis of the problems, identify threats, determine the potential for sustainable development, and plan the Activities correctly, in such a way that the greatest possible effectiveness.

In addition, the indigenous authorities also provided secondary information in documents that they had already developed in activities that they had previously carried out with the support of state entities and other NGOs.

On the other hand, the same indigenous communities of the RIU-SM are those that carry out the Activities that are implemented in the territory of the Indigenous Reservation, according to a general framework to achieve the objective of the Project and according to the proposals and needs of the inhabitants of the RIU-SM, which are consistent with the purposes of this initiative to generate development and meet with the protection, conservation and recuperation of the natural resources.

In the validated PDD-VCS, Section “6.2 / Table 87”, page 323, the comments that the stakeholders presented during the local consultations are presented, and in the Section “6.3”, page 343, the summary of comments of the stakeholders is presented.

2.3.8 Continued Consultation and Adaptive Management (G3.4)

Holding meetings with indigenous authorities, leaders, and community members is an ongoing practice that is part of Project Activity A1.2, through which constant communication is maintained. As the Project Activities are the axis of its implementation, this rapprochement with the communities will continue to be permanent, considering that the indigenous peoples themselves are proponents of the REDD+ Project RIU-SM represented by their Association ACATISEMA.

In fact, the entire execution of the Project depends on the work of the indigenous communities, so it is and will be completely necessary to continue with the coordination of the actions carried out in the RIU-SM.

All management carried out within the framework of the Project will have the approval of the indigenous peoples, and it will be adapted if it is necessary according to needs and decisions of communities, since they themselves will not carry out actions that are to their own detriment.

On the other hand, as already mentioned, REDD+ Project RIU-SM implements an Adaptive Management Plan (validated PDD-VCS, Section “4.3.3 Mitigation Measures and Monitoring actions”, page 280), which includes a constant participation of the indigenous communities and authorities, since they are who finally executing the Project Activities throughout their life cycle. Meetings within the indigenous reservation continue to be held (and will continue to be held) as one of the main strategies for making concerted decisions.

2.3.9 Stakeholder Consultation Channels (G3.5)

Since 2012, the first contacts were made with the representatives of the indigenous authorities that are part of the Board of Directors of ACATISEMA Association, through meetings in the cities of Bogotá, Cali and Cumaribo.

From then on, contacts to establish a consultation channels with the other authorities of the indigenous reservation were expanded through the organizational structure of the ACATISEMA, such as the members of the Coordinator Committee (by several development areas) and the members of the *Cabildos* Board; and through the organizational structure of the Indigenous Reservation, such as the *Cabildos* by Sectors, Captains of the communities and, finally, with the members of the communities.

In the training and socialization meetings and workshops (Annex 1 of validated PDD-VCS) it is sought that various members of the community could attend and participate, without any exclusion. However, there are also other spaces, such as the Joint Commission, where the main representatives meet to define strategies and procedures, which are then taken to the *Cabildos*, Captains, leaders and the community in general, to reach a consensus about the actions to be carried out.

In this way, the regular channel is served through the organizational levels of the REDD+ Project RIU-SM, of the ACATISEMA Association, and of the RIU-SM (validated PDD-VCS, Section “1.3 Project proponent”, page 23), through which information and decision-making flow.

Direct contact is maintained with other stakeholders through the same meetings held with the communities in the RIU-SM, and through online channels. Different state entities, such as Cumaribo Mayor's Office,

Vichada Government, CAR, Ministries, etc., and NGOs have channels available to establish contact, such as their web pages and email addresses.



Training workshop with community leaders (Caracol community, Zone1)

2.3.10 Stakeholder Participation in Decision-Making and Implementation (G3.6)

All indigenous communities of RIU-SM have the space to participate in the REDD+ Project RIU-SM, in meetings and workshops for socialization and training, in decision-making bodies within RIU-SM and ACATISEMA through their leaders, in the implementation of Project Activities, and in the profit sharing.

An important decision point is that the general budget for the implementation of the Project Activities is approved by the *Cabildos* of the Sectors (representing the community Captains), by the members of the ACATISEMA Coordinator Committee and by the Board of Directors of their Association, in meetings that they are held at the beginning of each year. Another component of the budget, the sectorial, is decided in meetings that each *Cabildo* holds with the Captains, where they agree on the best way to invest it and bring the benefits that each community requires.

The organizational structures of RIU-SM (community Captains and *Cabildos* of Sectors) and of ACATISEMA (*Cabildos* Board, Coordinator Committee, Board of Directors and General Coordinator) are elements of a regular channel through which decisions and needs are communicated from the base, as follows:

- Each Captain has the possibility, as a representative of his community, to address the needs and proposals of the indigenous peoples and to intervene and participate in decision-making in the instance that the indigenous reservation and the ACATISEMA Association have, according to their organizational structure (in the General Assembly of the Association). Within the community, its members meet and agree on what is best for the general well-being, and that the definitions they make are conducted directly or through their Captain in making decisions in the corresponding spaces.
- The *Cabildos* of Sectors meet in the *Cabildos* Board have the decision-making powers at the level of the entire RIU-SM each year on issues such as the work plan, budget, balance sheets, projects, resolving conflicts, among others, and while the ACATISEMA General Assembly does not meet, they can appoint

Coordinator Committee members, according the ACATISEMA Statutes (Annex 2.1.2 of validated PDD-VCS), Article 29.

- The Coordinator Committee of ACATISEMA participates in the preparation, agreement, approval and communication of annual plans and budgets, contribute to the execution of decisions, present management reports, advise on conflict resolution, among others, according the ACATISEMA Statutes, Article 37.
- The General Coordinator of ACATISEMA represents the Association, must ensure compliance with the policies, plans and decisions made in ACATISEMA's bodies, present management reports, among others, according the ACATISEMA Statutes, Article 39.
- Zonal Coordinators by the Project, delegated by the Direction and Co-direction of the Project to promote the measures and Activities and work together with the indigenous guard, Captains and community leaders to achieve the Project Objective.

On the other hand, in relations with MEDIAMOS F&M S.A.S, there are new bodies created for the design and execution of the REDD+ Project RIU-SM: Joint Commission (made up of representatives of ACATISEMA and MEDIAMOS F&M S.A.S.), body where strategies are established to be analyzed in the meetings of the Council of *Cabildos* and Coordinator Committee, in order to make decisions within the framework of the implementation of the REDD+ Project RIU-SM, Project Co-director, and Zonal Coordinators.

The Project is developed with a gender perspective, which is why women, who play an important role in the structure and support of the family, they are the first line in the care of the house, health, attend deliveries, care of the herds, harvest, transport, processing with tools such as cassava grating machines. They have spaces for their participation, empowerment and decision-making. It has already been seen how some women lead communities (as Captains) and are active in the development of initiatives for the development of their peers. They are also having the opportunity to develop productive projects that they themselves are leading (sewing, small species, vegetable garden, cooperative; the management of stores in an economic circle is projected; they are also participating in the cocoa-banana-corn agroforestry project at the forefront of the families responsible for this development). They also participate in the formulation of the Life Plan (Captains, Coordinators, leaders in a group special formed by women of each ethnicity). Women are recognized and empowered considering that they have space in the Coordinator Committee and as *Cabildos* of Sector and Captains. They are participating a lot in administrative aspects of the Association.

In the social safeguards defined in the Strategic Alliance Agreement between ACATISEMA and MEDIAMOS F&M S.A.S. for the Protection, Conservation and Recovery of Natural Forest of the *Resguardo Indígena Unificado – Selva de Matavén* (Annex 2.1.11 of validated PDD-VCS) for the implementation of the REDD+ Project RIU-SM, in the Clause 5, determines the spirit of protecting aspects such as culture and gender sensitivity, unity and "*minga*" and participation, as follows:

"... 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..."



Agroforestry cultivation cocoa-plantain-corn-abarco, with participation of women (Palmarito community, Zone 5)

2.3.11 Anti-Discrimination Assurance (G3.7)

In the framework of the REDD+ Project RIU-SM no form of discrimination has been identified in and between the participating entities. ACATISEMA watches over the well-being of the indigenous communities of the indigenous reservation. This association is made up of authorities from all the communities of each Sector and of all ethnicities, in this way there is a full participation of representatives from all corners of the RIU-SM, so that all inhabitants are represented.

The greatest participation in the Project is always called for, so that no type of discrimination occurs, by gender, age, ethnicity, or location.

Further, the Strategic Alliance Agreement for the Protection, Conservation and Recovery of the natural forests of the *Resguardo Indígena Unificado - Selva de Matavén* (Annex 2.1.11 of validated PDD-VCS), in its Clause 5, determines the spirit of equity aspects such as unity and "*minga*", gender sensitivity, and participation, as follows:

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..."*

MEDIAMOS has always held a position of respect for the uses, customs and decisions of indigenous communities. In this way, all leaders of the Indigenous Reservation y those jointed in the ACATISEMA Association have all the elements to guarantee that discrimination has not occurred and will not occur in the territory of the RIU-SM, since, naturally, they are those who tend to maintain and improve the conditions of the territory, including the human aspects.

All ethnic groups have a voice and vote in the decisions made within the RIU-SM, as well as the possibility of receiving the benefits they consider, according to their proposals and needs, and representation in the Indigenous Reservation. The Project also supports the development of Ethnic and Territorial Life Plans, with which the integration of indigenous peoples, their identity and organization is enhanced.

2.3.12 Feedback and Grievance Redress Procedure (G3.8)

The RIU-SM has an organizational structure which includes a sectoral organization of the Indigenous Reservation, where each sector has as representative authority to one *Cabildo*, each of whom is an instance of solution of grievances and conflicts, which meet in the *Cabildos* Board. Also, each community in the Sectors has as representative authority to one Captain, each of whom is also an instance for the resolution of grievances and conflicts inside the RIU-SM. This is how through the *Cabildos* and Captains the grievances and conflicts are resolved and, if applicable, they are channeled to wider meetings and assemblies for discussion and resolution.

In the organizational structure of ACATISEMA (validated PDD-VCS, Section “1.3 Project proponent / Illustration 4”, page 28) shows the establishment of a General Assembly, a *Cabildos* Board, a Coordinator Committee, a Fiscal Observer, and Regional Support Groups, which reflects the existence of a system of authorities who resolve different aspects of the Association, in particular everything related to grievances and conflicts, according to its administrative autonomy, rules, own definitions, organization and Statutes (Annex 2.1.2 of validated PDD-VCS), where, through different Articles, it is mentioned that:

“Article 29. FUNCTIONS OF THE CABILDOS OF SECTOR ... h) To be the instance of resolution of the conflicts of the members of the Association ...

Article 37. Functions of the Coordinator Committee ... m) Advise and support the processes of agreement and conflict resolution to the problems of the Selva de Matavén, in accordance with the guidelines established by the General Assembly and the Sectoral Cabildos Board...

Article 47 ... Regional Support Groups will have the following functions ... a) Process the worries of the zones before the General Assembly and the Coordinator Committee.”.

Article 50. The functions of the Territory and Environment Coordinator are as follows ... c) Collect the worries, suggestions and observations of the communities, about events and activities that impact the environment and biodiversity in the Selva de Matavén...

Article 60. Fiscal Observer: It is the entity that supervises the fulfillment of the activities that correspond to the members of the Coordinator Committee and the operation of the Association in general. It is the internal control body of the Coordinator Committee ...

Article 61. Functions of the Fiscal Observer ... a) Request technical and financial reports on activities, projects and programs. b) Evaluate forementioned activities. c) Submit reports about the activities carried out to the General Assembly. d) Notify the General Assembly and the Sectoral Cabildos Board of irregularities regarding the development of the Association. e) Summon the General Assembly and the Sectoral Cabildos Board when he/she deems it pertinent. f) Others not contemplated in these statutes and assigned by Law...

Furthermore, the Strategic Alliance Agreement for the Protection, Conservation and Recovery of the natural forests of the *Resguardo Indígena Unificado - Selva de Matavén* (Annex 2.1.11 of validated PDD-VCS), in its Clauses 5 and 8 establishes that:

*"Fifth. - Ethnic and Environmental Safeguards: The parties of the ALLIANCE agree during the development of the PROJECT to comply with all ethnic and environmental safeguards for the Resguardo Indígena Unificado - Selva de Matavén, within the constitutional and legal framework of Colombia, in particular those referring to ... 2. **Autonomy**: understood this as the ability to make own decisions regarding the territory, self-government and culture in accordance with ancestral practices of internal organization. The right to autonomy and self-determination of the peoples is recognized in international law and in the Colombian National Constitution ...*

Eighth. - ACATISEMA Special Obligations... 2. Autonomously resolve internal and social difficulties or conflicts that arise and that affect or hinder the execution of the normal development of the Project."

So, the REDD+ Project RIU-SM has always supported and endorsed all the management of the Association in the RIU-SM, respecting that its leaders and authorities have the right to autonomously exercise their government, control and justice, also fulfilling the mission of the *Ministerio del Interior* (Ministry of the Interior), which leads actions aimed at promoting respect for Indigenous Peoples, their uses and customs, the strengthening of their organizational processes, as well as their governance.

In any case, the meetings held (Annex 1 of validated PDD-VCS), are spaces used by the participants to raise their concerns, doubts, conflicts, grievances, needs and proposals about the development of the REDD+ Project RIU-SM, which are attended by the indigenous representatives in charge of each meeting, who also invite the attendees to be more willing to approach and learn about the Project, participate, avoid misunderstandings, work collaboratively, etc., as presented in the minutes of the following meetings:

On the other hand, in the national regulations, the procedures for the reception, treatment and response of petitions are defined, in Law 1437 of 2011:

"Article 4: In their dealings with the authorities, everyone has the right to:

- 1. Present petitions in any of its forms, verbally, or in writing, or by any other suitable means and without the need for a proxy, as well as to obtain information and guidance about the requirements that the current provisions require for this purpose ...*
- 2. Know, unless expressly reserved by law, the status of any action or procedure and obtain copies, at your own expense, of the respective documents.*
- 3. Except for legal reserve, obtain information that resides in the public records and archives in the terms provided by the Constitution and the laws.*
- 4. Obtain a timely and effective response to your requests within the terms established for this purpose.*
- 5. To be treated with the respect and consideration due to the dignity of the human person.*
- 6. Receive special and preferential attention in the case of persons with disabilities, boys, girls, adolescents, pregnant women or the elderly, and in general of persons in a state of defenselessness or manifest weakness in accordance with article 13 of the Political constitution.*

...

- 8. To formulate allegations and provide documents or other elements of evidence in any administrative action in which they are interested, so that said documents are valued and taken into account by the authorities when deciding and that they inform the intervener which has been the result of your participation*

in the corresponding procedure.

9. Any other that is recognized by the Constitution and the laws.

...

Article 14: Except for special legal norm and under penalty of disciplinary sanction, every request must be resolved within fifteen (15) days [business] following its receipt. The resolution of the following requests will be subject to a special term:

1. Requests for documents and information must be resolved within ten (10) days after receipt. If the petitioner has not been answered within that period, it will be understood, for all legal purposes, that the respective request has been accepted and, consequently, the administration will no longer be able to deny delivery of said documents to the petitioner, and as a consequence, copies will be delivered within three (3) days.

2. Requests by means of which a query is raised to the authorities in relation to the matters in their charge must be resolved within thirty (30) days following their receipt.

PARAGRAPH. When, exceptionally, it is not possible to resolve the request within the periods indicated here, the authority must inform the interested party of this circumstance, before the expiration of the term indicated in the law, stating the reasons for the delay and indicating at the same time the reasonable period in which it will be resolved. or will give an answer, which may not exceed twice the amount initially foreseen.

...

Article 16: Requests may be submitted orally and must be recorded, or in writing, and through any suitable means for communication or transfer of data. The appeals will be presented in accordance with the special rules of this code..."

If the request goes beyond the Right to Petition, the legislation establishes resources such as the Protection Action, which is instituted before a judicial authority and which is resolved according to the provisions of Decree 2591 of 1991:

"Article 1. Purpose. Every person will have a protection action to claim before the judges, at any time and place, through a preferential and summary procedure, by himself or by whoever acts on his behalf, the immediate protection of his fundamental constitutional rights, whenever they are violated by the action or omission of any public authority or individuals in the cases indicated in this Decree ...

Article 2. Rights protected by guardianship. The protection action guarantees fundamental constitutional rights. When a guardianship decision refers to a right not expressly indicated by the Constitution as fundamental, but whose nature allows its protection for specific cases, the Constitutional Court will give priority in the review of this decision."

If the dispute requires a procedure greater than the Right of Petition and the Guardianship Action, the regulations make available to the interested parties the recourse to complaint before the judicial authorities at different levels (regional courts of justice, Prosecutor's Office, National Courts).

There are all the records of the management and the procedures that have been carried out to respond to the different questions, grievances, claims, and suggestions (PQRS by its acronym in Spanish) from the communities and official entities.

2.3.13 Accessibility of the Feedback and Grievance Redress Procedure (G3.8)

The questions, grievances, claims, and suggestions have been answered to those interested within the corresponding deadlines. Regarding the publication of these answers and decisions, the indigenous authorities have the power, at their discretion and for security reasons, to keep under the figure of confidentiality, some information that is sensitive to handling and that should not be public knowledge.

On the other hand, the entities that are part of the judicial branch have the power to publish the information they deem appropriate, attending to the requests made by the owners of the data regarding the sensitivity of these.

In any case, in the socialization workshops that are constantly held to report on the progress of the Project, information is provided to indigenous communities about the cases in which questions, grievances, claims, and suggestions have been received, as well as on the handling, the responses given and the respective reserves. Other stakeholders can access the answers to these PQRS as they request, at the discretion of the indigenous authorities, as stated above.

2.3.14 Worker Training (G3.9)

The employees who are part of the work team (officials in the ACATISEMA and MEDIAMOS F&M S.A.S. headquarters and professionals who support the technic activities and those in the field) receive adequate instruction in relation to the development aspects of the REDD+ Project RIU-SM. Workshops are held with the staff to generate knowledge and understanding for the correct execution of the actions with which the Project Activities are developed.

Both ACATISEMA and the MEDIAMOS F&M S.A.S. do induction to the technical and administrative staff, the Zonal Coordinators and the auxiliaries for field work in their respective headquarters. This new knowledge is gradually being formed through various events that take place under the implementation of Activity A2.2 and the tasks that are developed within the framework of the Project, thereby generating additional and specific skills related to this type of initiatives, and that contribute to doing a better job.

In the same way, training sessions are also organized periodically for new officials who are part of the bodies of organizational structures of the RIU-SM and the Association, such as Captains and *Cabildos* (some of which change annually) and when the members of the Coordinator Committee (every three years, in General Assembly).

Also, some MEDIAMOS F&M S.A.S. experts collaborate with training for ACATISEMA employees, such as, for example, in accounting matters.

On the other hand, as mentioned, socialization and training workshops have been developed, about issues of governance, climate change, carbon cycle, REDD+ projects, monitoring and control of deforestation, first aid (to indigenous guard), self-sustainable food production, productive projects, and cooperativism (to farmers), among others, oriented to the different RIU-SM representatives and members of the community in general (Coordinator Committee members, *Cabildos*, Captains, farmers, Indigenous Guard, leaders, Zonal Coordinators, youth, women, pastors, etc.), which is part of the Education Program (Activity A2.2). The purpose is that the inhabitants of the RIU-SM understand the different aspects of the Project and that they achieve capacities to contribute in the execution of the Activities.

These new knowledge let to communities and indigenous authorities of the RIU-SM, under the direction and coordination of their own Association, to be the ones who execute most of the Project Activities (surveillance and control of territory and its natural resources, implementation of information-communication-transportation systems, strengthening of the governance, implementation of FAPUS to guarantee food guarantee, implementation of educational programs, and implementation of productive

projects, with the except for activities related to validation and verification).

Although economic resources and logistic are provided to support the indigenous leaders of the RIU-SM in the execution of the Project Activities (due to the fact that they stop performing their traditional tasks, such as cultivating in order to obtain food, to dedicate their time to the Project), this is not considered in any way as salary, since the inhabitants who collaborate with the tasks cannot be considered as workers, since their commitment goes far beyond seeking a simple remuneration for a job, their actions contribute to their own well-being, to their families and to all the people of the RIU-SM.

Another aspect of the implementation of Activity A2.2 is the support for higher education to indigenous students, who are being trained in different technical, technological and professional areas (in universities, technical / technological institutions and SENA) to contribute to the future development of RIU-SM, becoming the next ACATISEMA workers.

Even some indigenous people and professionals in MEDIAMOS F&M S.A.S. develop postgraduate studies and specialized training.

2.3.15 Community Employment Opportunities (G3.10)

As mentioned, ACATISEMA is in charge of the budget execution to implement the Project Activities and at its discretion is the determination of the people who participate in that execution. Given that this Association is made up of indigenous, several leaders elected by local inhabitants and who represent them, have the ability to provide occupations for different members of the population to take part in the actions of the Project and be beneficiaries, and in the RIU-SM and ACATISEMA bodies (Captains, Indigenous Guard, *Cabildos*, members of Coordinator Committee), where can there be representatives of indigenous leaders, women, youths, teachers, elderlies, students, among others. So, these representatives are elected from within the indigenous communities according to their leadership and to the knowledge that people have of them, who, once they join the work teams, receive training from the ACATISEMA and REDD+ Project RIU-SM.

Many members of the indigenous communities also find occupation spaces in the development of the Project Activities, being part of the indigenous guard, generating infrastructure and participating in the implementation of communication and transportation systems, increasing the production of food for self-consumption. and commercialization in productive chains, building infrastructure to provide logistics in health matters, to supply water to the communities, to improve housing and the infrastructure of the Association's headquarters.



Bridge built with indigenous labor (Urba Morichal community, Zone 2 Bajo Río Vichada)

Also, some indigenous workers are formally hired to collaborate with administrative tasks in the ACATISEMA offices, complying with all the requirements that the regulations demand in terms of work for contracted officials and professionals. Likewise, in the company MEDIAMOS F&M S.A.S., workspaces are created to form the technical and administrative teams. Thus, about 40 jobs are generated at the headquarters of the Project Proponents.

In the case of the Zonal Coordinators of the Project, the members of the communities of the respective zone are the ones who propose the leaders who could best develop this responsibility, and it is the direction of the Project that determines, due to their qualities, those who will collaborate in this position.

On the other hand, many of the actions that are carried out to implement the Project Activities are developed through contracts with companies from the region, mainly small and medium-sized, that have their own legally hired workers (and that they also can contract indigenous people from the Reservation to carry out tasks in their own communities), with whom all the requirements that the regulations demand in terms of work must be accomplished.

It is also worth mentioning that higher education students are being supported to become future professionals who will work for the development of indigenous communities at RIU-SM and for ACATISEMA.

2.3.16 Relevant Laws and Regulations Related to Worker's Rights (G3.11)

Both ACATISEMA, MEDIAMOS F&M S.A.S. and the companies outside the RIU-SM that are providing goods and services as part of the execution of contracts, meet the formal requirements, supporting the proper handling of labor issues with their workers. In this way, these entities comply with the regulations on rights and duties with workers under their charge¹⁵ and with the provisions of the Substantive Labor Code¹⁶.

¹⁵ <https://www.mintrabajo.gov.co/web/empleosinfronteras/derechos-y-deberes-empleadores>

¹⁶ http://www.secretariassenado.gov.co/senado/basedoc/codigo_sustantivo_trabajo.html

In the work contracts that are signed with the people who are part of the work teams, is stipulated both the duties, obligations, forms and elements to carry out their tasks, as the rights and the remuneration to the workers.

2.3.17 Occupational Safety Assessment (G3.12)

The implementation of some Project Activities entails the intensification of actions traditionally carried out by the inhabitants of the RIU-SM, such as transporting themselves through the rivers in motor boats, the use of tools to improve their infrastructure, and, above all, the agricultural activities for food guarantee and in the implementation of productive projects.

In the case of Activity A1.1, related to the surveillance and control of the territory, the Indigenous Guard only uses its instruments and insignia representative of authority and its traditional "weapons" (bows and arrows, but not firearms) and has the instruction to take preventive measures to avoid confrontations and damages in the presence of strangers who are caught carrying out illegal activities, through the support they request from the armed authorities, such as the police and, mainly, the army, with whom they can establish adequate contact in case of emergency. On the other hand, training is given in first aid and the respective endowment is provided, including a suitable clothing for protection from inclement weather and first aid kits.

In the case of Activity 1.2, related to the management of information and establishment of communication, the risks are considered to be minimal. In the case of the implementation of means of transport, given the case that it has become overcrowded with the acquisition of boats and motors and this service is being provided to the community in general, it is strongly recommended that the motorist be an experienced person, who know the variants in the rivers and the correct way to navigate, the use of security means, such as life jackets, and that it is not traveled at night.

In the case of Activity 1.3, there must be a care team for the people who are gathered in the different socialization and training workshops.

In the case of Activities A2.1 and A2.3, related to the implementation of actions to guarantee food guarantee and productive projects, which correspond, mainly, to an intensification of agricultural activities and the management of minor species. In this regard, including the use of some small machinery to process their food (cassava graters) they have some devices to avoid accidents, and a recently supplied heavy farm machinery, the "Primer for hazard identification and prevention in OSH - Agricultural Sector" (Mintrabajo, 2018) lists the following risks:

- Presence of noise during work in the field: the use of heavy machinery is not frequent and those who will act as operators are trained, providing security measures and adequate signaling. Light machinery is used more frequently, but represents a low noise level.
- Presence of whole-body vibration / full hand vibration when the equipment, machine or tractor is in operation: The machinery is new and is receiving adequate maintenance and updating of components that wear out. In case of malfunction, they will receive the relevant adjustments.
- Presence of heat / cold / moisture from rain or watering in the environment while the work is done: Ancestral knowledge in agricultural practices is promoted, which includes traditional forms of protection in the activities of planting, harvesting, transferring heavy material, including the use of suitable clothing that protects the body from the inclement weather and adequate work hours, when the sun is not so strong.
- Drinking water is available while the work is done: The agricultural tasks are being carried out in areas

close to the indigenous communities, so the provision of water for hydration is available, in addition to that each participant in this activity brings their provision of liquid and, even, food. In the case of meetings, refreshments are offered and, on many occasions, lunches and dinners.

- There is a toilet in the workplace: The use of toilets is not very entrenched among indigenous communities. The Project works on the massification of measures to improve basic sanitation, gradually, and educates them on its importance, although the traditional customs of indigenous peoples are respected. Some toilets are present mainly in the hamlets.
- Agrochemicals are stored and labelled, handled safely and their waste is disposed of properly: Agrochemicals are not used in the framework of the execution of the Project Activities.
- Ancestral knowledge in the management of plants and animals: as part of the implementation of productive projects, training is provided regarding each task, in addition to having ancestral knowledge, important for this Activity.
- Identification of hazards due to physical load or ergonomics: As part of health care (which is being provided by its own means by ACATISEMA), tools are provided that help with the work and avoid threats to physical integrity, in addition to traditional knowledge allows knowing the most appropriate way to carry out field work.

Other activities such as strengthening governance (A1.3) and the implementation of educational programs (A2.2) are considered not to carry risks in themselves, but rather through associated actions, such as moving from one place to another.

As part of the strengthening of the health system within the RIU-SM, steps are being taken to have its own health provider institution (IPS for its acronym in Spanish), health posts were built and it is being equipped to attend to situations of injuries and events typical of the jungle, such as wounds caused by wild animals. In the case of gravity, there are boats and motors for the exclusive use of transporting the injured to the largest hospitals in the municipal capitals.

On the other hand, the companies outside the RIU-SM that are providing goods and services as part of the execution of contracts are, as part of the formal requirements, supported the proper handling of labor issues with their workers.

Regarding medical care, health posts are being installed with appropriate equipment and there are hospitals in *Cumaribo* and *Inírida*.

2.4 Management Capacity

2.4.1 Project Governance Structures (G4.1)

Project's Governance Structures

Project Governance Structure is based on the roles of entities that signed the "Strategic Alliance Agreement" (Annex 2.1.11 of validated PDD-VCS), signed by ACATISEMA and MEDIAMOS F&M S.A.S., including the authorities of RIU-SM. Each entity contributes, in turn, a sub-structure based, on the RIU-SM and ACATISEMA side, on the governance bodies and new designations by the Project (Captains, indigenous guard, *Cabildos* Board, Coordinator Committee, the Project Co-director and the Project's Zonal Coordinators), and on MEDIAMOS side, on the technical and administrative work areas that have been defined to meet the requirements of the Project.

The Organizational Structure of this Alliance is presented in the validated PDD-VCS, Section "1.3 Project

proponent”, page 23 (as well as the organizational structures of each entity of the Alliance). In this section it is also established that ACATISEMA, as an indigenous association of the RIU-SM, has its own Statutes (Annex 2.1.2 of validated PDD-VCS) and its own governance structure (page 27 of these Statutes), which is equally essential for the execution of the Project. Additionally, this section explains the roles and responsibilities of Project Proponents.

The organizational structure for the implementation and monitoring of Project activities is presented in the validated PDD-VCS, Section “4.3.5 Organizational structure / Illustration 39”, page 312.

Roles and responsibilities of all entities involved in project design and implementation

As defined in the “Strategic Alliance Agreement” (Annex 2.1.11 of validated PDD-VCS), Clauses 7 and 8, the special obligations of the Project Proponents are:

“... OF MEDIAMOS: 1. Direct the technical and scientific development of the PROJECT in its different phases of design, validation, verification and execution.

2. Provide technical and scientific knowledge with its technological elements for the design, validation, verification and execution of the PROJECT.

3. Provide and manage the necessary resources for the design and preparation of the PROJECT (described in the PDD) and for the presentation, validation and registration before the VCSA and / or any other Association with similar characteristics. In this purport, it will manage the complementary financial resources that are required until they are validated and verified (Accreditation and Registration), according to the stages of the cycle of a carbon project.

4. Strictly comply with their responsibilities and contributions, taking into account the defined POAs and the Budget for the execution of the activities and tasks defined in the PDD.

5. Arrange what is necessary to carry out the updates and transfer of the required technological information.

6. Respond for the quality of technical, financial, social, environmental and market studies.

7. Maintain a technical file containing the documentation and have it available during the term of this AGREEMENT.

... OF ACATISEMA: 1. CONCURRENCE: ACATISEMA declares that, at the signing of this AGREEMENT, another contract, agreement, pact or alliance with the same object of this AGREEMENT or that prevents and obstructs it, is not in force.

2. Autonomously resolve internal and social difficulties or conflicts that arise and that affect or hinder the execution of the normal development of the PROJECT.

3. Strictly comply with their responsibilities and contributions, taking into account the POAs and the Budget defined for the execution of the activities and tasks defined in the PDD, in particular, regarding the control and surveillance of the forest and the development of the of Agri-food Productive Units System that guarantee the commitment not to deforest or degrade in the part defined as PROJECT AREA, described in the PDD.

4. Allow and facilitate access and transit through the territories of the Unified Indigenous Reservation - Selva de Matavén to technical, specialized and operations personnel designated by MEDIAMOS, during the term of the AGREEMENT.

5. Facilitate, cooperate and transmit the information and elements necessary for the design, validation, verification and development of the PROJECT.

6. Coordinate, define and establish the locations and arrangements for meetings with the members of ACATISEMA necessary for the design, elaboration and implementation of the PROJECT.

7. Inform, disseminate and publish the scope and achievements of the PROJECT to the members of the Unified Indigenous Reservation - Selva de Matavén and other communities at the national and international level.”

On the other hand, the roles of other stakeholders, involved in project design and implementation, are presented in Section “2.1.7 Stakeholder Descriptions” of this document.

2.4.2 Required Technical Skills (G4.2)

According to the document “The Knowledge and Skills Needed to Engage in REDD+: A Competencies Framework” (Barquín, et al., 2014), manages key concepts, policy benchmarks, technical elements, skills, tools and resources for 10 specific REDD+ themes, as explained below:

1. The Science of Climate Change and the Role of Forests: Understand the natural processes that affect climate, how human activities are impacting climate and how natural ecosystems such as forests are important to climate change adaptation and mitigation.
2. REDD+ Policies Under the UNFCCC: Understand the main REDD+ decisions that have been made through the UNFCCC and understands the UNFCCC negotiation process. A stakeholder understands the implications of the UNFCCC process and can apply this understanding in his/her engagement on REDD+.
3. The Scale of REDD+: Understand the options for implementing REDD+ within different scopes and scales, including national, sub-national and nested approaches to REDD+, and should understand the advantages and disadvantages of each.
4. REDD+ Readiness Process: Understand the phased approach for the REDD+ mechanism, the key components for piloting REDD+ readiness activities and the leading mechanisms being used to build and implement REDD+ strategies.
5. Stakeholder Engagement: Understand the roles and responsibilities of the various stakeholders (taking in account that communities are the main) in REDD+; the value of their engagement; and the key elements to achieve full, inclusive and effective participation in REDD+ planning, implementation and monitoring at the national, sub-national or project level.
6. Perspectives on FPIC: Understand the evolving discussions and perspectives on the concept and application of Free, Prior and Informed Consent (FPIC) and how interpretations of FPIC vary.
7. REDD+ Social (community aspects) and Environmental (biodiversity aspects) Safeguards: Understand and applies the seven broad safeguard principles from the UNFCCC Cancun Agreements for the implementation of REDD+ and is familiar with the leading social and environmental mechanisms that apply to REDD+.
8. Measurement, Reporting and Verification (carbon measurement and monitoring): Understand the reasons why MRV is a central part of a REDD+ program and should understand main elements of an MRV system. The stakeholder should also understand how MRV relates to RELs/RLs.
9. Reference Levels and Reference Emission Levels: Understand the purpose of reference levels (RLs) and reference emission levels (RELs), the difference between them and the basic steps involved in their development.

10. REDD+ Funding and Finance: Understand the cost of REDD+ implementation, including the readiness process, and should understand the opportunities for funding REDD+ activities through the UNFCCC and other sources.

On the other hand, community leaders and members require knowledge related to the REDD+ scheme, such as climate change, the carbon cycle, its contribution to the protection of forests and related natural resources, indigenous governance, rights and commitments to the Project, implementation of the particular Activities of this initiative.

The technical staff of the Project have these skills required to develop the Activities properly and make this initiative sustainable (see organizational structure for the Project -in validated PDD-VCS, Section “1.3 Project proponent / Illustration 3”- and for the implementation and monitoring of Project Activities -in validated PDD-VCS, Section “4.3.5 Organizational structure / Illustration 39”, page 312-), applying, of course, Project Activities (Section “2.1.8 Project Activities and Theory of Change” of this document) and the Monitoring Plans (validated PDD-VCS, Section “4.3 Monitoring Plan”, page 265, and the Sections “4.4 Community Impact Monitoring” and “5.4 Biodiversity Impact Monitoring” of this document) and the evaluation and quantification of results and benefits in relation to Climate, Community and Biodiversity components, a task to which indigenous leaders and members of the communities also contribute, since it is they who acquire the skills to carry out field work, under the indications of the corresponding member of professional staff.

2.4.3 Management Team Experience (G4.2)

The technical staff of the Project have the necessary and adequate experience to implement the REDD+ Project RIU-SM, the Sustainable Management Plan for Land and Forest of the RIU-SM and the Project Activities. It has forestry engineers, agronomists, biologists, administrators, professionals in marketing and advertising, professional in finance, technician in indigenous development, professionals in GIS and information systems, lawyer, accountant, among others.

Below is a summary of the professional profiles of the REDD+ Project RIU-SM staff members:

Table 15. Details about management team experience

Name	Profession / credentials	Profile
Disciplinary areas: Climate, forests, waters, biodiversity, management		
Francisco A. Quiroga Zea	• Forest engineer. • Master in Mathematical Statistics • Emeritus Professor - Universidad del Valle, Colombia. • Associate Professor,	According to his resume, he has the training, skills and experiences necessary to direct and collaborate technically and scientifically in the design, implementation and development of projects related to carbon, greenhouse gas emissions (GHG) and climate change that are currently required at national and international level, such as projects REDD, AFOLU, MDL. The following aspects of his professional experience are highlighted: ✓ Director of the REDD+ Project RIU-SM, within the framework of the Strategic Alliance Agreement for the Protection, Conservation and Recovery of Natural Forests of the Unified Indigenous Reserve - Selva De Matavén. In development, since June 2012. ✓ Member of the Expert Panel of the International Tropical Timber Organization (ITTO). Period 2010-2011.

Name	Profession / credentials	Profile
	Universidad del Valle, Colombia. - Professional card: 7116 Ministry of Agriculture - Colombia - Forest Technical Assistance Card: N° 031-7116, CVC – Colombia.	✓ Professor - researcher of the Postgraduate Program of the University of Tolima in the area of Management and Strategic Planning of Forestry Projects, Mathematical Modeling and Dynamic Simulation. 2004 - 2009. ✓ Current international advisor and consultant to ITTO (International Tropical Timber Organization) for the ex-post evaluation, design and implementation of projects related to forest statistical information systems in different Latin American countries (Bolivia, Peru, Panama, Honduras, Venezuela and Colombia). 1994 -2007. ✓ Researcher in projects on "Systematization and modeling of economic and technical information related to the production, transformation and commercialization of timber products". 2003 - 2008. ✓ Researcher in projects on Territorial Planning, Environmental Management, Forest Zoning and Characterization of Natural Forests in hydrographic basins". 1982 - 2008. ✓ Director of the Interinstitutional Research Program in an Agreement between the Universidad del Valle and the National Center for Coffee Research, CENICAFÉ, entitled: "Mathematical Modeling of Coffee Cultivation in Colombia". 1989 - 1994.
Hugo Martínez Higuera	- Forest engineer. - M.Sc., Doctor of Science Biology	With more than 34 years of professional experience preferentially dedicated to Forestry Research and Extension, specialist in planning, execution, monitoring and evaluation of development projects (including institutional and community development, environmental and social impact assessments), with a human development approach. sustainable (including equity and community development in communities of collective black and indigenous and Andean territories) for policy-making purposes; management of renewable natural resources, with emphasis on watershed management, natural forest management (both primary and secondary), specialist in ecology and forest succession, experimental design and elements of forest sampling and inventory, as well as nursery and plantation management commercial; He has been an auditor in voluntary forest certification processes in Colombia and Ecuador, also served as an Environmental Advisor for Black Communities in prior consultation processes. Skills specifically in the diagnosis of natural resources, with emphasis on flora, of the area under study, implementation and monitoring of permanent sampling plots for the determination of biomass (aerial and underground) with emphasis on carbon capture, reduction of carbon emissions into the atmosphere, formulation of community projects that aim to stop the risks of deforestation in the region.
Juan Carlos Silva Montoya	Biologist	Biologist specializing in Environmental Management with experience in the formulation and implementation of social and environmental projects, with an emphasis on participatory planning and community environmental management, comprehensive management of hydrographic basins and restoration of wetlands. He has carried out community projects for the management of domestic and municipal solid waste based on the recycling and production of organic compost bins. Development of landscaping and

Name	Profession / credentials	Profile
		gardening in homes and open spaces (Parks, avenues, avenues), I carry out food guarantee projects with clean and organic technologies aimed at low-income families. I dictate Environmental Education workshops emphasizing the situation of climate change, adaptation and mitigation.
Luis Alonso Merizalde	• Biologist, with an emphasis in Marine Sciences • Master in Conservation and Management of the Natural Environment: Global change and Socio-ecological Sustainability	Biologist with a master's degree in conservation and management of the natural environment: global change and socio-ecological sustainability; with experience in the management and coordination of productive projects; community tourism and participatory conservation with rural and ethnic communities, administration of projects for the management, conservation, rescue and rehabilitation of wildlife. With extensive experience in the implementation of environmental education projects with a focus on climate change and in the implementation of socio-economic and biodiversity monitoring plans to evaluate conservation status.
Mónica Barragán Salas	• Business administrator	Training, skills and experiences necessary to collaborate technically and scientifically in the design, implementation and development of projects related to aspects of community participation and demographic development and analysis.
Alejandro Camacho Ortíz	• Bachelor • Technician in environmental sanitation • Technician in indigenous promoting for sustainable development	Indigenous leader of the <i>Piaroa</i> ethnic group who has work as a Technician in environmental sanitation in the Vichada Secretariat of Health - <i>El Sejal</i> Health Center, as a teacher in health issues with the Vichada Secretariat of Education - <i>Cadanapay</i> school, and as Coordinator of integral health in the Coordinator Committee of ACATISEMA.
Disciplinary areas: Finance, sociology, community, anthropology, communication, web platform		
Juan Pablo Muriel Rojas	• Business administrator • Master of Administration with an emphasis in Finance	Business administrator, with extensive experience in the commercial, financial and administrative part of multinational and national companies, with a high level of commitment to set and achieve challenging goals and objectives, great leadership capacity, to work in interdisciplinary teams and to generate and promote the implementation of ideas and strategies for growth and profitability.
Daniela Quiroga Casella	• Business Administrator • International Marketing Professional • Bachelor in	Professional in Business Administration with double degree (France - Colombia) and in International Marketing and Advertising; trilingual (Spanish, English, French); with experience in marketing, research, academic learning processes and trade marketing. Proactive, responsible and achievement-oriented person, with the ability to learn, a high sense of belonging and social responsibility. Also, with experience in working in

Name	Profession / credentials	Profile
	Science of Management	interdisciplinary teams in changing contexts.
Gustavo Adolfo Muriel Rojas	• Professional in graphic design and visual communication	With training, skills and experiences necessary to collaborate technically and scientifically in the implementation and development of projects related to carbon, greenhouse gas emissions (GHG) and climate change that are currently required at a national and international level, such as projects REDD, AFOLU, MDL.
Sandra Lucía Bravo Reyes	• Social communicator and bilingual educator	Social Communicator - Universidad del Valle 1992, Organizational Communication - Universidad Javeriana 1999 - Organizational Communication at the service of education and the development of human groups, coordination, design and direction of Cooperative Education and social development programs. - Instructor in Cooperativism. - University teaching. Subject "Business Communication". - Teaching with young people, "Jóvenes en Acción" program. Subject Humanities and Spanish Language. - Experience in Spanish Language curriculum designs, Primary, Secondary and Middle levels. Constructivist methodology. - Teacher in the United States. - Editing and writing business media.
Disciplinary areas: Food guarantee and soils		
Freddy Adalberto Martínez Astudillo	• Agricultural engineer	With the necessary training, skills and expertise that allow the technical and scientific consolidation of the requirements for the implementation of projects related to carbon emissions and the greenhouse effect and climate change.
Jennifer Montenegro Parra	• Agricultural engineer	Knowledge in analysis and chemistry of soils, high frequency irrigation, drainage and precision agriculture, organic fertilizers and soils in general. With interest to work in the field with projects related to land management, agriculture related to fruit trees, vegetables, as well as projects for environmental conservation. I have the facility and disposition to learn, good interpersonal relationships, responsible, with capacity for integration and leadership, ability to formulate and develop projects.
Andrés Mauricio Rodríguez Loaiza	• Agricultural engineer	
Disciplinary area: Geomatics, digital image processing, GIS, information system, technology		
Miguel Andrés Idrobo Sánchez	• Topographic Engineer	Training as a Topographic Engineer. I have the necessary skills to generate cartography of land uses and changes in land uses through multitemporal study through the digital process of satellite images and in spatial modeling to generate prospective deforestation data. With 3 years of experience in research and generation of products derived from remote sensing and their application to the climate and the environment and thus collaborate technically and scientifically in the design, implementation and development of REDD, AFOLU, CDM projects.
Eider Hernán Pérez Rojas	• Systems Engineer	With training, skills and experiences necessary to collaborate technically in the implementation and development of forestry projects, related to the operation and logistics in the compilation and systematization of information; design, development and implementation of software for

Name	Profession / credentials	Profile
		Dynamic Simulation Models - MSD (Java programming language and databases) and generation of official documentation in the design, validation and verification phases.
Disciplinary areas: Legal, Accounting, Tax auditor		
Jorge H. Gómez V.	• Lawyer	With training, skills and experience necessary to carry out a general legal analysis of the different perspectives in which the REDD+ Project RIU-SM is carried out. The following aspects of his professional experience stand out: 1. Administrative Law: analysis of the Strategic Alliance Agreement signed between ACATISEMA and MEDIAMOS F&M S.A.S., for its proper practical development. 2. Commercial and Civil Law: preparation of documents that allow a positive impact on the communities belonging to ACATISEMA. 3. Tax Law: analysis of possible tax impacts of the REDD+ Project RIU-SM in the society MEDIAMOS F&M S.A.S. 4. Constitutional Law: attention to constitutional actions where MEDIAMOS F&M S.A.S is linked in relation to the execution of the REDD+ Project RIU-SM.
Sandra Valdivia	• Counter, tax auditor	Professional with the ability to apply, analyze and interpret the accounting and financial information of an organization, in order to design and implement instruments and mechanisms to support the organization's directives in the decision-making process. Expert with university training with special emphasis on accounting-financial-tax-administrative matters and practices, auditing and business advisory services. With powers, by law, to give public faith regarding the known facts of the field of my profession, as well as to rule on economic and financial information, carry out activities related to accounting and tax science, the information systems of the company, finances, costs, etc.
María Gaby Boshell Villamarín	• Bachelor of Education. Mathematics and Physics Areas • Master in Systems Auditing • PhD candidate in Educational Sciences	Pedagogue with extensive experience in higher education. Master's degree in systems and doctoral student in educational sciences, with a thesis on the university-productive sector relationship in which historical-contextual factors at a global and local level, politics, management and training processes are studied. In management, coordination and accompaniment of institutional and inter-institutional projects; in projects with the external sector based on calls, alliances and agreements. In academic, research and entrepreneurship projects. ICT and network management.

The Annex 24 of validated PDD-VCS contains the information about the management team's expertise and prior experience (CVs and profiles).

2.4.4 Project Management Partnerships/Team Development (G4.2)

It is planned to have the advice of expert entities in certain topics, such as, for example, to develop production projects (Activity A2.3) whose purpose is to implement processes to generate different goods and services in production chains. So, agreements will be signed with organizations that have enough experience in each of the initiatives that the communities decide to carry out, such as those necessary to develop specialized crops, minor species breeding, tourism, handicrafts, among others. As an example, mention is made of the Agreement with *FEDECACAO* for the establishment of 100 has. under the Agroforestry System (cocoa, banana, corn, abarco -*Cariniana pyriformis*-). It is also expected to establish agreements and conventions with other expert institutions to develop productive projects in the areas of agroforestry, silvopastoral projects -integral farms-, nature tourism, fish farming -consumption and ornamental-, handicrafts and minor species.

2.4.5 Financial Health of Implementing Organization(s) (G4.3)

In the first stage of the Project, financing was achieved through the efforts of the proponents, especially *MEDIAMOS F&M S.A.S.* that contributed with its own resources, loans and investors to guarantee the execution of the Activities in the design and the first years of implementation. In the same purport, both proponents contributed with working capital to achieve the Project Objective. Once the breakeven point is reached, the financial support is guaranteed for the coming years, with the economic resources (derived from the commercialization of certified VCUs) and human resources for the correct and complete execution of the Project Activities.

For over the project lifetime, financial support is considered in the compensation for the environmental services rendered until the year 2042, based on future verification periods, the VCUs that will be certified and their commercialization.

In the validated PDD-VCS, Section “2.5.1 Step 2 Investment analysis (VT0001)”, the initial conditions with which the execution of the REDD+ Project RIU-SM began and the projections in income were presented, with which the Project is sustainable. The Verified Carbon Units – VCUs certified in 2013, 2014, 2015, 2016 and 2017 were the basis of the budget execution of the Project Activities in years 2017, 2018, 2019 and 2020.

2.4.6 Avoidance of Corruption and Other Unethical Behavior (G4.3)

In the validated PDD-VCS, Section “2.5.1 Step 2 Investment analysis (VT0001)”, the origin of the funds with which the REDD+ Project RIU-SM began its execution was explained since 2013 (own funds of the Project Proponents, loans in the name of natural participants in the Project, support from other entities, private investor), with which is clear and transparent initial financing.

The Project Proponents signed the Strategic Alliance Agreement for the Protection, Conservation and Recovery of Natural Forest of the *Resguardo Indígena Unificado – Selva de Matavén* (Annex 2.1.11 of validated PDD-VCS), which, in its Clause 2, Scope of the Object, numeral 4, undertakes to “Develop the obligations and exercise their rights with absolute fidelity to the principles of good faith, transparency (truthfulness), loyalty, ethics and equity, during the development of this AGREEMENT”.

Both ACATISEMA and MEDIAMOS ensure the correct and transparent execution of the REDD+ Project RIU-SM. Both entities have periodic Fiscal Reviews. Also, ACATISEMA, that is the entity that execute the

economic budget, realize its own process of assessment through its Fiscal Observer.

It is also important to highlight that in each verification event, the VVB that intervenes as auditor also evaluates all the results, benefits and actions derived from the implementation of the Project Activities, which they have found to be correct and adequate.

The Project Proponents have the adequate legal support and can document that they are not embedded in any event of corruption. In addition, the companies with contracts signed to implement some tasks to meet the Project Activities must submit legal documentation where transparency is evidenced in their actions, agreements and businesses in their trajectory.

The details of the execution of the Project Activities, including the monitoring and verification processes, as well as the final results of these, are shared with the communities and indigenous leaders in periodic meetings. In this way, the aim is to ensure that the main stakeholders are constantly informed of progress and investments made.

Likewise, the REDD+ Corruption Risk Assessment (ERC REDD+, by its acronym in Spanish) processes are considered as tools to *"... ensure that all relevant stakeholders understand the risks of corruption in REDD+ and are well informed about their roles and responsibilities to mitigate them; that corruption risks are represented when developing national approaches to safeguards and information systems on safeguards for REDD+; that a mechanism for monitoring the risks of corruption in REDD+ is initiated; that the national REDD+ strategy incorporates effective measures to address corruption risks that fully reflect national and international requirements..."* (ONU-REDD, 2012). Although it is oriented at the national level, its precepts can be applied at the local level, as is the case of the REDD+ Project RIU-SM. For this purpose, the following aspects are taken into account:

- Surveillance of Safeguards (decision 1 / COP.16 – COP Cancún, 2010).
- Distribution of benefits.
- Forest Monitoring, Reporting and Verification (MRV System).
- Observation of the NREF issued by Colombian Government to UNFCCC (according to what the national legislation determines).

2.4.7 Commercially Sensitive Information (Rules 3.5.13 – 3.5.14)

All the information about "operational and capital inversions and expenditures" in the implementation of Project Activities has been provided in the documentation that the REDD+ Project RIU-SM, which is available to the VVBs and the VCS Program, as is evident in the attached files of annual budgets that are delivered with the PDD and the different Monitoring Reports - VCS in each verification event. Generally, this type of information is provided in Annexes, which are not required by the Verra Registry information system, but are available for consultation with interested parties, considering the legal reservations to which the Project Proponents are entitled.

2.5 Legal Status and Property Rights

2.5.1 Statutory and Customary Property Rights (G5.1)

As indicated above, in the Section "2.1.6 Stakeholder Identification / Rights of the main stakeholders", the

territory of RIU-SM is registered as property identified under Folio of Real Estate Registration No. 540-0005491 of August 4, 2008 (Annex 2.2.4 of validated PDD-VCS), issued by the Office of Public Records of *Puerto Carreño, Vichada*, based on the Resolution 037 of July 22nd, 2003 issued by the INCORA (Annex 2.2.1 of validated PDD-VCS), "by which 16 indigenous communities joined on the right side of the Vichada river, left side of the *Orinoco* river, *Brazo Amanavén* are unified under the name of *Resguardo Indígena Selva de Matavén*, and also expands the Unified Reservation, located in the jurisdiction of the municipalities of *Cumaribo* and *Puerto Inírida, Guainía* and *Vichada* departments" (see Map 10). Resolution 037/2003 was protocolized by Deed No. 3798 of September 15, 2008, Notary 19 of *Bogotá D.C.* Circle (Annex 2.2.3 of validated PDD-VCS).

By Certification No. 263 of April 16, 2013 (Annex 2.2.6 of validated PDD-VCS), issued by the Ministry of Interior, it confirms that the *Resguardo Indígena Unificado – Selva de Matavén* belongs to the ethnic groups of *Guahibo [Sikuani], Piaroa, Puinave, Curripaco, Cubeo* and *Piapoco*, inhabiting the 17 sectors, as established in Resolution 037/2003. The Reservation is collective, inalienable, and indefeasible (Articles 63 and 329 of the Constitution of Colombia) property. The administration and management of these lands are subjected to uses and customs of the beneficiaries and Decree 1386 of 1994, Article 10 and Decree 2164 of 1995, Article 22.

This documentation satisfies the VCS Standard as rights of use "arising by virtue of a statutory, property or contractual right" (VCS. 2012 VCS Standard. Version 3.3, 04 October 2012. Verified Carbon Standard) has been documented.

In Annex 2 of validated PDD-VCS (and RIU-SM information) this aspect can be detailed.

In this way, the communities of entire RIU-SM (Annex 1 of this document) have the statutory and customary property rights over the territory. Regarding the use of the territory, within the framework of the Project's implementation, the Proponents (ACATISEMA and MEDIAMOS F&M S.A.S.) have the rights to the results derived from the implementation of this initiative, in particular the VCU that are generated and verified.

2.5.2 Recognition of Property Rights (G5.1)

The property rights are completely clear according to the previous Section, by Resolution 037 of 2003, which is a legal document issued by the national authority in charge, in 2003, of promoting access to land and legally adjudicating rural property and its social, environmental and cultural order to promote development. sustainable production of the peasant, indigenous and black economy (INCORA). The provisions of this entity are recognized by the *Dirección de Asuntos Indígenas, ROM y Minorías* (Directorate of Indigenous Affairs, ROM and Minorities) of the *Ministerio del Interior* (Ministry of the Interior).

The REDD Project RIU-SM respects the right that indigenous peoples have over their territory, which are enshrined in different Colombian legislation, since the Indigenous Reservations are inalienable and unenforceable. In fact, in the principles of the Strategic Alliance Agreement (Annex 2.1.11 of validated PDD-VCS), that in its Clause 5 stipulated that "*Ethnic and Environmental Safeguards: The parties of the ALLIANCE agree during the development of the PROJECT to comply with all ethnic and environmental safeguards for the Resguardo Indígena Unificado - Selva de Matavén, within the constitutional and legal framework of Colombia, in particular those referring to 1. Territory: as the raison d'être of the physical and cultural existence of the Reservation, since it is the fundamental guarantee to continue surviving as an indigenous people. In particular, the Comprehensive Management Plan for the forests and lands of the Reservation guarantees compliance with this aspect. In this purport, MEDIAMOS, nor any other entity that could intervene in the PROJECT, acquire rights over the territory of the Unified Indigenous Reservation, other than those specified in this AGREEMENT, making it absolutely clear that neither the PROJECT nor*

the AGREEMENT imply commitments or sale or rental of any part of the territory of the Reservation, thus committing to guarantee its integrity”, and in its Clause 20 stipulated that “Each of the parties undertakes to respect, comply with and enforce the set of values and ethical principles such as Equity, Respect, Dignity, Solidarity, Integrity, Honesty, Transparency, Justice, Responsibility, Teamwork, which strengthen an ethical and service culture, generating motivation and internalization of each one of those values in daily activities leads them to reflect on a transparent behavior in the validity of this AGREEMENT”.

On the other hand, Activity A1.3 seeks to strengthen governance in the territory of the RIU-SM, improving the management capacities of indigenous leaders and the governing bodies of ACATISEMA. Therefore, a solid governance system in the Indigenous Reservation is a mechanism that contributes to help to secure statutory rights, not only in relation to this Project, but to enforce your general rights.

And, as it was described in the previous Section, regarding the use of the territory, within the framework of the Project's implementation, the Proponents (ACATISEMA and MEDIAMOS F&M S.A.S.) have the rights to the results derived from the implementation of this initiative, in particular the VCUs that are generated and verified.

2.5.3 Free, Prior and Informed Consent (G5.2)

How the Project will not encroach uninvited on indigenous community property

The REDD+ Project RIU-SM is an initiative of the *Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén* – ACATISEMA. On July 06 of 2012 (see Sections “2.1.1 Project Proponent” of this document), the Board of Directors of ACATISEMA summoned to MEDIAMOS company to develop any action to protect and conserve the Selva de Matavén. From this rapprochement by members of ACATISEMA, the idea of the Project was born. So, REDD+ Project RIU-SM does not encroach the indigenous community property, since this project is their property.

In any case, when any entity enters the territory to contribute to the implementation of any Activity (such as MEDIAMOS, the entities with which agreements are signed and the auditors) they must always consult with the authorities, receive their endorsement and be permanently accompanied.

Free, prior, and informed consent

Since the REDD+ Project RIU-SM is of indigenous communities that inhabit the territory, the process of free, prior, and informed consent, which is called “*Previous Consultation*” in the national context, is not applicable, because they have decided autonomously to develop this initiative and they are aware that it does not threaten their lives, beliefs, culture, institutions, spiritual well-being, social and economic integrity and the lands they occupy or use in any way, and they can guarantee the right to their own participation in the formulation, design, implementation, and assessment of their Project, as ratified by the Decision and resolution of the Superior Court of the Villavicencio Judicial District, Labor Decision Chamber for the Guardianship Action on November 14, 2014 (Annexes 1.11.5 and 1.11.8 of validated PDD-VCS) and the Decision of the Supreme Court of Justice, Labor Cassation Chamber of the Protection Action on March 04, 2015 (Annexes 1.11.7 and 1.11.10 of validated PDD-VCS), where the Decision and resolution of the Superior Court of the Villavicencio Judicial District is ratified.

Annex 1 of validated PDD-VCS, contains information about the process of socialization and training on aspects of the implementation of REDD+ strategy and about the consultation process that support to this initiative, that has occurred in the several stages of REDD+ Project RIU-SM. This Annex consists in evidences of participatory process and concerted actions that have been placed in several workshops and

meetings in the RIU-SM.

Appropriate restitution or compensation

In the validated PDD-VCS. Section " 2.5.1 Step 2 Investment analysis (VT0001) / Table 45. Distribution of income for the project implementation and utilities and reservations", page 180, (that corresponds to Strategic Alliance Agreement, Annex 2.1.11 of validated PDD-VCS, page 6) is explained the way how the restitution or compensation of the Project for parties is carried out, by achieve the commercialization of carbon credits, which gives to indigenous reservation an investment of between 70% and 80% for the execution of the Project Activities in the territory of the RIU-SM, and between 10% and 22.5% of the resources for reserves of ACATISEMA, to be used as the indigenous authorities and the communities decide. However, it is important to clarify that this compensation is not due to that any parties of lands are or will be negatively affected by the Project, rather it is derived from the protection of forests.

2.5.4 Property Rights Protection (G5.3)

- The Project Activity A1.1 "Surveillance and control of territory" is to watch over that there is no interference by people outside the RIU-SM in the territory, that natural resources are not exploited beyond the customary use by indigenous communities, that there is no deforestation and that indigenous guard is present in the territory as native authorities. Although this task is depriving to strangers and/or to indigenous people of the inappropriate use of some resources, it is precisely because this use is not part of the land property rights.
- The Project Activity A1.2 "Information, communication and transport systems" is to provide necessary services to enhance the performance of the other Project Activities and provide benefits to the communities in their needs to be in contact with their peers and move around the territory. This Activity in no way affects the property rights and freedoms of indigenous people, but rather contributes to the development of their own important activities to their culture or livelihood.
- The Project Activity A1.3 "Governance" is to improve the management capacity of indigenous peoples over their territory and resources and the strengthening of their ACATISEMA Association. The development of this Activity does not entail any threat to the rights of indigenous communities, nor is it contrary to their customs and traditional uses of resources for their livelihood, on the contrary, it tends for their development.
- The Project Activity A2.1 "Family Agri-food Production Units System - FAPUS" is to contribute to ensuring food sustainability in the RIU-SM. Although the strategy entails gradually changing the way in which land is used for crops (improving agricultural practices) and how fauna is used to provide food, alternatives are included that allow reducing the pressure on forests and biodiversity, without affecting the provision of food, on the contrary, seeks to improve the yield of crops and opt for the breeding of smaller species to complement the quantity and quality of nutrients. FAPUS has been sufficiently socialized with indigenous communities (Annexes 1 and 4 of validated PDD-VCS), which are aware of the benefits of improving their production, affecting the forests less and less. This Activity does not imply that they have to relocate or restrict their customary activities, but rather it promotes better management of the lands that are already being used.
- The Project Activity A2.2 "Education" is to improve the knowledge and capacities of indigenous people in order to train professionals to administer the territory of the RIU-SM and its natural resources. This Activity does not entail any threat to the property rights of the inhabitants of the indigenous reservation,

nor does constitute a reason for the displacement of the fundamental activities for the inhabitants, as students receive support, which is a great collaboration for their families.

- The Project Activity A2.3 “Productive Projects” is to provide development alternatives that improve the economy of the interested and benefited communities. This Activity seeks to better manage the lands and resources, without altering them, but through a sustainable use that provides well-being and occupation among indigenous people.
- The Project Activities A3.1 “Project Validation” and A3.2 “Project Verification” are to manage and provide compensation for the environmental services rendered. As is the principle of the REDD+ strategy, the Project does not contemplate restricting any rights of indigenous peoples, without prohibiting the customary use that they give to the lands and resources, but by offering alternatives that generate benefits.

2.5.5 Illegal Activity Identification (G5.4)

Illegal activities are related with the threats against the conservation and protection of the forests of the *Selva de Matavén* and the other natural resources of the indigenous reservation, associated with the clandestine entry of external actors to carry out activities that are not permitted (as it is explained in the validated PDD-VCS, Section " 1.10.10 Diagnosis of the problem / The specificity of the problem", page 111), as follows:

- The destruction and deterioration of the natural forest by land use change resulting from the improper expansion of the agricultural frontier and undirected colonization.
- The unlicensed mining and oil interest, harming soils and forests.
- The deterioration of water sources resulting from, for example, illegal dredging rivers.
- The extraction of biodiversity resources, as to cut down the best trees and illegal hunting.
- The illicit crops, by which deforestation and public order problems are generated.

To reduce these threats, the Project Activity A1.1 is implemented in the territory of RIU-SM through the indigenous guard, who in its task of surveillance and control of the territory, find that prohibited activities are carried out, above all, by strangers who enter the RIU-SM irregularly and make timber extraction, mining in rivers, hunting, fishing, and capturing animal species.

Some actions are carried out due to events that are detected by indigenous guard in conjunction with indigenous authorities and community members. The people who enter into the Indigenous Reservation are intervened, materials found with intruders are seized, and these persons are handed over to the civil and / or military authorities of the region.

Direct communication is also maintained with the police and the army to receive support in the event of more serious events (such as armed persons conducting illegal mining).

Finally, the Project does not tend to carry out any illegal activity, nor could the results and benefits achieved come from this type of action, since the main purpose is to protect the forests of the *Selva de Matavén*.

2.5.6 Ongoing Disputes (G5.5)

About conflicts or disputes over rights to lands, the indigenous authorities of the RIU-SM are working to

resolve invasions by settlers, who have established farms within the territory of the indigenous reservation without authorization, carrying out actions against the protection and conservation of resources and forests through agricultural activities, in such a way that they look for those areas to be restored.

The Project supports the indigenous authorities in their efforts related to the application of their governance, through the implementation of Activity A1.3. However, it does not intervene or influence the processes to resolve conflicts of this type nor does it generate any of these, but the authorities autonomously, with the resources they already have available due to compensations derived of Project, decide about ongoing or unresolved conflicts or disputes over rights to lands, territories and resources.

In the implementation of the Project and its Activities, that self-determination of the indigenous peoples to manage their affairs is respected; No action necessary to comply with the Project Objective influences or coerces the efforts of the authorities to exercise their own form of government and the procedures to demand the rights to their lands, for which they themselves determine the necessary measures.

During the approaches with the indigenous people of the RIU-SM, some of these disputes over land invasions were known, and that the indigenous communities were relying on the national authorities (as the *Agencia Nacional de Tierras – ANT* [National Land Agency]) to resolve them, since they can receive support based on the national legislation to enforce their rights.

2.5.7 National and Local Laws (G5.6)

The National Government considers as a key strategy to develop REDD projects in Colombia, as defined by the National Council for Economic and Social Policy approved by CONPES Document 3700 (DNP, 2011), four routes for critical work or actions achieve sustainable national development by reducing the negative impacts generated by climate change.

These work routes are:

- *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 8 years of implementation (2013-2020) 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.

Consult more details in the validated PDD-VCS, Section "1.11 Compliance with laws, statutes and other

regulatory frameworks”, page 117.

Law 2111, 2021 was recently issued, by which “Title XI ‘about crimes against natural resources and the environment of Law 599, 2000 is replaced, Law 906, 2004 is modified and other provisions are enacted”. It should be noted that this new regulation is positive and only brings benefits to the REDD+ Project RIU-SM, because it provides better tools to deal with crimes against natural resources and the environment. In general, the Project’s objective is consistent with the purpose of this Law, which seeks, by means of prohibitions, to criminalize deforestation, ecocide, damage to natural resources, the financing of the illegal appropriation of vacant lots, wildlife trafficking, among others, which results in the protection of natural resources.

It is known that criminal laws are of a prohibitive nature, which means that they are laws that order not to do something, prohibit or prevent certain conduct.

The main objective of this law is to modify the Colombian Penal Code in relation to the title that typifies crimes against natural resources and the environment, with the purpose of introducing new and broader penal types, which seek to protect the environment as a legal good, among these penal types are deforestation, ecocide, damages against natural resources, financing of illegal appropriation of wastelands, fauna trafficking, among others.

Another positive aspect of this law is that if the above-mentioned crimes are committed under certain conditions, they will have a higher penalty, since it established several circumstances of punitive aggravation.

Law 2111, 2021, also modified the Code of Criminal Procedure and created, within the Attorney General's Office, the Directorate of Territorial Support and the Specialized Directorate for Crimes against Natural Resources and the Environment; the former with the purpose of increasing the presence of the Attorney General's Office in remote territories and the latter with the purpose of more efficiently investigating crimes against natural resources and the environment.

Taking into account that in the territory where the REDD+ RIU-SM Project is being developed, there are 6 indigenous ethnic groups, which, by virtue of the 1991 Constitution and international treaties signed by the Colombian State, enjoy a "Special Indigenous Jurisdiction" that entails a legal autonomy in terms of legal organization, a system of norms, rights and duties, laws, conducts, precepts and, therefore, sanctions and punishments consequent to the punishable conducts of its members, when these infringe upon the well-being, peace and other protected legal assets. This means that indigenous communities have, in their territories and in criminal matters, the power to investigate and punish within their communities, autonomously, in accordance with their customs, beliefs and ancestral practices, only those members of their community who are culturally identified when they commit crimes.

The proponents of the REDD+ RIU-SM Project will socialize the topic of Law 2111 of 2021 as part of the training process that is constantly carried out with the communities of the indigenous reservation, highlighting its importance and coherence with the actions of protection of natural resources and the environment that they are carrying out, in addition to obtaining two purposes:

1. That in use of their autonomy the indigenous ancestral authorities of the indigenous reservatoin consider, or not, to adapt their own and ancestral norms on crimes against natural resources and the environment that come to occur in their territory, committed by their members, at least with the spirit or objective of this Law, which is to try through the coercion produced by the law, to prevent acts or crimes that attempt against natural resources and the environment from happening.
2. That the information transmitted allows the indigenous communities to know what to do when the crimes

contemplated in this law are committed in their territory by persons not belonging to any of the ethnic groups of the reservation, that is, the duty to report them to the “*Fiscalía General de la Nación*”, not only to investigate and, through the criminal judges, to punish the offenders, but also to seek compensation for damages to the affected community.

In relation to the risks derived from the changes that have been presented by new regulations on the subject of REDD+ projects at the national level, which generate legislative instability, in particular due to the application of Resolution 1447 of 2018 (issued by MADS), and impacts on the REDD+ Project RIU-SM, the following must be considered:

- Regarding the adjustment of the baseline that, by virtue of Article 41 - paragraph 2 of Resolution 1447/2018, the REDD+ Project RIU-SM must carry out as of 2020 (two years before what was established, due to the 10-year validation process has been already completed with VERRA -2013-2022), and whose effects appear immediately by drastically reducing the emission reductions projected for the years 2020 to 2022 and until the end of the Project cycle (2023 to 2042), which affects the sustainability and viability of this initiative.

The impact on the amount of reduced emissions that had been projected between 2020 and 2022 is presented below, taking into account the data provided in the IDEAM communication (Annex 3b of this document).

Table 16. Annual Baseline of the REDD+ Project RIU-SM vs. Baseline according to FREL (IDEAM)

	(a)	(b)	(c)	(d)
Year	FREL (National) (tCO ₂ e)	Baseline for the Project Area according to the FREL	(*) Project Baseline certified by Verra following the VCS Standard	(**) % of Project Baseline according to FREL in relation to the certified Baseline
2018	123.834.903	430.822	Verified	3,175,941
2019	130.234.810	453.087		4,921,874
2020	135.882.892	472.737	Estimated	3,455,208
2021	140.609.989	489.182		2,933,500
2022	144.303.327	502.031		4,234,780
			Ref.: Table No. 82 of validated PDD-VCS	Average = 13.0%

(*) y (**) calculated by Project Proponents

Next, the impact from the year 2023 to the end of the crediting period (2042) is presented, based on the average of 13% as valid VCUs values, resulting from the data provided by IDEAM.

Table 17. Impact from the year 2023 to the end of the crediting period by reduction on VCUs

Year	Estimated VCUs [PDD-VCS Table 80]	VCUs that could not be certified [PDD-VCS Table 80 – 13%]	VCUs that would only be valid [PDD-VCS Table 80 * 13%]
Year 11 (2023)	3,891,914	3,385,966	505,949
Year 12 (2024)	3,186,481	2,772,238	414,243

Year	Estimated VCUs [PDD-VCS Table 80]	VCUs that could not be certified [PDD-VCS Table 80 – 13%]	VCUs that would only be valid [PDD-VCS Table 80 * 13%]
Year 13 (2025)	2,101,325	1,828,153	273,172
Year 14 (2026)	1,940,595	1,688,318	252,277
Year 15 (2027)	2,725,887	2,371,522	354,365
Year 16 (2028)	1,522,708	1,324,756	197,952
Year 17 (2029)	641,751	558,323	83,428
Year 18 (2030)	563,617	490,347	73,270
Year 19 (2031)	2,817,576	2,451,291	366,285
Year 20 (2032)	3,462,126	3,012,050	450,076
Year 21 (2033)	2,582,973	2,247,186	335,786
Year 22 (2034)	3,801,662	3,307,446	494,216
Year 23 (2035)	1,907,857	1,659,835	248,021
Year 24 (2036)	2,101,168	1,828,016	273,152
Year 25 (2037)	2,442,873	2,125,300	317,574
Year 26 (2038)	3,906,213	3,398,405	507,808
Year 27 (2039)	4,155,300	3,615,111	540,189
Year 28 (2040)	4,055,156	3,527,986	527,170
Year 29 (2041)	3,668,534	3,191,624	476,909
Year 30 (2042)	1,208,612	1,051,493	157,120
Total estimated	52,684,330	45,835,367	6,848,963
Total number of affected years	23	23	23
Average Annual	2,290,623	1,992,842	297,781

Thus, the most significant negative effect is that the resources available for the execution of the Project Activities, the ACATISEMA Reserves and other medium and long-term actions, such as productive projects (for example, the agroforestry that is being executed) will be affected, by which the scope that was planned for each of these should be reduced.

Against this background, spaces to dialogue with the Ministry of Environment and Sustainable Development were tried to agree in 2020, through the Colombian Association of Carbon Market Actors - ASOCARBONO, to review several technical aspects regarding compliance with the guidelines of the VCS Standard and Resolution 1447/2018. However, it was not possible to carry out the workshops planned for the end of that year. In any case, an attempt is constantly being made to dialogue with officials from MADS and IDEAM in order to be able to discuss with them the adverse effects that REDD+ projects suffer from the application of this rule.

On the other hand, REDD+ Project RIU-SM will continue looking for the spaces to be able to reach agreements with the environmental authorities in the face of the affectations that have such a considerable impact on this initiative, and seeking intermediaries with ASOCARBONO.

- About the platform of the *Registro Nacional de Reducción de Emisiones de Gases Efecto Invernadero* – RENARE, it has not yet entered into operation (when it was supposed to do so around September 2018, according to Article 53 of Resolution 1447/2018), which is generating instability in the aspects that are intended to be regulated and in the validity, for national accounting, of the carbon credits that have already been generated, offset and withdrawn / canceled (even before this Resolution came into effect) as part of

the “carbon neutrality” / “non-causation of the carbon tax”, by entities / companies that have already acquired them.

In relation to the status of the Project registration on the RENARE platform, below is a summary of the events that have taken place to date:

- Launch of the RENARE platform

On October 10, 2018, the *Ministerio de Ambiente y Desarrollo Sostenible* (MADS) announced, through its website, the following news: “*The platform of the National Registry of GHG Emissions Reduction (Renare) is ready*” (<https://archivo.minambiente.gov.co/index.php/noticias-minambiente/4194-lista-la-plataforma-del-registro-nacional-de-reduccion-de-emisiones-de-gei-renare>).

In this statement, the MADS reported that as of that date the first phase began and the technological platform could be accessed through the following link <http://renare.siac.gov.co>. Therefore, citizens were invited to make a request to create their registration user through a web link (no longer available online), or through an email addressed to servicioalciudadano@minambiente.gov.co.

- User/Password request to enter RENARE

In response to the first phase, the Proponents of the REDD+ Project RIU-SM requested the creation of their user in accordance with the suggestions, issues, claims or complaints (SICC) E1-2018-030292 submitted on October 10, 2018, which was answered on December 18, 2018, by official letter DCC - 8250-E2-2018-038185, where it was explained that from the MADS *has been working on the start-up of the RENARE platform, and in this process there have been technical and administrative problems that have delayed its entry into operation. We are currently working on solving the problems presented to provide a quick and optimal solution, and minimize the risk of failures or inconsistencies in the operation of the platform. Once it comes into operation and we can meet your request, we will inform you by this same means.*

On July 31, 2019, the Proponents of the REDD+ Project RIU-SM sent via email to MADS (servicioalciudadano@minambiente.gov.co) a query to find out the status of the response to the request to create a user to enter the RENARE platform. On August 16, 2019, the Director of Climate Change of MADS replied that the RENARE platform was in the final adjustment phase, so MADS would publish the final version in that semester and inform the interested public, once the platform, applicants could check the user creation status.

- Request for exclusion of the non-compatible overlapping area between the REDD+ Project RIU-SM and the “Visión Amazonía” Program

Anticipating that, in accordance with the provisions of Resolution 1447/2018, there would be an overlap between the REDD+ Project RIU-SM and the “Visión Amazonía” Program (REDD+ REM), on September 2, 2019, a communication with, among other aspects, the request for exclusion of the Project area from the Program area was sent by email to the Directorate of Climate Change and Risk Management (DCCGR).

This request was answered by means of a communication dated June 30, 2020 where DCCGR mentions that “3. Regarding the request for exclusion from the area regarding the Amazon Vision

program, it must be requested by virtue of the provisions of article 49 of Resolution 1447 of 2018. However, this condition is only recognized when it is constituted as a fact fulfilled, that is, when in effect, the owner of the initiative proceeds to register it on the RENARE platform. From your communication it is assumed that the first step has already been completed, that is: 'The holder of the REDD+ project must identify the area of the project that is in an overlap that is not compatible with the REDD+ program', then, once RENARE starts operating, you must continue with the second step, that is: '...must complete the feasibility and formulation phases in RENARE and inform the owner of the REDD+ program of the intention to exclude the non-compatible overlapping area' ... and "Another point that is important to address has to do with the RENARE registration platform, whose operation should not be seen as an obstacle to not requesting the maximum mitigation potential. Article 40 is clear in stating that both this Ministry and IDEAM will establish the maximum GHG mitigation potential based on official data from the SMByC, when appropriate." ...

- Launch of the RENARE platform

The MADS developed a launch workshop for the RENARE platform on October 15, 2019, with online transmission (<https://www.minambiente.gov.co/negocios-verdes/renare-la-plataforma-para-registrar-las-reducciones-de-gases-efecto-invernadero-en-colombia>), which was seen by the proponents of the REDD+ Project RIU-SM.

- Workshops about the use of the RENARE platform

A response was received from Francisco Charry, Director of Climate Change of MADS, to some requests about holding a training workshop about the RENARE platform. Thus, this workshop was defined for its realization on December 20, 2019, in Bogotá, to which a delegate of the proponents of the REDD+ Project RIU-SM attended and participated.

On July 29-30, 2020, a new training workshop about the use of the RENARE platform was carried out, virtually. This time, two delegates of the proponents of the REDD+ Project RIU-SM attended and participated.

- Startup of the RENARE platform

MADS and Institute of Hydrology, Meteorology and Environmental Studies (IDEAM by its acronym in Spanish) informed that from September 08, 2020, the RENARE platform is enabled to register the initiatives of reduction of GHG emissions (<https://archivo.minambiente.gov.co/index.php/noticias-minambiente/4804-en-marcha-renare-plataforma-para-registrar-iniciativas-de-mitigacion-de-gases-efecto-invernadero-en-colombia>).

- User/Password request

On September 08, 2020, the proponents of the REDD+ Project RIU-SM requested about creation of its user taking up the SICC filed E1-2018-030292 of October 10, 2018. which was answered on September 10, 2020, by the RENARE administrator, where it explained that the user/password had to be requested again by the means indicated on the same RENARE platform.

Thus, on September 11, 2020, the proponents of the REDD+ Project RIU-SM requested, again, the user/password to enter in RENARE, which was answered on September 24, 2020, by the RENARE administrator, where it explained the assigned data to be able to enter in that platform.

- Data registration on the RENARE platform

Once the username and password were received, the proponents of the REDD+ Project RIU-SM began, in the same day, the registration of the all data required by the platform in the Feasibility phase, in accordance with the provisions of Resolution 1447/2018 and as established in the RENARE Technical Guide, but it was not possible to continue to next Formulation phase due to a non-compatible overlap.

- Non-compatible overlap

At the time this platform was put into operation, the “Visión Amazonía” Program (as seen in the following images, where it was the only initiative), in such a way that any project that started its registration and that coincided with the three criteria (area, activity and time) would already overlap with this program, according to what is established in Numeral 3 of Article 18 of Resolution 1447/2018.

The screenshot shows the RENARE web application interface. At the top, there are logos for RENARE, SIAC, IDEAM, and the Colombian government. Below the logos, there is a navigation bar with 'Gestión de iniciativas' and a user status 'Bienvenido, Usuario Invitado'. The main content area is titled 'Iniciativas' and contains a search section labeled 'BUSCAR'. The search section has four filters: 'Palabra clave' (text input), 'Autoridad ambiental' (dropdown menu with 'Todas' selected), 'Tipo de iniciativa' (dropdown menu with 'Todos' selected), and 'Fases' (dropdown menu with 'Todos' selected). A 'Buscar' button is located to the right of the filters. Below the search section is a table titled 'LISTADO DE INICIATIVAS'. The table has six columns: 'No.', 'Autoridad Ambiental', 'Tipo', 'Nombre', 'Fase', and 'Acciones'. There is one row in the table with the following data: '1', 'N/A', 'PG REDD+', 'Programa Visión Amazonia', 'Implementación', and a magnifying glass icon. At the bottom of the table, there is a pagination control showing '« < 1 > »'.

No.	Autoridad Ambiental	Tipo	Nombre	Fase	Acciones
1	N/A	PG REDD+	Programa Visión Amazonia	Implementación	

← → ↻ 🔍 Not secure | renare.siac.gov.co/GPY-web/#/gpy

RENARE **siac** **IDEAM** **El ambiente es de todos** **Minambiente**

Gestión de iniciativas Bienvenido, Usuario Invitado

Iniciativas

BUSCAR

Palabra clave

Autoridad ambiental

Tipo de iniciativa

Fases

Buscar

LISTADO DE INICIATIVAS

No.	Autoridad Ambiental	Tipo	Nombre	Fase	Acciones
1	N/A	PY REDD+	Proyecto REDD+ Resguardo Indígena Unificado – Selva de Matawén (RIU-SM)	Factibilidad	
2	N/A	PG REDD+	Programa Visión Amazonia	Implementación	

renare.siac.gov.co/GPY-web/#home

It must be taken into account that the “Visión Amazonía” Program began in June 2016 (as confirmed, for example, in its 2017-2018 annual report: <https://visionamazonia.minambiente.gov.co/content/uploads/2019/02/Informe-Anual-2017-2018.pdf>), while the REDD+ Project RIU-SM began in January 2013 (as confirmed in the validation / verification report issued by ICONTEC in 2017: https://registry.terra.org/mymodule/ProjectDoc/Project_ViewFile.asp?FileID=21325&IDKEY=8iquwesd_fmknk0iei23nnm435oiojnc909dsflk9809adlkmlkfn29407175), therefore, it can be deduced that the “Visión Amazonía” Program is the one that overlaps the REDD+ Project RIU-SM.

Indeed, when registering in the feasibility phase and requesting passage to the next formulation phase, the RENARE platform defined that the REDD+ Project RIU-SM was in a not-compatible overlap with the “Visión Amazonía” Program. The paragraph 1 of Article 18 establishes that “RENARE will not allow the holder of a GHG mitigation initiative in a non-compatible overlapping state to continue with the registration process”, but the numeral 2 of article 49 determines that “The holder of the REDD+ Project must complete the feasibility and **formulation** phases in RENARE and inform the owner of the REDD+ Program of the intention to exclude the non-compatible overlapping area”, however, the RENARE platform did not allow “to finish the formulation phase” (it could not even start), by not allowing the change because there were “activities with non-compatible overlaps” (as can be seen in the following image, generated in the RENARE platform).:

Requisitos para la solicitud de cambio de fase

Revisa las condiciones de la iniciativa

Todavía hay actividades con traslapes no compatibles. Por favor verifique cada actividad

Aceptar

Therefore, it is urgent for the REDD+ Project RIU-SM to achieve a prompt solution for the overlap that is non-compatible, taking into account the short term of 3 months to complete the registration process established by Resolution 1447/2018 in its Article 54.

- Request for exclusion of the area in non-compatible overlap between the REDD+ Project RIU-SM and the “Visión Amazonía” Program

Based on Articles 45, 47, and 49 of Resolution 1447/2018, the Proponents of the REDD+ Project RIU-SM decided to request the exclusion of the non-compliant overlap area. This request was sent via email to “Visión Amazonía” Program (visionamazonia@minambiente.gov.co), MADS (servicioalciudadano@minambiente.gov.co, specially directed to Directorate of Climate Change and Risk Management – DCCGR, IDEAM ([atencionalciudadano @ ideam .gov.co](mailto:atencionalciudadano@ideam.gov.co)) and RENARE support (soporte.renare@ideam.gov.co).

On October 05, 2020, IDEAM sent an answer via email where informed that had received the request and had processed it the technical area. This same day, MADS sent an answer via email where informed the filing number in relation to the request.

On October 20, 2020, RENARE support sent an answer via email where they forwarded the request to the Director of Climate Change (jcharry@minambiente.gov.co), “Visión Amazonía” Program (visionamazonia@minambiente.gov.co), MADS (servicioalciudadano@minambiente.gov.co) and IDEAM (atencionalciudadano@ideam.gov.co, dmvargas@ideam.gov.co), as it is not the responsibility of the RENARE administrator to resolve the request for exclusion of the area in non-compatible overlap.

On April 23, 2021, a response was received from the Coordinator of the *Visión Amazonía* Program, José Yunis Mebarak, where, among other aspects, he mentions that *“Faced with this panorama, the coexistence between local initiatives and REDD+ programs could only be considered by providing applicants with the status of executing partner and complying with the participation mechanisms established in the REDD+ program in the reference period 2013-2017 led by the national government through the Ministry of Environment and Sustainable Development, and following the requirements of articles 48 and 49 of Resolution 1447, 2018, as applicable. However, this condition of executing partner will only be granted after analysis of the involvement plan of the Visión Amazonía program, in which the characteristics and circumstances under which it may operate under this figure are defined.”*.

Since then, the proponents of the REDD+ Project RIU-SM continue to wait for a pertinent response to the solution to the exclusion of the non-compatible overlap area in order to continue with the registration of the information required by the RENARE platform in the other phases (Formulation and Implementation). In relation to this, it has been known that it is not the only request for exclusion that has not been resolved by the “Visión Amazonía” Program, observing a delay in the solution to this type

of requirement, and considering that, technically, at this time there would no longer be any type of overlap, since this program has registered on the RENARE platform that it was only valid until 2017 (as seen in the following image).

The screenshot displays the RENARE platform's 'Actividades' section. The sidebar on the left contains navigation links: 'Factibilidad', 'Formulación', 'Implementación', and 'Cierre'. The main content area is titled 'Iniciativa Programa Visión Amazonia (PG REDD+)' and 'Titular: Ministerio de Ambiente y Desarrollo Sostenible'. It includes a 'Ver soporte' button and a list of activities. The 'Depósitos de carbono' dropdown menu is open, showing options: 'Suelos', 'Hojasasca', 'Detritos', and 'Biomasa subterránea'.

- Workshops on the use of the RENARE platform

On August 11 and 13, 2021, another training workshop on the use of the RENARE platform was held virtually, which was attended by two delegates from the proponents of the RIU-SM REDD+ Project.

Finally, it is known that the RENARE platform is being subject to adjustments that have resulted from failures that arose in the practices carried out in the workshops on its use.

The Proponents of the REDD+ Project RIU-SM will continue to be attentive to any progress that is reported about the RENARE platform.

In relation to the risks derived from considerations that external agents have expressed about the implementation of the REDD+ Project RIU-SM, the following must be taken into account:

- The strategy of dissemination and communication of the actions that are being carried out within the framework of the Project will continue to be implemented, extending invitations so that other stakeholders know their characteristics, attending to all the queries that are presented and supporting the indigenous authorities of the RIU-SM and their association ACATISEMA so that, following their powers of self-government, they have the elements and capacities to resolve conflicts that arise and any situation related

to external agents that may affect them and the Project.

- About the *Visión Amazonía* Program (including REDD Early Movers - REM), which implementation is generating uncertainty among the indigenous peoples of the RIU-SM by interfering with their own REDD+ initiative, the Project Proponents will continue with the formalities to the RIU-SM area be excluded from the Program area.
- About opinions and assertions that are published in the mass media, such as those raised by the Article of “*The Guardian*”, that found an echo in other media such as *El Espectador*, *Mongabay*, *Climate Home News* and *La silla vacía*, and that questioned the quality of the REDD+ Project RIU-SM, the Proponents will continue with their strategy of providing all the pertinent clarifications and adjusting the incorrect information that is disseminated without technical rigor and without corroborating with the main source, through:
 - The media that are available on the following platforms:
LinkedIn: <https://www.linkedin.com/company/mataven-redd-project/>
Youtube: <https://www.youtube.com/channel/UCA6GkStaj6oECwZ9zJwBcsg>
Twitter: https://twitter.com/mataven_redd
Facebook: <https://www.facebook.com/selvamatavenredd/>
Instagram: <https://www.instagram.com/matavenredd/>
Project Website: <https://www.selvamatavenredd.org/es/noticias>
 - Interviews with the media at the local, regional, national and international level.
 - Hiring with expert agencies in support of media processes.

2.5.8 Approvals (G5.7)

Through the Strategic Alliance Agreement between ACATISEMA and MEDIAMOS F&M S.A.S. for the Protection, Conservation and Recovery of Natural Forest of the RIU-SM, 2013 (Annex 2.1.11 of validated PDD-VCS) the execution of the REDD+ Project RIU-SM was approved by the legal representative of ACATISEMA, with the endorsement of the *Cabildos* Board (sectoral authorities), community Captains (the highest authority in the RIU-SM), *Caciques* (native chiefs), leaders and several members of communities, who have backed up the Project and expressed their support for its execution and continuity in many socialization meetings and training workshops, as well as in the ACATISEMA General Assemblies that are held every 3 years, which is the highest decision-making body for all RIU-SM authorities (Annexes 1 - minutes of meetings and 2.1.3 Minutes of XIII General Assembly 2013 of validated PDD-VCS).

2.5.9 Right to Claim Benefits (G5.8)

REDD+ Project RIU-SM is exclusively ownership of Project Proponents (ACATISEMA and MEDIAMOS F&M S.A.S.), as it has already been evaluated and certified in several documents, as following:

- The property rights over territory of RIU-SM are completely clear, according to the previous Sections, by Resolution 037 of 2003.
- Document of Strategic Alliance Agreement between ACATISEMA and MEDIAMOS F&M S.A.S. (Annex

2.1.11 of validated PDD-VCS) ensures joint work to develop the Project and obtain the rights to the results, benefits and VCUs.

- Validated VCS Project Design Document – PDD, that includes the Verification Report of 2013 & 2014-2015 periods (in 2017).
- VCS Joint Validation & Verification Report of 2013 & 2014-2015 periods (in 2017).
- VCS Monitoring Reports and Verification Reports of 2016-2017 period (in 2018) and 2018 & 2019 periods (in 2020).

2.5.10 Other Programs (G5.9)

The REDD+ Project RIU-SM has not sought generate nor has received any form of environmental or social credit, nor tries to create emission reductions with any program.

As established in the Strategic Alliance Agreement (Annex 2.1.11 of validated PDD-VCS), ACATISEMA declares that “... another contract, agreement, pact or alliance with the same object of this AGREEMENT or that prevents and obstructs the same is not in force ...” (Clause 8) and agrees “... During the validity of this AGREEMENT -30 years-, ACATISEMA acquires the commitment not to enter into an agreement, agreement or contract with another entity other than MEDIAMOS for the same purpose of this AGREEMENT ...” (Clause 15).

The *Instituto Colombiano de Normas Técnicas y Certificación* - ICONTEC (Colombian Institute of Technical Standards and Certification), as VVB that carried out the validation process and first verification 2013 & 2014-2015 of REDD+ Project RIU-SM, declares in the Joint Validation & Verification Report (2017), in the in section 3.19, that “... The project has not participated in any other GHG program”. Also, in the section 3.2, this VVB declares that “The project has not been registered under any other GHG program and is not seeking a second registration in the future. The current VCS project is completely independent from any other carbon project scheme being developed in Colombia. The project is not seeking participation into any other GHG program”.

EPIC Sustainability Services Pvt. Ltd, as VVB that carried out the second verification process 2016-2017 of REDD+ Project RIU-SM, declares in the Verification Report (2018), in the section 3.1, that “The project has not applied for other GHG programs such as CDM, GS, etc. The same is verified through the declaration letter from PP confirming that the project is not claiming any other environmental credits. The verification team also checked the national as well as international credits trading systems to assess double counting risks and the web links for the same have been listed in the section 7 of this report ...”.

So, the Validation/Verification Bodies, that have carried out validation and verification processes for the REDD+ Project RIU-SM, have state that REDD+ Project RIU-SM does not participate under Other GHG Programs.

On the other hand, the REDD+ Project RIU-SM presents an overlap that is not compatible with the *Visión Amazonía* (Program (according to Resolution 1447/2018), whose responsible parties are the *Ministerio de Ambiente y Desarrollo Sostenible* – MADS (Ministry of Environment and Sustainable Development) and the *Instituto de Hidrología, Meteorología y Estudios Ambientales* – IDEAM (Institute of Hydrology, Meteorology and Environmental Studies). This overlap is partial in the following areas and proportions:

In Project Area - PA there is an overlap of 1,135,454 has (that corresponds to 98.7% of PA).

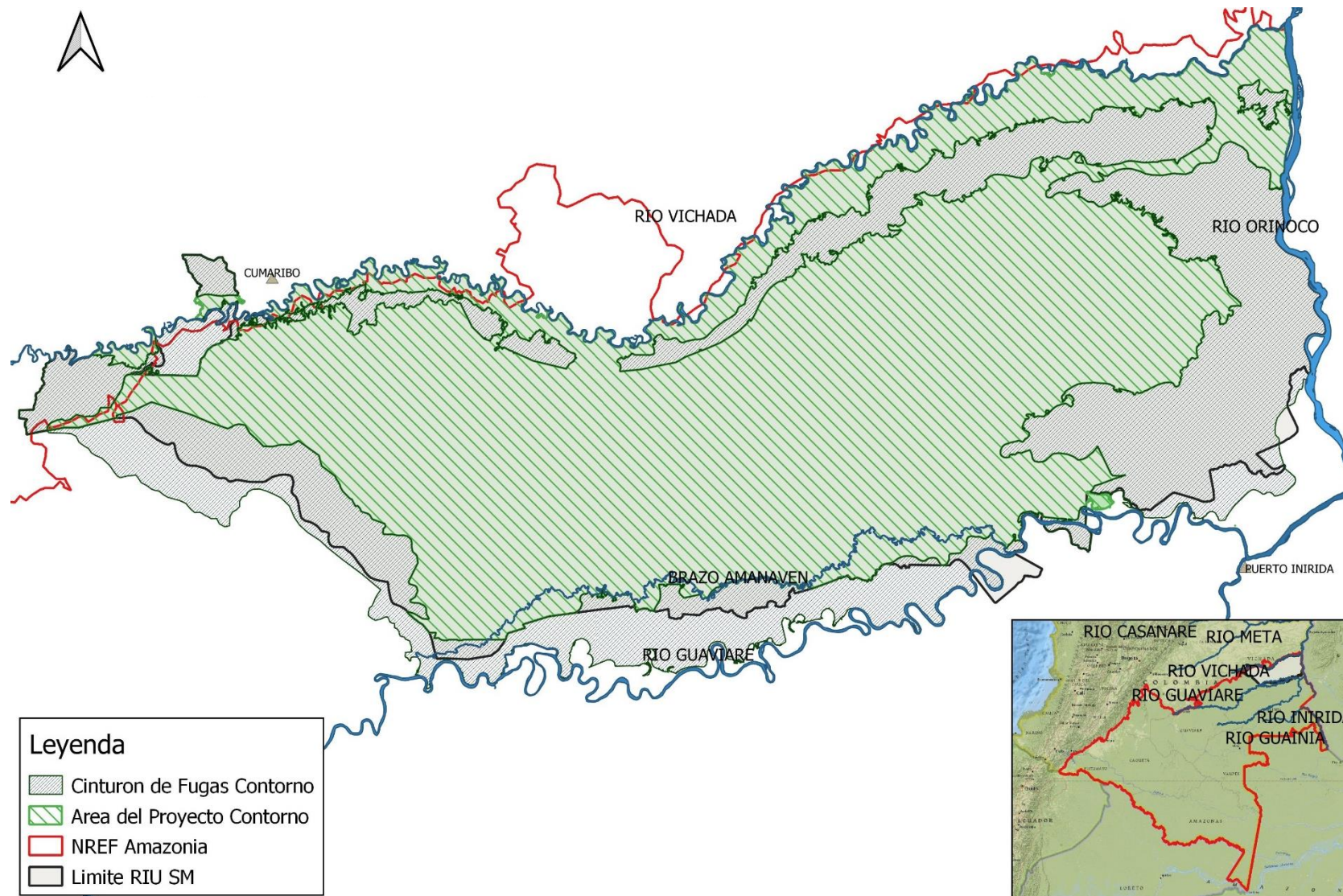
In Leakage Belt – LB there is an overlap of 476,944 has (that corresponds to 98.1% of LB).

In RRL there is an overlap of 1,963,810 has (that corresponds to 96.8% of RRL).

In RRD there is an overlap of 1,174,325 has (that corresponds to 81.3% of RRD).

Map 23 shows the area of the Vision Amazonia Program boundary that partially overlaps with the areas of the REDD+ Project RIU-SM boundary.

Map 23. Geographical representation of partial overlap between boundaries of *Visión Amazonía* Program and REDD+ Project RIU-SM



Source: REDD+ Project RIU-SM GIS

It is important to note that, as indicated in Section "2.1.9" of this document, the REDD+ Project RIU-SM started on January 1, 2013 (having passed its feasibility phase since June 2012), while the *Visión Amazonía* Program officially started on July 1, 2016, making it clear that the Program is the one that presents overlap that is not compatible with the Project. However, being the MADS one of those responsible for this Program and, at the same time, the legislator on the issue of climate change and REDD+ in the country, has established unfavorable conditions for REDD+ projects against this REDD+ Program, particularly through the implementation of Resolution 1447/2018 and by the entry into operation of the platform of the *Registro Nacional de Reducción de Emisiones de GEI* – RENARE (National Registry of GHG Emissions Reduction), where it is unknown that the REDD+ Project RIU-SM is already in the implementation stage, forcing the proponents of this initiative to register in the aforementioned platform from the feasibility phase, finding the *Visión Amazonía* Program already in the implementation phase and, therefore, configuring the overlapping condition, a situation that is also contrary to the provisions of Article 54 of this Resolution, which determines "The holders of the GHG mitigation initiatives existing at the time of entry into force of this Resolution, ... will have a maximum period of three (3) months to register and update the information of their initiatives in the RENARE platform, according to the corresponding phase", since, due to this overlapping situation, the REDD+ Project RIU-SM does not have the possibility to continue with the registration in RENARE until the phase that really corresponds to it.

This situation has had an impact on the Project, which can be examined in the context of the safeguards as follows:

- The transparency and effectiveness of the forest governance structures, in the words of the indigenous authorities of RIU-SM and organized in ACATISEMA, is being violated by the *Visión Amazonía* Program, since they included the area of the territory of their Indigenous Reservation without even informing them and less complying with the process of prior consultation, which directly affects their governance, self-determination and self-management, since they had already put the REDD+ Project RIU-SM into operation when the Program began.
- Respect for the knowledge and rights of indigenous peoples is also being violated by the a *Visión Amazonía* Program for the same reason stated in the previous point, since it was not considered or respected, at any time, that the indigenous peoples of RIU-SM were already developing their own initiative to reduce GHG emissions when the MADS and IDEAM decided to start with the Program.
- The full and effective participation of indigenous peoples, likewise, was violated, since it was not until May 6, 2017 when the RIU-SM authorities were invited to a "First space for Socialization and dialogue ENREDD and Capacity Building" as part of the safeguard processes at the national level¹⁷, with already almost 5 years of implementation of the REDD+ Project RIU-SM and about to finish the validation process and first verification.
- The measures designed and implemented to address the risks of reversion may be ineffective in affecting the autonomy of the indigenous peoples of RIU-SM, due to the lack of resolution of the overlap by the *Visión Amazonía* Program, what generates uncertainty and affects the technical and economic viability of this initiative of the indigenous communities, since it interferes with the validity and consistency of the results already achieved by the Project and creates possibilities of undoing the achievements made..

Given the situation of overlapping and the effects it causes to the REDD+ Project RIU-SM, and in compliance with Resolution 1447 of 2018 (as amended by Resolution 0831 of 2020) and, in particular, Article 45 on the registration of existing REDD+ projects, which expresses that "The REDD+ Project holder

¹⁷ https://redd.unfccc.int/files/2_223_segundo_resumen_de_salvaguardas.pdf, page 90

that when performing the registration and updating of its information in RENARE in accordance with the provisions of Article 54 of this Resolution, is in the implementation phase and in a non-compatible overlapping status with a REDD+ Program in accordance with the provisions of Article 47, shall request the status of implementing partner or the exclusion of the area in non-compatible overlap in accordance with the provisions of Article 48 and Article 49 of this Resolution respectively", the REDD+ Project RIU-SM requested to the *Visión Amazonía* Program (through a Right of Petition, with copy to MADS, DCCGR of MADS and IDEAM), since October 2020, the exclusion of the overlapping area (Annexes 4a and 4b of this document), to which responses have been received from IDEAM and the Program (Annexes 4c and 4d of this document), but without obtaining an effective resolution to the request.

Thus, the REDD+ Project RIU-SM area has not yet been excluded from the *Vision Amazonia* Program area. This causes the data registration process in the RENARE platform to be interrupted, since it does not comply with the provisions of Article 49, paragraph 2, which states "*The REDD+ Project holder shall complete the feasibility and formulation phases in RENARE and inform the REDD+ Program holder of the intention to exclude the area in non-compatible overlap*", since the platform has not allowed to move to the formulation phase due to the overlapping situation.

2.5.11 Double Counting (G5.9)

REDD+ Project RIU-SM has only received economic compensation when marketing the VCUs that have been generated and verified. Project does not seek to generate or receive any other form of environmental or social credit. Therefore, no risk of double counting is observed in this regard.

Verra Registry platform ensures that credits already sold as offsets on the voluntary / compliance markets do not can again offer. So, double counting is avoided. The REDD+ Project RIU-SM has not been registered on any other platform.

On the other hand, according to previous Section, in the territory of *Resguardo Indígena Unificado - Selva de Matavén* no other REDD+ Project is developed, so there is no risk to account twice the same reduced GHG emissions.

Finally, the REDD+ Project RIU-SM does not seek to be eligible to participate in a program or to create another form of environmental or social credit. Now, it only seeks to complement its last VCS validation under CCB, but no to create a new project.

3 CLIMATE

3.1 Without-Project Climate Scenario

3.1.1 Without-Project Estimated Greenhouse Gas Emissions (CL1.1)

Baseline Identification and Justification

The identification and selection of alternative land use scenarios for determination of the baseline and assessment of additional was conducted in accordance with the VCS VT0001 Tool for the Demonstration and Assessment of Additional in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities, Version 3, and VM0007 methodology module BL-UP “VMD0007 Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation”, version 3.0.

The project meets the applicability requirements of VCS VT0001 as follows:

- The proposed project activities do not violate any applicable law whether it is or is not enforced. Additional details regarding relevant laws are provided in Section 1.11.
- The project is not proposing a new baseline methodology but is using VMD0007 Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation (BL-UP), Version 3.0, which includes a detailed step by step approach for development of the baseline.

Step 1. Identification of alternative land use scenarios to the proposed VCS AFOLU project activity (VCS VT0001)

Sub-step 1a. Identify credible alternative land use scenarios to the proposed VCS AFOLU project activity

The following alternative land use scenarios were identified for the project:

Scenario 1: Continuation of the pre-project land use;

Scenario 2: What are the conditions of scenario 1 (pre-project land use) plus arising from the implementation of the National Development Plan (Congreso de Colombia, 2015) specifically what corresponds to the political and economic definition in CONPES 3797 of 2014 (DNP, 2014) which aims to create social and economic conditions for inclusive and sustainable development of Mountain Plateau based on the construction of a model region and the Law 223 of 2015 (Congreso de Colombia, 2015) (ZIDRES) by which areas of interest in regional economic and social development are established (See section 1.11 “Compliance with laws, statutes and other regulatory frameworks”).

Scenario 3: Project activities occurring without being registered as a VCS Project.

The three scenarios are possible (realistic and credible) to the project area considering both historical conditions, as the uses of the land, practices and economic tendencies and laws and national and sectorial policies, such as project activities. Scenario 2 was selected as the baseline scenario.

Stratification

Stratification for carbon stocks consist in grouping forest areas in homogeneous groups in terms of carbon stocks, using stratification factors (such as type of forest/vegetation, type of soil/geology, management) that could affect carbon stocks, so that less sample parcels would be required to reach certain level of precision.

Stratification applied to all areas of space limits are based on official information of *Instituto Geográfico Agustín Codazzi - IGAC, Instituto de Hidrología, Meteorología y Estudios Ambientales – IDEAM, attached to Ministerio de Ambiente y Desarrollo Sostenible - MADS*, official institutions authorized to provide official information on this subject.

Biomes are the basis for defining the stratification (Annex 15 of validated PDD-VCS).

A biome is defined as a set of ecosystems characterized by species and a variety of plants with characteristic conditions of climate and land. They are usually defined by the structure of the vegetation and climate. The biome is also defined by geographic components (latitude and altitude) and local names are used for designation, for example: Amazon Biome.

Stratification is defined in 4 types of biomes.

The map of biomes in Colombia was prepared from synthesis units established by superposition of three key thematic layers: land cover, climate and geopedological (INVEMAR, et al., 2007).

These biomes (strata), in RIU-SM, are:

Table 18. Biomes (strata) of RIU-SM

Biome		Description	Characterized landscapes
1	Heliobiome	Floodplain forest without underwood	Lowland forest on flood site of <i>Matavén</i> Creek
2	Litobiome	Floodplain forest with underwood	Highland forest on flood site of <i>Matavén</i> Creek
3	Peinobiome	Forest rocky hill	Residual granite forest rocky hills in Guiana shield
4	Zonobiome	Forest land	Forest moderately segmented in ancient sedimentary plains

Source: Annex 15 X-STR – Module VMD0016, Methods for stratification of the project area

Estimation of Carbon Stocks before deforestation for stratum

Estimates of carbon stocks were based on field observations obtained from plots stratified random sampling, then allometric equations using properly validated. The calculations of the estimates are made using appropriate statistical developments in this type of sampling.

Aboveground tree biomass ($C_{AB\_tree,i}$):

Step 1: Determination of tree dimensions and size and amount of field plots:

In each sample unit the following parameters are evaluated:

- In trees of 10 cm or more of DBH (diameter at breast height): specie name (common), C (circumference), HC (commercial height - tree trunk height-), HT (total height), and habit (A: tree ;) Q: Palm; L: liana; AR: Shrub; H: tree fern), its state conventions (L: stem inclined; Q: broken above 1.3 m from the ground; I: irregular stem; B: with buttresses; M: multiple stems) and special observations.
- In the 4 central registry units (strata), all the trees of 10 cm or more of DBH are evaluated.
- Each plot was georeferenced using geographic coordinates.

- In some plots, vegetation measurements were taken with DBH <10 cm, to constitute the so-called study of "vegetation on regeneration" (understory) (Yepes et al., IDEAM, 2011, p. 41).
- The plots and the *fustales* are marked.

Size of field plots

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:

Amount of field plots

	Strata <i>i</i>			
	Helobiome	Peinobiome	Litobiome	Zonobiome
	n_1	n_2	n_3	n_4
n_j	16	29	24	62

Step 2: Selection of the allometric equation:

The following equation for trees (*fustales*) and other for palms are selected.

$$\ln(BA) = a + B1 \ln(D)$$

Where:

BA is the biomass of trees in kg

D is the average diameter measured at 1.3 m height from the ground from 10cm

a and **B1** are constant model

R² is the fit of the model

Independent variables: diameter (D). The values of the estimated parameters are:

Forest type	a	B1	R ²
bh-T	-1.544	2.37	0.932

Source: (Yepes, et al., 2011) *Protocolo para la estimación nacional y subnacional de biomasa - carbono en Colombia*, IDEAM 2011, page 49

Allometric equation to estimate the biomass of palms

$$BA = 6.666 + 12.826 * H^{0.5} * \ln(H)$$

Where:

BA: aboveground dry matter, kg / tree

H: height of the trunk, 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])*

Step 3: Estimation carbon reservoir in biomass for each tree.

Fixed Area Plots with Allometric Equation method was used for sampling aboveground tree biomass. Results are based in field measurements, as follows:

Equation to determine the Carbon stock in aboveground biomass was:

$$C_{AB\_tree-sp,i} = \sum_j^S \sum_{l=1}^{N_{j,sp,l}} f_j(X,Y...) * CF_j$$

Where:

$C_{AB\_tree-sp,i}$: Carbon stock in aboveground biomass of trees in plot sp in stratum l , t C

CF_j : Carbon fraction of biomass for species group j , t C t⁻¹ d.m.

$f_j(X,Y...)$: Aboveground biomass of trees based on allometric Equation for species group j based on measured tree variable(s), t. d.m. tree⁻¹

l : mber of individual trees of species group j in sample plot sp in stratum i

Source: VCS (2013) VMD0001- Estimation of carbon stocks in the above – and below group bionas in live tree and non-tree pools (CP-AB)) Equation 1, page 5

The Biomass of each individual was estimated using the appropriate Equation (Standard estimates a parameter factor of 0.47 CF VMD0001 –p 12- IPCC 2006 INV GLs AFOLU Chapter 4 Table 4.3) since in most studies on carbon stored in the biomass of tropical forests is assumed that the biomass of living trees contains about 50% carbon (e.g., MacDicken 1997, Fearnside et al. 1999, Clark et al. 2001b, Malhi et al. 2004, Chave et al. 2005, Aragão et al. 2009).

It is notice that these values were not carried to hectares yet.

Results for biomass by stratum (biomes)

Biome indicators	Helobiome		Peinobiome		Lithobiome		Zonobiome	
	AB (t/ha)	C (t/ha)	AB (t/ha)	C (t/ha)	AB (t/ha)	C (t/ha)	AB (t/ha)	C (t/ha)
n	16	16	29	29	24	24	62	62
GL	15	15	28	28	23	23	61	61
t	2.1315	2.1315	2.0484	2.0484	2.0687	2.0687	1.9901	1.9901
Minimum	155.3	73.0	93.5	44.0	128.2	60.3	151.9	71.4
Maximum	533.2	250.6	354.0	166.4	351.5	165.2	1.296.3	609.3
Average	278.5	130.9	218.8	102.9	222.1	104.4	280.9	132.0
Standard deviation	103.8	48.8	59.6	28.0	62.8	29.5	187.4	88.1
Coefficient of variation	37.3%	37.3%	27.2%	27.2%	28.3%	28.3%	66.7%	66.7%
Standard error	26.0	12.2	11.1	5.2	12.8	6.0	23.8	11.2
Average coefficient of variation	9.3%	9.3%	5.1%	5.1%	5.8%	5.8%	8.5%	8.5%
Sampling error%	19.9%	19.9%	10.4%	10.4%	12.0%	12.0%	16.9%	16.9%
LI	223.1	104.9	196.2	92.2	195.5	91.9	233.5	109.8
LS	333.8	167.2	241.5	113.5	248.6	116.8	328.2	154.3

Source: REDD+ Project RIU-SM Folder "calculation_ table", file "plot_study_fustales.xlsm", Sheets, "estad H", "estad P", "estad L", "estad Z"

In the file "plot_study_fustales.xlsm" (folder "calculation_tables") are estimates, by applying the selected in the previous step allometric equation. Details by plot are shown in Sheet "estad grals".

Step 4: Calculate the average carbon in biomass per plot in each stratum and its conversion to CO₂ e, 0.47 factor was used to transform carbon in biomass and CO₂ e.¹⁸

In the file "plot_study_fustales.xlsm" (folder "calculation_tables") are the calculations of the average carbon content in biomass per plot for each stratum, converted to CO₂ e.

Table 19. Statistics of simple random sampling in each stratum (biome). Aboveground biomass (AB)

Aboveground biomass (AB) - "fustales" (trees with DBH>=10cm)

Stratum	Helobiome			Peinobiome			Litobiome			Zonobiome		
	AB	C and CO ₂ equivalent		AB	C and CO ₂ equivalent		AB	C and CO ₂ equivalent		AB	C and CO ₂ equivalent	
	t d.m. / ha	C (t/ha)	CO ₂ (t/ha)	t d.m. / ha	C (t/ha)	CO ₂ (t/ha)	t d.m. / ha	C (t/ha)	CO ₂ (t/ha)	t d.m. / ha	C (t/ha)	CO ₂ (t/ha)
Number of plots in stratum sample	16	16	16	29	29	29	24	24	24	62	62	62
Minimum value	155.3	73.0	267.7	93.5	44.0	161.2	128.2	60.3	221.0	151.9	71.4	261.8
Maximum value	533.2	250.6	918.9	354.0	166.4	610.0	351.5	165.2	605.8	1,296.3	609.3	2,233.9
Average	278.5	130.9	479.9	218.8	102.9	377.1	222.1	104.4	382.7	280.9	132.0	484.1

Estimation of aboveground biomass (AB) and carbon equivalent – Sampling Error

Weighted averages

256.99 AB (t dm / ha)

442.88 CO₂ e / ha

Belowground tree biomass ($C_{BB\_tree,i}$):

The content of carbon in below-ground tree biomass of each tree were obtained by multiplying the results of part 1, step 3, for the value R = 0.24 (root - stem ratio)¹⁹.

Table 20. Belowground tree biomass in each stratum (biome)

Stratum	Helobiome			Peinobiome			Litobiome			Zonobiome		
	AB	C and CO ₂ equivalent		AB	C and CO ₂ equivalent		AB	C and CO ₂ equivalent		AB	C and CO ₂ equivalent	
	t d.m. / ha	C (t/ha)	CO ₂ (t/ha)	t d.m. / ha	C (t/ha)	CO ₂ (t/ha)	t d.m. / ha	C (t/ha)	CO ₂ (t/ha)	t d.m. / ha	C (t/ha)	CO ₂ (t/ha)
Average aboveground biomass	278.5	130.9	479.9	218.8	102.9	377.1	222.1	104.4	382.7	280.9	132.0	484.1
Average belowground biomass	66.83	31.41	115.18	52.52	24.68	90.51	53.29	25.05	91.84	67.41	31.68	116.17

Source: based on REDD+ project RIU-SM, file "plot_study_fustales.xlsm", sheet "BRG_parcelas" (folder "calculation_tables")

¹⁸ CF = carbon fraction of dry matter (default = 0.47), (ton C/tonne d.m.) (IPCC, 2006) INV GLs AFOLU Chapter 4 Table 4.3)

¹⁹ AFOLU Guidelines (IPCC 2006, Chapter 4, page 4.49)

Estimation of soil organic carbon pool

Table 21. Statistics of simple random sampling in each stratum (biome) CO₂ in soil (Cumulative t/ ha) by soil depths (cm)

	CO ₂ (Cumulative t/ ha) by soil depths (cm)									
	0-10	0-20	0-30	0-40	0-50	0-60	0-70	0-80	0-90	0-100
n	88	88	88	88	88	88	88	88	88	88
Minimum	2.9	15.6	31.5	40.0	41.8	47.9	54.0	60.1	66.2	72.4
Maximum	701.5	931.3	1,446.3	1,961.2	2,476.1	2,603.2	2,730.3	2,857.3	2,984.4	3,111.5
Average	85.2	147.6	188.9	230.2	271.5	296.6	321.6	346.6	371.7	396.7
Coefficient of variation of average	13.1%	11.7%	12.3%	12.8%	13.3%	12.9%	12.7%	12.5%	12.3%	12.2%
% Sampling error	25.9%	23.2%	24.3%	25.3%	26.3%	25.6%	25.1%	24.7%	24.4%	24.2%
LL	63.2	113.3	143.1	171.9	200.2	220.7	240.9	260.9	280.8	300.6
UL	107.3	182.0	234.8	288.6	342.8	372.5	402.3	432.3	462.5	492.8

Source: REDD+ project RIU-SM, Annex 14; file "soil_analysis.xlsx", sheet "CO2 ac biom" (folder "calculation_tables")

Forest carbon stock pre-deforestation

Table 22. Estimation of carbon stocks (t CO₂/ha) before deforestation for stratum

Pool	Acronym	Helobiome	Peinobiome	Litobiome	Zonobiome
Aboveground tree biomass	$C_{ABtree-bsl,i}$	479.9	377.1	382.7	484.1
Aboveground non-tree biomass	$C_{ABnon-tree-bsl,i}$	0	0	0	0
Belowground tree biomass	$C_{BBtree-bsl,i}$	115.2	90.5	91.8	116.2
Belowground non-tree biomass	$C_{BBnon-tree-bsl,i}$	0	0	0	0
Dead wood	$C_{DW-bsl,i}$	0	0	0	0
Litter	$C_{LI-bsl,i}$	0	0	0	0
Organic soil	$C_{SOC-bsl,i}$	123.5	195.8	207.8	199.2
Subtotal		718.5	663.4	682.3	799.4

Source: Annex 10- VMD0007, 5. PROCEDURES, Part 4 Estimation of carbon stock changes and greenhouse gas emissions, STEP 4.2 Estimation of carbon stocks and carbon stock changes per stratum, 4.2.1 Forest carbon stocks; file "VMD0007.xlsx", sheet "P4 Step4.2.1 forest C stock" (folder "calculation_tables")

Deforestation during historical reference period (HRP)

Table 23. Deforestation in HRP in each one of the biomes

Biomes	2001		Deforestation Period 1 (2001-2005)		Deforestation Period 2 (2005-2011)	
	Área (has)	%	D (has / año)	t (% año)	D (has / año)	t (% año)

	2001		Deforestation Period 1 (2001-2005)		Deforestation Period 2 (2005-2011)	
Helobiome	230,435	15.95%	1,602	0.6950%	2,744	1.2247%
Peinobiome	333,195	23.06%	3,663	1.0993%	5,490	1.7235%
Litobiome	158,752	10.99%	86	0.0543%	445	0.2812%
Zonobiome	722,424	50.00%	5,459	0.7556%	7,209	1.0289%
Total	1,444,805	100%	10,809	0.7481%	15,888	1.1336%

D: deforestation rate

Source: REDD+ project RIU-SM. Folder "calculation_tables", file "transition_changes.xlsx", Sheets "Transit Helob", "Transit Peinob", "Transit Litob" and "Transit Zonob"

Table 24. Deforestation trends in HRP

	Deforestation Period (2001-2011)			Increm. D (has/year) per 2 vs. per 1
Biomes	D (has / año)	t (% año)	Tend	
Helobiome	2,287	0.9924%	growing	1,142
Peinobiome	4,759	1.4284%	growing	1,827
Litobiome	302	0.1901%	growing	359
Zonobiome	6,509	0.9009%	growing	1,750
Total	13,857	0.9591%	growing	5,079

D: deforestation rate

Increment in D (has/año): Period 2 vs. Period 1

Source: REDD+ project RIU-SM. Changes in coverage and land use (Folder "calculation_tables", File "transition_changes.xlsx", Sheet "trends general")

Table 25. Results of deforestation model in Project Area for stratum / year

t	Helobiome	Peinobiome	Litobiome	Zonobiome	Subtotal $\sum_i A_{BSL,PA,unplanned,t}$
2013	402	2	0	11,872	12,276
2014	11,337	6	0	2	11,345
2015	12,879	10	5	10	12,904
2016	12,597	10	1	4	12,611
2017	4,755	4,074	0	1	8,831
2018	19	2,576	4,152	3,821	10,568
2019	3	2	0	13,903	13,909
2020	4	0	0	11,897	11,901
2021	8	4	0	9,386	9,398
2022	5	3	0	14,488	14,496
Subtotal year 1-10	42,008	6,687	4,159	65,385	118,239
2023	11,229	0	0	2,125	13,356
2024	10,310	2	4	11	10,326
2025	4,290	1,909	3	8	6,209
2026	7	6,917	2	4	6,930
2027	7	7,516	3,445	4	10,973
2028	2	6	4,050	2	4,060

t	Helobiome	Peinobiome	Litobiome	Zonobiome	Subtotal $\sum_i A_{BSL,PA,unplanned,t}$
2029	3	0	0	9	11
2030	0	0	0	17	17
2031	19	4,129	1,466	5,341	10,955
2032	11,993	4	901	3	12,902
Subtotal year 10-20	37,860	20,484	9,871	7,524	75,739
2033	9,018	4	0	6	9,028
2034	1,293	5	0	12,554	13,853
2035	7	3,956	6	2,869	6,838
2036	1	8,162	723	2	8,888
2037	4,893	6	3,945	1	8,845
2038	4,664	2	3	9,408	14,077
2039	1	2	0	14,562	14,565
2040	7	2	0	13,736	13,745
2041	2	8	1	12,013	12,024
2042	6	2,560	1	4	2,570
Subtotal year 20-30	19,893	14,706	4,679	65,154	104,433
Total years 1-30	99,762	41,877	18,710	138,062	298,410

Source: Annex 10 - VMD0007, 5. PROCEDURES, Part 3 Location and quantification of threat of unplanned deforestation, STEP 3.4 Mapping of the locations of future deforestation, 3.4.2 Where location analysis (Steps 2.1, 2.2, 2.3) has been conducted, Annual areas deforested in each forest class within the Project Area; file "spatial_model_results.xlsx", sheet "P4" (folder "calculation_tables")

Forest carbon stock post-deforestation

Table 26. Estimation of carbon stocks after deforestation for stratum

Carbon pool		Helobiome	Peinobiome	Litobiome	Zonobiome
Aboveground tree biomass	$C_{ABtree-post,i}$	51.7	44.9	20.4	60.2
Aboveground non-tree biomass	$C_{ABnon-tree-post,i}$	30.7	30.7	22.1	13.6
Belowground tree biomass	$C_{BBtree-post,i}$	12.4	10.8	4.9	14.5
Belowground non-tree biomass	$C_{BBnon-tree-post,i}$	11.8	12.9	15.9	9.0
Dead wood	$C_{DW-post,i}$	0	0	0	0
Litter	$C_{LI-post,i}$	0	0	0	0
Organic soil	$C_{SOC-post,i}$	106.7	170.0	190.0	187.4
Subtotal		213.3	269.3	253.3	284.7

Source: Annex 10 - VMD0007, 5. PROCEDURES, Part 4 Estimation of carbon stock changes and greenhouse gas emissions, STEP 4.2 Estimation of carbon stocks and carbon stock changes per stratum, 4.2.2 Estimation of post-deforestation carbon stocks; file "VMD0007.xlsx", sheet "P4 Step4.2.2 postdef C stock" (folder "calculation_tables")

Forest carbon stock changes

Table 27. Estimation of changes of carbon stocks for stratum

Carbon pool		Helobiome	Peinobiome	Litobiome	Zonobiome
Aboveground tree biomass	$\Delta C_{ABtree,i}$	428.2	332.2	362.2	423.8

Carbon pool		Helobiome	Peinobiome	Litobiome	Zonobiome
Aboveground non-tree biomass	$\Delta C_{ABnon-tree,i}$	-30.7	-30.7	-22.1	-13.6
Belowground tree biomass	$\Delta C_{BBtree,i}$	102.8	79.7	86.9	101.7
Belowground non-tree biomass	$\Delta C_{BBnon-tree,i}$	-11.8	-12.9	-15.9	-9.0
Dead wood	$\Delta C_{DW,i}$	0	0	0	0
Litter	$\Delta C_{LI,i}$	0	0	0	0
Organic soil	$\Delta C_{SOC,i}$	16.7	25.7	17.8	11.7
Subtotal		505.2	394.1	429.0	514.7

Source: Annex 10 - VMD0007, 5. PROCEDURES, Part 4 Estimation of carbon stock changes and greenhouse gas emissions, STEP 4.2 Estimation of carbon stocks and carbon stock changes per stratum, 4.2.3 Estimation of carbon stock changes per stratum; file "VMD0007.xlsx", sheet "P4 Step4.2.3 Eq16-22 C st-ch,i" (folder "calculation_tables")

The following Table 28 shows the total GHG emissions expected during the accounting period of Project, inside the Project Area, under the "without-project" land use scenario, calculated according instructions of Module VCS – VMD0007. All processes carried out to determinate these estimations are presented in the validated PDD-VCS, Section "3.1 Baseline Emissions", page 186.

Table 28. Estimated GHG emission (tCO₂e) in the Project Area, under the without-project land use scenario

Year	Estimated GHG emission (tCO ₂ e) in the Project Area, under the without-project land use scenario
Year 1 (2013)	5,151,681
Year 2 (2014)	4,742,981
Year 3 (2015)	5,490,203
Year 4 (2016)	5,499,384
Year 5 (2017)	3,686,093
Year 6 (2018)	4,422,586
Year 7 (2019)	6,500,811
Year 8 (2020)	5,794,823
Year 9 (2021)	4,860,161
Year 10 (2022)	7,094,602
Year 11 (2023)	6,503,210
Year 12 (2024)	5,271,017
Year 13 (2025)	3,391,935
Year 14 (2026)	3,138,361
Year 15 (2027)	4,507,718
Year 16 (2028)	2,396,343
Year 17 (2029)	890,689
Year 18 (2030)	782,845
Year 19 (2031)	4,728,400
Year 20 (2032)	5,854,866

Year	Estimated GHG emission (tCO ₂ e) in the Project Area, under the without-project land use scenario
Year 21 (2033)	4,327,030
Year 22 (2034)	6,437,487
Year 23 (2035)	3,143,802
Year 24 (2036)	3,491,406
Year 25 (2037)	4,068,761
Year 26 (2038)	6,595,483
Year 27 (2039)	6,990,250
Year 28 (2040)	6,782,190
Year 29 (2041)	6,100,771
Year 30 (2042)	1,841,874
Total estimated	140,487,762
Total number of crediting years	30
Average Annual	4,682,925

Source: Validated PDD-VCS, Section "3.1.2 Estimation of Carbon Stocks before deforestation for stratum / 3.1.2.9 Calculation of the sum of baseline carbon stock changes", page 215

In particular, the REDD+ Project RIU-SM expects to contribute to conserve and protect the carbon stocks in the Aboveground Biomass ($C_{AB\_tree,i}$), Belowground Biomass ($C_{BB\_tree,i}$), and Soil Organic Carbon (SOC) by avoid deforestation in the RIU-SM, as it is indicated in the validated PDD-VCS, Section " 3.1.2 Estimation of Carbon Stocks before deforestation for stratum", page 191, and in its Annexes 13 and 14.

The Project performs the biomass analysis on the standing tree elements, so it does not include non-tree biomass, dead wood or litter due to they are considered insignificant. In addition, this decision can be used to calculate carbon content conservatively.

The calculation of the carbon pools was carried out using the *Protocolo para la estimación nacional y subnacional de biomasa - carbono en Colombia* (Yepes, et al.) issued by IDEAM, as it is explained in the validated PDD-VCS and its Annexes 13 and 14. This methodological protocol was used due to it provide the accepted and adequate allometric equations to determinate the carbon contents in trees, as it is recommended by the Module VCS – VMD0001.

The "Applicability Condition" corresponds to assumptions and the "Justification" of these decisions are presented in the Section 4 of mentioned Annex 13 for Aboveground Biomass and Belowground Biomass, and in the Section 2 of mentioned Annex 14 for Soil Organic Carbon.

3.2 Net Positive Climate Impacts

3.2.1 With-Project Estimated Greenhouse Gas Emissions (CL2.1)

Net greenhouse gas emissions within the project area under the project scenario

The total GHG emissions expected from land use activities inside the Project Area, under the "with-project" land use scenario, during the accounting period of Project was estimated according the instructions of VCS REDD-MF – VM0007 and Module VCS – VMD0015 (PDD-VCS, Section "3.2 Project emissions" and PDD-

VCS Annex 11, Section “5.1 Calculation of ΔC_P : net greenhouse gas emissions within the project area under the project scenario”).

The application of Equation 2 of Module VCS VMD0015 (M-MON) addresses the procedures to achieve the results of the estimated Net greenhouse gas emissions within the project area under the project scenario.

Equation 1 ΔC_P (Ex-ante)

$$\Delta C_P = \sum_{t=1}^{t^*} \sum_{i=1}^M (\Delta C_{P,DefPA,i,t} + \Delta C_{P,Deg,i,t} + \Delta C_{P,DistPA,i,t} + GHG_{P-E,i,t} - \Delta C_{P,Enh,i,t})$$

$$\Delta C_P = \sum_{t=1}^{t^*} \sum_{i=1}^M (\Delta C_{P,DefPA,i,t})$$

Source: REDD+ RIU-SM Project

$$\text{Equation 1} = \sum_{t=1}^{t^*} \sum_{i=1}^M (\text{Equation 3 Ex-ante})$$

Where:

Acronym	Unit	Description
ΔC_P	t CO ₂ -e	Net greenhouse gas emissions within the Project Area under the project scene
$\Delta C_{P,DefPA,i,t}$	t CO ₂ -e	Net carbon stock change as a result of deforestation in the project area in the project case in stratum <i>i</i> at time <i>t</i>
$\Delta C_{P,Deg,i,t}$	t CO ₂ -e	Net carbon stock change as a result of degradation in the project area in the project case in stratum <i>i</i> at time <i>t</i>
$\Delta C_{P,DistPA,i,t}$	t CO ₂ -e	Net carbon stock change as a result of natural disturbance in the project area in the project case in stratum <i>i</i> at time <i>t</i>
$GHG_{P-E,i,t}$	t CO ₂ -e	Greenhouse gas emissions as a result of deforestation and degradation activities within the project area in the project case in stratum <i>i</i> in year <i>t</i>
$\Delta C_{P,Enh,i,t}$	t CO ₂ -e	Net carbon stock change as a result of forest growth and sequestration during the project in areas projected to be deforested in the baseline BL in stratum <i>i</i> at time <i>t</i>
<i>i</i>	dimensi onless	1, 2, 3 ... <i>M</i> strata in the project scenario
<i>t</i>	year	1, 2, 3 ... <i>t</i> years elapsed since the start of the project activity

Source: VCS (2012) VMD0015- Methods for monitoring of GHG emissions and removals (M-MON) Equation 1, page 6

This estimate corresponds to an ex-ante estimation of GHG emissions in the project area if the project is implemented, i.e., it is an estimate before the project is implemented, to which it is necessary to estimate the changes in the results of deforestation in the case of the Project Area and Leakage Belt in each stratum. In the case of this project is not considered degradation, taking into account the principle of conservatism in the estimates, the same situation has with natural disturbances such as GHG emissions from deforestation and degradation in the Project Area and on same stage in each stratum and changes in carbon stocks as a result of the growth of forests and CO₂.

Table 29. Net greenhouse gas emissions within the Project Area under the project scene ΔC_P

t	Forest strata i				ΔC_{Pt}	ΔC_P
	i = 1 Helobiome	i = 2 Peinobiome	i = 3 Litobiome	i = 4 Zonobiome	Subtotal	Accumulated
t = 1 : 2013	30,394	102	0	916,595	947,090	947,090
t = 2 : 2014	856,911	330	25	176	857,443	1,804,534
t = 3 : 2015	973,491	562	337	771	975,161	2,779,695
t = 4 : 2016	952,193	570	41	295	953,098	3,732,793
t = 5 : 2017	359,406	240,758	28	92	600,284	4,333,077
t = 6 : 2018	1,439	152,227	266,755	294,984	715,406	5,048,483
t = 7 : 2019	231	138	0	1,073,380	1,073,749	6,122,231
t = 8 : 2020	286	26	0	918,477	918,790	7,041,021
t = 9 : 2021	600	266	0	724,591	725,457	7,766,478
t = 10 : 2022	343	195	0	1,118,542	1,119,079	8,885,558
t = 11 : 2023	848,796	24	29	164,090	1,012,938	9,898,496
t = 12 : 2024	779,281	110	236	821	780,448	10,678,944
t = 13 : 2025	324,236	112,809	163	585	437,793	11,116,736
t = 14 : 2026	494	408,724	151	310	409,679	11,526,416
t = 15 : 2027	525	444,160	221,333	344	666,362	12,192,777
t = 16 : 2028	186	337	260,185	190	260,899	12,453,676
t = 17 : 2029	203	0	0	662	865	12,454,542
t = 18 : 2030	0	23	0	1,284	1,307	12,455,849
t = 19 : 2031	1,466	243,982	94,193	412,306	751,948	13,207,797
t = 20 : 2032	906,544	234	57,911	251	964,939	14,172,736
t = 21 : 2033	681,628	261	0	438	682,327	14,855,063
t = 22 : 2034	97,771	292	18	969,198	1,067,279	15,922,343
t = 23 : 2035	544	233,741	401	221,490	456,177	16,378,520
t = 24 : 2036	103	482,275	46,430	176	528,984	16,907,503
t = 25 : 2037	369,857	361	253,483	54	623,755	17,531,258
t = 26 : 2038	352,533	141	185	726,352	1,079,211	18,610,468
t = 27 : 2039	80	131	0	1,124,212	1,124,422	19,734,891
t = 28 : 2040	553	96	12	1,060,445	1,061,106	20,795,997
t = 29 : 2041	171	453	39	927,444	928,108	21,724,104
t = 30 : 2042	431	151,249	60	306	152,047	21,876,151

Source: REDD+ Project RIU-SM. Folder "calculation_tables" file "VMD0015.xlsx", Sheet "Eq1 Cp PA Exante"

Net carbon stock change as a result of deforestation in the project case in the project area

The application of Equation 2 of Module VCS VMD0015 (M-MON) addresses the procedures to achieve the results of the estimated Net greenhouse gas emissions within the project area under the project scenario.

Equation 1 $\Delta C_{P,DefPA,i,t}$ (Ex-ante)

$$\Delta C_{P,DefPA,i,t} = \sum_{u=1}^U (A_{DefPA,u,i,t} * \Delta C_{pools,P,Def,u,i,t})$$

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
u	dimensionless	1,2,3,...U post-deforestation land uses
i	dimensionless	1, 2, 3, ...M strata
t	year	1, 2, 3 ... t years elapsed since the start of the project activity

Source: VCS (2012) VMD0015- Methods for monitoring of GHG emissions and removals (M-MON) Equation 3, page 6

To get $\Delta C_{P,DefPA,i,t}$ (Ex-ante) the following procedure was applied

$$ABSL_{unplanned,i,t} (PA)$$

Where:

Acronym	Unit	Description
$ABSL_{unplanned,i,t} (PA)$	ha	Projected area of unplanned baseline deforestation in the project area (PA) in year t
i	dimensionless	1, 2, 3, ... M (4) strata
t	year	1, 2, 3, ... t* (30) years elapsed since the projected start of the REDD project activity

(*)VMD0007, Part 3, Step 3.4, 3.4.2. Where location analysis (Steps 2.1, 2.2, 2.3 and Steps 2.1 alternate, 2.2 alternate, and 2.3 alternate) has been conducted (pag. 28)

Table 30. Projected area of unplanned baseline deforestation in the Project Area (PA) in year t
 $ABSL_{unplanned,i,t} (PA)$

t	$i = 1$ Helobiome	$i = 2$ Peinobiome	$i = 3$ Litobiome	$i = 4$ Zonobiome	$ABSL_{unplanned,t} (PA)$
2013	402	2	0	11,872	12,276
2014	11,337	6	0	2	11,345
2015	12,879	10	5	10	12,904
2016	12,597	10	1	4	12,611
2017	4,755	4,074	0	1	8,831

t	i = 1 Helobiome	i = 2 Peinobiome	i = 3 Litobiome	i = 4 Zonobiome	<i>A_{BSL,unplanned,t} (PA)</i>
2018	19	2,576	4,152	3,821	10,568
2019	3	2	0	13,903	13,909
2020	4	0	0	11,897	11,901
2021	8	4	0	9,386	9,398
2022	5	3	0	14,488	14,496
Subtotal year 1-10	42,008	6,687	4,159	65,385	118,239
2023	11,229	0	0	2,125	13,356
2024	10,310	2	4	11	10,326
2025	4,290	1,909	3	8	6,209
2026	7	6,917	2	4	6,930
2027	7	7,516	3,445	4	10,973
2028	2	6	4,050	2	4,060
2029	3	0	0	9	11
2030	0	0	0	17	17
2031	19	4,129	1,466	5,341	10,955
2032	11,993	4	901	3	12,902
Subtotal year 10-20	37,860	20,484	9,871	7,524	75,739
2033	9,018	4	0	6	9,028
2034	1,293	5	0	12,554	13,853
2035	7	3,956	6	2,869	6,838
2036	1	8,162	723	2	8,888
2037	4,893	6	3,945	1	8,845
2038	4,664	2	3	9,408	14,077
2039	1	2	0	14,562	14,565
2040	7	2	0	13,736	13,745
2041	2	8	1	12,013	12,024
2042	6	2,560	1	4	2,570
Subtotal year 20-30	19,893	14,706	4,679	65,154	104,433
Total years 1-30	99,762	41,877	18,710	138,062	298,410

Source: REDD+ Project RIU-SM. Folder "calculation_tables" file "spatial_model_results.xlsx", Sheet "PA"

$$A_{P,unplanned,i,t} (PA) = A_{BSL,unplanned,i,t} (PA) * (Not\ effective)$$

Table 31. Projected area of unplanned project scenario deforestation in the Project Area (PA) in year t $A_{P,unplanned,i,t} (PA)$

$A_{P,unplanned,i,t} (PA) = A_{BSL,unplanned,i,t} (PA) * 15\%$					
t	i = 1 Helobiome	i = 2 Peinobiome	i = 3 Litobiome	i = 4 Zonobiome	Subtotal
2013	60	0	0	1,781	1,841
2014	1,701	1	0	0	1,702
2015	1,932	1	1	1	1,936
2016	1,890	1	0	1	1,892

$A_{P,unplanned,i,t} (PA) = A_{BSL,unplanned,i,t} (PA) * 15\%$					
t	i = 1 Helobiome	i = 2 Peinobiome	i = 3 Litobiome	i = 4 Zonobiome	Subtotal
2017	713	611	0	0	1,325
2018	3	386	623	573	1,585
2019	0	0	0	2,085	2,086
2020	1	0	0	1,785	1,785
2021	1	1	0	1,408	1,410
2022	1	0	0	2,173	2,174
Subtotal year 1-10	6,301	1,003	624	9,808	17,736
2023	1,684	0	0	319	2,003
2024	1,546	0	1	2	1,549
2025	643	286	0	1	931
2026	1	1,038	0	1	1,039
2027	1	1,127	517	1	1,646
2028	0	1	607	0	609
2029	0	0	0	1	2
2030	0	0	0	2	3
2031	3	619	220	801	1,643
2032	1,799	1	135	0	1,935
Subtotal year 10-20	5,679	3,073	1,481	1,129	11,361
2033	1,353	1	0	1	1,354
2034	194	1	0	1,883	2,078
2035	1	593	1	430	1,026
2036	0	1,224	108	0	1,333
2037	734	1	592	0	1,327
2038	700	0	0	1,411	2,112
2039	0	0	0	2,184	2,185
2040	1	0	0	2,060	2,062
2041	0	1	0	1,802	1,804
2042	1	384	0	1	386
Subtotal year 20-30	2,984	2,206	702	9,773	15,665
Total years 1-30	14,964	6,282	2,806	20,709	44,762

Source: REDD+ Project RIU-SM. Folder "calculation_tables" file "VMD0015.xlsx", Sheet "Modelo Cp,t Ex ante"

Table 32. Changes in coverage and land use (CT/UT) in RRD (2001-2011) (% $CT/UT_{u,i}$)

Land use classes post-deforestation, u	Layers of forests (pre-deforestation): i			
	$i=1$: Helobiome	$i=2$: Peinobiome	$i=3$: Litobiome	$i=4$: a Zonobiome
$u1 = VR$	47.0%	40.9%	18.6%	54.8%
$u2 = HAA$	24.2%	23.4%	12.5%	8.3%
$u3 = G$	28.7%	35.7%	68.8%	37.0%
$u4 = W$	0.1%	0.0%	0.0%	0.0%
$u5 = BS$	0.1%	0.0%	0.1%	0.0%

Source: REDD+ Project RIU-SM. Folder "calculation_tables" file "VMD0015.xlsx", Sheet "Modelo Cp,t Ex ante"

Where:

Acronym	Description
VR	Vegetation on regenerating
HAA	Heterogeneous Agricultural Area
G	Grassland
W	Wetland
BS	Bare soil

Source: Weights kinds of land uses post- deforestation. Archive "land-uses_weights.xlsx"

$$A_{DefPA,u,i,t} = A_{P,unplanned,i,t} (PA) * \%CT/UT_{u,i}$$

Where:

Acronym	Unit	Description
$A_{DefPA,u,i,t}$	ha	Area of deforestation in the project case in the project area stratum i converted to land use u at time t
$A_{P,unplanned,i,t} (PA)$	ha	Projected area of unplanned project scenario deforestation in the project area (PA) in year t
$\%CT/UT_{u,i}$	%	Changes in coverage and land use in the RRD (2001-2011) (% weighted)
u	dimensionless	1,2,3,...U post-deforestation land uses
i	dimensionless	1, 2, 3, ... M (4) strata
t	year	1, 2, 3, ... t^* (30) years elapsed since the projected start of the REDD project activity

Source: REDD+ Project RIU-SM. Folder "calculation_tables" file "VMD0015.xlsx", Sheet "Modelo Cp,t Ex ante"

But it is also applied a simplified method taking as common factor to $\%CT/UT_{u,i}$ i as follows:

$$\Delta C_{pools,Def,u,i,t}$$

Where:

Acronym	Unit	Description
$\Delta C_{pools,P,Def,u,i,t}$	t CO ₂ -e ha ⁻¹	Net carbon stock changes in all pools in the project case in land use <i>u</i> in stratum <i>i</i> at time <i>t</i>
<i>u</i>	dimensionless	1,2,3,...U post-deforestation land uses
<i>i</i>	dimensionless	1, 2, 3, ... M (4) strata
<i>t</i>	year	1, 2, 3, ... t* (30) years elapsed since the projected start of the REDD project activity

Source: VCS (2012) VMD0015- Methods for monitoring of GHG emissions and removals (M-MON) Equation 5, page 9

Table 33. Net carbon stock changes in all pools in the project case in land use *u* in stratum *i* at time *t* $\Delta C_{pools,P,Def,u,i,t}$

Post-deforestation land use <i>u</i>	Forest strata <i>i</i>			
	<i>i</i> = 1 Helobiome	<i>i</i> = 2 Peinobiome	<i>i</i> = 3 Litobiome	<i>i</i> = 4 Zonobiome
<i>u</i> =1 veg. reg.	460.3	333.8	340.8	466.4
<i>u</i> =2 HAA	514.9	423.0	435.8	557.3
<i>u</i> = 3 grassland	569.2	444.0	451.2	576.6
<i>u</i> =4 wetland	0.0	0.0	0.0	0.0
<i>u</i> =5 bare soil	0.0	0.0	0.0	0.0

Source: REDD+ Project RIU-SM. Folder "calculation_tables" file "VMD0015.xlsx", Sheet "Eq3 CPools,Def,i,t"

Table 34. Changes in C from area of deforestation in PA stratum *i* converted to land use *u* (%CT/UT*u*,*i*) ($A_{DefPA,u,i,t} * \Delta C_{pools,Def,u,i,t}$)

Land use	2013 period				2014-2015 period			
	<i>i</i> = 1 Helobiome	<i>i</i> = 2 Peinobiome	<i>i</i> = 3 Litobiome	<i>i</i> = 4 Zonobiome	<i>i</i> = 1 Helobiome	<i>i</i> = 2 Peinobiome	<i>i</i> = 3 Litobiome	<i>i</i> = 4 Zonobiome
<i>u</i> 1 = VR	13,038	35	0	454,814	785,156	309	54	470
<i>u</i> 2 = HAA	7,505	26	0	82,152	451,978	224	46	85
<i>u</i> 3 = G	9,851	41	0	379,629	593,269	359	262	392
<i>u</i> 4 = W	0	0	0	0	0	0	0	0
<i>u</i> 5 = BS	0	0	0	0	0	0	0	0
Total	30,394	102	0	916,595	1,830,402	892	362	947

Source: REDD+ Project RIU-SM. Folder "calculation_tables" file "VMD0015.xlsx", Sheet "Eq3 CPDefPA,i,t Exante (2)"

Finally, the Project does not include emissions from non-CO₂ sources, as it is explained in the validated PDD-VCS, Annex 9 (see the following Table 35), since, from the design stage, it has been estimated that

these sources do not represent a significant proportion of the emissions (they do not even reach 20% of the GHG emissions in the scenario with the Project).

Table 35. Non-CO₂ emissions sources not included

Sources	Gas	Included	Justification / Explanation
Biomass burning	CH ₄	Excluded	Non-CO ₂ gases emitted from woody biomass burning - it is conservative to exclude in the baseline.
	N ₂ O	Excluded	
Combustion of fossil fuels	CH ₄	Excluded	Potential emissions are negligible
	N ₂ O	Excluded	Potential emissions are negligible
Use of fertilizers	CH ₄	Excluded	Potential emissions are negligible
	N ₂ O	Excluded	Can be excluded if excluded from baseline accounting. No significant use of fertilizers is made in the implementation of the Project Activities.

Source: Based on validated PDD-VCS, Annex 9 - VM0007, 5.4 Sources of GHG emissions / 5.4.2 REDD: GHG Sources Included in or Excluded from the REDD Project Boundary.

3.2.2 Net Impact (CL2.2)

For the estimation of expected results about emission reductions, the methods indicated in the VCS - VM0007 module, Section “8.4 Summary of GHG Emission Reduction and/or Removals” were applied.

1. Estimated GHG emission reductions

The application of Equations 1 and 2 of methodology VCS VM0007 (REDD- MF) addresses the procedures to achieve the results of the estimated GHG emission reductions.

Equation 1 NER_{REDD+}

$$NER_{REDD+} = NER_{REDD} + NGR_{ARR} + NER_{WRC}$$

Where:

Acronym	Unit	Description
NER_{REDD+}	t CO ₂ -e	Total net GHG emission reductions of the REDD+ project activity up to year t*
NER_{REDD}	t CO ₂ -e	Total net GHG emission reductions of the REDD project activity up to year t*
NGR_{ARR}	t CO ₂ -e	Total net GHG removals of the ARR project activity up to year t*
NER_{WRC}	t CO ₂ -e	Total net GHG emission reductions of the WRC project activity up to year t*

Source: VCS (2015) VM0007- REDD+ Methodology Framework (REDD-MF) Equation 1, page 24

Equation 2 NER_{REDD}

$$NER_{REDD} = \Delta C_{BSL-REDD} - \Delta C_{WPS-REDD} - \Delta C_{LK-REDD}$$

Where:

Acronym	Unit	Description
NER_{REDD}	t CO ₂ -e	Total net GHG emission reductions of the REDD project activity up to year t*
$\Delta C_{BSL-REDD}$	t CO ₂ -e	Net GHG emissions in the REDD baseline scenario up to year t*
$\Delta C_{WPS-REDD}$	t CO ₂ -e	Net GHG emissions in the REDD project scenario up to year t*
$\Delta C_{LK-REDD}$	t CO ₂ -e	Net GHG emissions due to leakage from the REDD project activity up to year t*

Source: VCS (2015) VM0007- REDD+ Methodology Framework (REDD-MF) Equation 2, page 24

The following Table 36 shows the estimated GHG emission reductions expected during the accounting period of Project, from land use activities, inside the Project Area, under the “with-project” land use scenario.

Table 36. Estimated GHG emission reductions - NER_{REDD} (tCO₂e) in the Project Area under the with-project land use scenario

Year	NER_{REDD+} (1)	$\Delta C_{BSL-REDD}$ (2)	$\Delta C_{WPS-REDD}$ (3)	$\Delta C_{LK-REDD}$ (4)
t = 1 : 2013	3,840,053	5,151,681	947,090	364,538
t = 2 : 2014	3,549,920	4,742,981	857,443	335,618
t = 3 : 2015	4,126,550	5,490,203	975,161	388,492
t = 4 : 2016	4,157,144	5,499,384	953,098	389,142
t = 5 : 2017	2,824,977	3,686,093	600,284	260,831
t = 6 : 2018	3,394,234	4,422,586	715,406	312,946
t = 7 : 2019	4,967,059	6,500,811	1,073,749	460,004
t = 8 : 2020	4,465,986	5,794,823	918,790	410,047
t = 9 : 2021	3,790,794	4,860,161	725,457	343,910
t = 10 : 2022	5,473,502	7,094,602	1,119,079	502,021
t = 11 : 2023	5,030,098	6,503,210	1,012,938	460,173
t = 12 : 2024	4,117,587	5,271,017	780,448	372,982
t = 13 : 2025	2,714,125	3,391,935	437,793	240,017
t = 14 : 2026	2,506,608	3,138,361	409,679	222,073
t = 15 : 2027	3,522,386	4,507,718	666,362	318,970
t = 16 : 2028	1,965,876	2,396,343	260,899	169,568
t = 17 : 2029	826,797	890,689	865	63,026
t = 18 : 2030	726,143	782,845	1,307	55,395
t = 19 : 2031	3,641,866	4,728,400	751,948	334,586
t = 20 : 2032	4,475,631	5,854,866	964,939	414,296
t = 21 : 2033	3,338,518	4,327,030	682,327	306,185
t = 22 : 2034	4,914,685	6,437,487	1,067,279	455,523
t = 23 : 2035	2,465,166	3,143,802	456,177	222,458

Year	NER_{REDD+} (1)	$\Delta C_{BSL-REDD}$ (2)	$\Delta C_{WPS-REDD}$ (3)	$\Delta C_{LK-REDD}$ (4)
t = 24 : 2036	2,715,367	3,491,406	528,984	247,055
t = 25 : 2037	3,157,097	4,068,761	623,755	287,909
t = 26 : 2038	5,049,569	6,595,483	1,079,211	466,703
t = 27 : 2039	5,371,191	6,990,250	1,124,422	494,637
t = 28 : 2040	5,241,170	6,782,190	1,061,106	479,914
t = 29 : 2041	4,740,967	6,100,771	928,108	431,696
t = 30 : 2042	1,559,494	1,841,874	152,047	130,333
Total	108,670,562	140,487,762	21,876,151	9,941,049

Source: REDD+ Project RIU-SM. Folder "calculation_tables" file "VM0007.xlsx", Sheet "Eq2 NER REDD"

(2) VCS. VM0007 - REDD-MF, 8.4 Summary of GHG emission reduction and/or removals, 8.4.2 REDD, Equation 3 ($\Delta C_{BSL-REDD}$)

(3) VCS. VMD0015 – M-REDD, 5 Procedures, Calc of ΔC_P : Net Greenhouse Gas Emissions within the Project Area under the Project Scenario (Ex ante estimation)

(4) VCS. VM0007 - REDD-MF, 8.4 Summary of GHG emission reduction and/or removals, 8.4.2 REDD, Equation 4 ($\Delta C_{LK-REDD}$) (VMD0010 Eq. 16 $\Delta C_{LK-AS,unplanned}$)

As can be seen in the table above, for each year, the result for estimated GHG emission reductions in the Project Area under the with-project land use scenario is always positive.

2. Baseline scenario

The application of Equation 3 of methodology VCS VM0007 (REDD- MF) addresses the procedures to achieve the results of the estimated baseline scenario emission.

Equation 3 $\Delta C_{BSL-REDD}$

$$\Delta C_{BSL-REDD} = \Delta C_{BSL,planned} + \Delta C_{BSL,unplanned} + \Delta C_{BSL,degrad-FW/C}$$

Where:

Acronym	Unit	Description
$\Delta C_{BSL-REDD}$	t CO ₂ -e	Net GHG emissions under the REDD baseline scenario up to year t*
$\Delta C_{BSL,planned}$	t CO ₂ -e	Net GHG emissions in the baseline scenario from planned deforestation up to year t*
$\Delta C_{BSL,unplanned}$	t CO ₂ -e	Net GHG emissions in the baseline scenario from unplanned deforestation up to year t
$\Delta C_{BSL,degrad-FW/C}$	t CO ₂ -e	Net GHG emissions in the baseline scenario from degradation caused by fuelwood collection and charcoal making up to year t*

Source: VCS (2015) VM0007- REDD+ Methodology Framework (REDD-MF) Equation 3, page 25

3. Leakage emissions

The application of Equation 4 of methodology VCS VM0007 (REDD- MF) addresses the procedures to achieve the results of the estimated emissions due to leakage from the REDD project activity.

Equation 4 $\Delta C_{LK-REDD}$

$$\Delta C_{LK-REDD} = \Delta C_{LK-AS,planned} + \Delta C_{LK-AS,unplanned} + \Delta C_{LK-AS,degrad-FW/C} + \Delta C_{LK-ME}$$

Where:

Acronym	Unit	Description
$\Delta C_{LK-REDD}$	t CO ₂ -e	Net GHG emissions due to leakage from the REDD project activity up to year t*
$\Delta C_{LK-AS,planned}$	t CO ₂ -e	Net GHG emissions due to activity shifting leakage for projects preventing planned deforestation up to year t*
$\Delta C_{LK-AS,unplanned}$	t CO ₂ -e	Net GHG emissions due to activity shifting leakage for projects preventing unplanned deforestation up to year t*
$\Delta C_{LK-AS,degrad-FW/C}$	t CO ₂ -e	Net GHG emissions due to activity shifting leakage for degradation caused by extraction of wood for fuel up to year t*
ΔC_{LK-ME}	t CO ₂ -e	Net GHG emissions due to market-effects leakage up to year t*

Source: VCS (2015) VM0007- REDD+ Methodology Framework (REDD-MF) Equation 4, page 25

4. Buffer

The application of Equations 7 and 9 of methodology VCS VM0007 (REDD- MF) addresses the procedures to achieve the results of the estimated buffer withholding.

Equation 5 $Buffer_{TOTAL}$

$$Buffer_{TOTAL} = Buffer_{Planned} + Buffer_{Unplanned} + Buffer_{Degrad-FW/C} + Buffer_{WRC} + Buffer_{ARR}$$

Equation 6 $Buffer_{Unplanned}$

$$Buffer_{Unplanned} = \left[\begin{array}{l} (\Delta C_{BSL,unplanned} - \sum_{t=1}^{t^*} \sum_{i=1}^M (E_{FC,i,t} + N_2O_{direct,i,t})) - \\ \text{Baseline Unplanned} \\ (\Delta C_{P,Unplanned} - \sum_{t=1}^{t^*} \sum_{i=1}^M (E_{FC,i,t} + N_2O_{direct,i,t})) \\ \text{Project Unplanned} \end{array} \right] * Buffer\%$$

Where:

Acronym	Unit	Description
$Buffer_{Unplanned}$	t CO ₂ -e	Buffer withholding for avoiding unplanned deforestation project activities
$\Delta C_{BSL,unplanned}$	t CO ₂ -e	Net GHG emissions in the baseline from unplanned deforestation
$E_{FC,i,t}$	t CO ₂ -e	Emission from fossil fuel combustion in stratum i in year t
$N_2O_{direct,i,t}$	t CO ₂ -e	Direct N ₂ O 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 -e	Net GHG emissions within the project area under the project scenario (The project emissions must be divided between the emissions arising from the

Acronym	Unit	Description
		respective project areas for planned and unplanned deforestation and degradation through fuelwood extraction/charcoal production.)
<i>Buffer%</i>	t CO ₂ -e	Buffer withholding percentage (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 must be calculated using T-BAR. Different percentages will likely be calculated for each of the baseline types as relevant.)
<i>i</i>	dimension- less	1, 2, 3, ...M (4) strata
<i>t</i>	years	1, 2, 3, ... t* (30) years elapsed since the start of the REDD VCS project activity

Source: VCS (2015) VM0007- REDD+ Methodology Framework (REDD-MF) Equation 9, page 27

Table 37. Buffer withholding for avoiding unplanned deforestation project activities

Year	<i>Buffer_{Unplanned}</i>
t = 1 : 2013	714,780
t = 2 : 2014	660,541
t = 3 : 2015	767,557
t = 4 : 2016	772,869
t = 5 : 2017	524,587
t = 6 : 2018	630,221
t = 7 : 2019	922,601
t = 8 : 2020	828,926
t = 9 : 2021	702,900
t = 10 : 2022	1,015,839
t = 11 : 2023	933,346
t = 12 : 2024	763,397
t = 13 : 2025	502,204
t = 14 : 2026	463,876
t = 15 : 2027	653,031
t = 16 : 2028	363,025
t = 17 : 2029	151,270
t = 18 : 2030	132,861
t = 19 : 2031	675,997
t = 20 : 2032	831,288
t = 21 : 2033	619,599
t = 22 : 2034	912,935
t = 23 : 2035	456,896
t = 24 : 2036	503,612
t = 25 : 2037	585,651
t = 26 : 2038	937,766
t = 27 : 2039	997,191
t = 28 : 2040	972,584
t = 29 : 2041	879,353

Year	Buffer _{Unplanned}
t = 30 : 2042	287,271
TOTAL	20,163,974

5. Uncertainty

Project use module VCS-VM0017 (X-UNC) to combine uncertainty information and conservative estimates and produce an overall uncertainty estimate of the total net GHG emission reductions.

The estimated cumulative net anthropogenic GHG emission reductions is adjusted at each point in time to account for uncertainty as indicated in module X-UNC. This develop is in PDD-VCS Annex 16.

X-UNC calculates an adjusted value for NER_{REDD+} for any point in time. This adjusted $Adjusted\_NER_{REDD+}$ is the basis of calculations at each point in time in following equation 13.

$$Uncertainty_{REDD\_BSL,t*} = \sqrt{[Uncertainty_{BSL,RATE,t*}^2 + Uncertainty_{REDD\_BSL,SS}^2]}$$

Source: VCS (2015) VMD0017 Estimation of uncertainty for REDD+ project activities (X-UNC), Equation 6
 $Uncertainty_{REDD\_BSL,t}$

$$Uncertainty_{REDD\_BSL,t*} = 8,36\%$$

Source: folder "calculation_tables" file "VMD0017.xlsx", Sheet "RIU-SM soils"

As the uncertainty does not exceed 15% of NER_{REDD+} at the 95% confidence level, **then no deduction should result for uncertainty.**

$$Adjusted\_C_{REDD,t} = NER_{REDD+,t}$$

Source: Annex 16, based don Equation 16; folder "calculation_tables" file "VMD0017.xlsx", Sheet "Eq16 Adjusted-CREDD,t"

6. Verified Carbon Units

The application of Equation 13 of methodology VCS VM0007 (REDD- MF) addresses the procedures to achieve the results of the calculation of Verified Carbon Units - VCU.

Equation 7 VCU_t

$$VCU_t = (Adjusted\_NER_{REDD+,t2} - Adjusted\_NER_{REDD+,t1}) - Buffer_{TOTAL}$$

Where:

Acronym	Unit	Description
VCU_t	t CO ₂ -e	Number of Verified Carbon Units at time t = t2 - t1
$Adjusted\_NER_{REDD+,t2}$	t CO ₂ -e	Total net GHG emission reductions of the REDD+ project activity up to year t ₂ adjusted to account for uncertainty (t CO ₂ e)

Acronym	Unit	Description
$Adjusted\_NER_{REDD,t1}$	t CO ₂ -e	Total net GHG emission reductions of the REDD+ project activity up to year t ₁ adjusted to account for uncertainty (t CO ₂ e)
$Buffer_{TOTAL}$	t CO ₂ -e	Total permanence risk buffer withholding
t	years	1, 2, 3, ...t* time elapsed since the start of the REDD+ project activity

Source: VCS (2015) VM0007- REDD+ Methodology Framework (REDD-MF) Equation 13, page 28

Table 38. Number of estimated Verified Carbon Units

Year	$Adjusted\_NER_{REDD,t}$	$Buffer_{TOTAL}$	% efficiency	VCU_t
t = 1 : 2013	3,840,053	714,780	10%	2,812,745
t = 2 : 2014	3,549,920	660,541	10%	2,600,441
t = 3 : 2015	4,126,550	767,557	8%	3,090,273
t = 4 : 2016	4,157,144	772,869	8%	3,113,533
t = 5 : 2017	2,824,977	524,587	5%	2,185,370
t = 6 : 2018	3,394,234	630,221	5%	2,625,812
t = 7 : 2019	4,967,059	922,601	5%	3,842,235
t = 8 : 2020	4,465,986	828,926	5%	3,455,208
t = 9 : 2021	3,790,794	702,900	5%	2,933,500
t = 10 : 2022	5,473,502	1,015,839	5%	4,234,780
t = 11 : 2023	5,030,098	933,346	5%	3,891,914
t = 12 : 2024	4,117,587	763,397	5%	3,186,481
t = 13 : 2025	2,714,125	502,204	5%	2,101,325
t = 14 : 2026	2,506,608	463,876	5%	1,940,595
t = 15 : 2027	3,522,386	653,031	5%	2,725,887
t = 16 : 2028	1,965,876	363,025	5%	1,522,708
t = 17 : 2029	826,797	151,270	5%	641,751
t = 18 : 2030	726,143	132,861	5%	563,617
t = 19 : 2031	3,641,866	675,997	5%	2,817,576
t = 20 : 2032	4,475,631	831,288	5%	3,462,126
t = 21 : 2033	3,338,518	619,599	5%	2,582,973
t = 22 : 2034	4,914,685	912,935	5%	3,801,662
t = 23 : 2035	2,465,166	456,896	5%	1,907,857
t = 24 : 2036	2,715,367	503,612	5%	2,101,168
t = 25 : 2037	3,157,097	585,651	5%	2,442,873
t = 26 : 2038	5,049,569	937,766	5%	3,906,213
t = 27 : 2039	5,371,191	997,191	5%	4,155,300
t = 28 : 2040	5,241,170	972,584	5%	4,055,156
t = 29 : 2041	4,740,967	879,353	5%	3,668,534
t = 30 : 2042	1,559,494	287,271	5%	1,208,612
Total	108,670,562	20,163,974		83,578,228
Average/annual	3,622,352	672,132		2,785,941

Source: REDD+ Project RIU-SM. Folder "calculation_tables" file "VM0007.xlsx", Sheet "Eq13 VCUt"

3.3 Offsite Climate Impacts (Leakage)

3.3.1 Types of Expected Leakage (CL3.1)

According to Module VCS – VMD0010, the main leakage is the one considered due to the displacement of deforestation activities from the Project Area (PA) towards the Leak Belt (LB) (see spatial boundaries in the Section “2.1.5 Project Zone Map” of this document).

The Annex 12 of the validated PDD-VCS presents the procedures to determinate de leakage that can occur as deforested forest hectares in the Leakage Belt (LB) and the results, as it is shown in the following Table 39.

Table 39. Estimated GHG emission by leakages (tCO₂e) due to the displacement of unplanned deforestation from Project Area to Leakage Belt, under the without-project land use scenario

Year	Estimated GHG emission reductions (tCO ₂ e) in the Project Area under the without-project land use scenario
Year 1 (2013)	364,538
Year 2 (2014)	335,618
Year 3 (2015)	388,492
Year 4 (2016)	389,142
Year 5 (2017)	260,831
Year 6 (2018)	312,946
Year 7 (2019)	460,004
Year 8 (2020)	410,047
Year 9 (2021)	343,910
Year 10 (2022)	502,021
Year 11 (2023)	460,173
Year 12 (2024)	372,982
Year 13 (2025)	240,017
Year 14 (2026)	222,073
Year 15 (2027)	318,970
Year 16 (2028)	169,568
Year 17 (2029)	63,026
Year 18 (2030)	55,395
Year 19 (2031)	334,586
Year 20 (2032)	414,296
Year 21 (2033)	306,185
Year 22 (2034)	455,523
Year 23 (2035)	222,458
Year 24 (2036)	247,055
Year 25 (2037)	287,909
Year 26 (2038)	466,703
Year 27 (2039)	494,637

Year	Estimated GHG emission reductions (tCO ₂ e) in the Project Area under the without-project land use scenario
Year 28 (2040)	479,914
Year 29 (2041)	431,696
Year 30 (2042)	130,333
Total estimated	9,941,049
Total number of crediting years	30
Average Annual	331,368

Source: Validated PDD-VCS, Section "3.4 Estimated GHG emission reductions and removals", page 229.

Module VCS – VMD0010 also considers the deforestation displaced outside Leakage Belt, which is explained in the next Section " 3.3.2 Quantity of Expected Leakage".

3.3.2 Quantity of Expected Leakage (CL3.1, 3.3)

The Module VCS – VMD0010 also considers the deforestation displaced outside Leakage Belt. The Annex 12 of the validated PDD-VCS, in the Section "5.4.5 Estimation of leakage outside the Leakage Belt, as a proportion of baseline deforestation", presents the procedures to determinate de leakage that can occur offsite of Project Zone, that is, leakage offsite of RRL (Project Area + Leakage Belt + other non-forest areas). These procedures conduct to calculate the variable " $\Delta C_{LK-ASU,OLB}$ " (net CO₂ emissions due to unplanned deforestation displaced outside the leakage belt), which results negative in each year, as it is shown in the following Table 40.

Table 40. Net cumulative CO₂ emissions due to unplanned deforestation displaced outside Leakage Belt

Year	Net cumulative CO ₂ emissions due to unplanned deforestation displaced outside Leakage Belt
Year 1 (2013)	-32,510
Year 2 (2014)	-29,931
Year 3 (2015)	-34,646
Year 4 (2016)	-34,704
Year 5 (2017)	-23,261
Year 6 (2018)	-27,909
Year 7 (2019)	-41,024
Year 8 (2020)	-36,569
Year 9 (2021)	-30,670
Year 10 (2022)	-44,771
Year 11 (2023)	-41,039
Year 12 (2024)	-33,263
Year 13 (2025)	-21,405

Year	Net cumulative CO ₂ emissions due to unplanned deforestation displaced outside Leakage Belt
Year 14 (2026)	-19,805
Year 15 (2027)	-28,446
Year 16 (2028)	-15,122
Year 17 (2029)	-5,621
Year 18 (2030)	-4,940
Year 19 (2031)	-29,839
Year 20 (2032)	-36,948
Year 21 (2033)	-27,306
Year 22 (2034)	-40,624
Year 23 (2035)	-19,839
Year 24 (2036)	-22,033
Year 25 (2037)	-25,676
Year 26 (2038)	-41,621
Year 27 (2039)	-44,113
Year 28 (2040)	-42,800
Year 29 (2041)	-38,499
Year 30 (2042)	-11,623

Source: Validated PDD-VCS, Annex 12, Table 11: Net cumulative CO₂ emissions due to unplanned deforestation displaced outside Leakage Belt, page 17

As can be seen, due the negative results in the design stage of the Project, it is estimated that there will be no offsite increases in GHG emissions due to project activities.

On the other hand, at the Table 35 the “non-CO₂ emissions sources not included” were presented, since it is estimated that they do not represent even 20% of GHG emissions in the scenario with the Project, which also applies to leaks

3.3.3 Leakage Mitigation (CL3.2)

To mitigate leakage, the entire Sustainable Management Plan for Land and Forest in the RIU-SM, Project Activities and other actions (in improving the provision of health services, water supply, housing, and providing attention to special population and in case of calamities occur, as it is described in Section “2.1.8 Project Activities and Theory of Change” of this document) are carried out to generate benefits to indigenous communities (see Sections “4.2.1 Expected Community Impacts” and “5.2.1 Expected Biodiversity Changes” of this document), in a large extent, in the area corresponding to the Leakage Belt, so, also, it will be possible to mitigate deforestation in this area as well.

3.4 Climate Impact Monitoring

3.4.1 Climate Monitoring Plan (CL4.1)

The primary purpose of the Monitoring Plan will be the collection of data to verify the level of deforestation within the Project Area, Leakage Belt and RRL 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.

In this purpose, the Monitoring Plan is based on the assessment of the Sustainable Management Plan for Land and Forest in the RIU-SM, Objectives, Products, Project Activities presented in Section “2.1.8 Project Activities and Theory of Change” of this document (also described in the Matrix of Logic Structure in validated PDD-VCS, Section “1.8 Description of the Project activity”, page 42), on the following climate parameters:

Data and Parameters Available at Validation

VM0007: METHODOLOGY FRAMEWORK (REDD-MF)

Data / Parameter	$\Delta C_{BSL,unplanned}$
Data unit	t CO ₂ e
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-VCS, 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: <i>IPCC 2006, Volume 4 - AFOLU, Chapter 4 – Forest Land, Table 4.3 Carbon Fraction fo aboveground forest biomass (p. 4.48)</i>
Value applied	0.47
Justification of choice of data or description of measurement	The default value is 0.47 tonne of C per tonne of biomass (dry weight). This default value is more realistic for herbaceous biomass (<i>IPCC 2006, Volume 4 - AFOLU, page 6.9</i>).

methods and procedures applied	
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. Instituto de Hidrología, Meteorología, y Estudios Ambientales-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 tonnes 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 researchs in bosques nativos tropicales, templados y boreales (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), page 93.
Measurement procedures (if any):	(Yepes, et al., 2011), 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 2006GL Volume 4
Measurement procedures (if any):	It was used according to source of data.
Any comment:	Stock Change Factors as defined in IPCC 2006GL 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 2006GL Volume 4
Measurement procedures (if any):	It was used according to source of data.
Any comment:	Stock Change Factors as defined in IPCC 2006GL 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 2006GL Volume 4
Measurement procedures (if any):	It was used according to source of data.
Any comment:	Stock Change Factors as defined in IPCC 2006GL 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	$A_{RRD, \text{unplanned}, \text{hrp}}$
Data unit	ha
Used in equations	3
Description	Total deforested area during the historical reference period (2001 a 2011) in the RRD

Module parameter original 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 original in:	CP-AB
Any comments	Whitout 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 original in:	CP-AB
Any comments	Whitout 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 original in:	CP-S
Any comments	Whitout 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 original in:	CP-S
Any comments	Whitout 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 ₂ e
Description	Net CO ₂ emissions in the baseline from unplanned deforestation in the leakage belt
Ecuations	1, 6
Source of data	Module <i>BL-UP</i>

Value applied	Module <i>BL-UP</i> "Annex 10 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	<i>C_{LB}</i>
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
Ecuations	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	<i>C_{OLB}</i>
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
Ecuations	4
Source of data	Literature: Average carbon dioxide –e- (tco ₂ -e/ha) Philips J.F (2011) IDEAM estimaciones de carbon 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 <i>MANFOR</i> and <i>PROTFOR</i> 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	<i>A_{BSL,PA-unplanned,t}</i>

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, 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	<i>Regional Forest / Non-forest Cover Benchmark Map</i>
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 (<i>Map of spatial limits RRD 2011 – REDD+ project RIU-SM</i>)
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	<i>Project Forest Cover Benchmark Map</i>
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). (<i>Map of spatial limit PA 2011 – REDD+ project RIU-SM</i>)
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	<i>Leakage Belt Forest Cover Benchmark Map</i>
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). (<i>Map of spatial limit CF 2011 – REDD+ project RIU-SM</i>)
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 . (<i>Table spatial boundaries, similarity VMD0016.xlsx</i>)
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. (<i>deforestation for hrp -2001 to 2011- in RRD</i>)
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 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: <i>IPCC 2006, Volume 4 - AFOLU, Chapter 4 – Forest Land, Table 4.3 Carbon Fraction fo aboveground forest biomass (p. 4.48)</i>
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 (<i>IPCC 2006, Volume 4 - AFOLU, page 6.9</i>).
Purpose of Data	Transform biomass to carbon
Comments	Without comment
Equations	19

Data / Parameter	<i>fj(X,Y)</i>
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	Protocol for the national and subnational estimates of biomass - carbon Colombia - IDEAM, 2011 (Yepes, et al., 2011), Equation 12.
Justification of choice of data or description of measurement methods and procedures applied	Equation with sufficient validation, R2 = 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 20-40cm – 1.33 for trees 40-80cm – 1.25 for trees ≥ 80cm4

	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	<i>Change in the land use</i>
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; Annex 10 of PDD-VCS, 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 ₂ e
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 (<i>BL-DFW</i> , <i>BL-PL</i> , <i>BLUP</i>) used to calculate net emission reductions.
Value applied	Annex 10 of PDD-VCS, 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 <i>ex ante</i> 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 carbón stocks and greenhouse gas sources in the REDD baseline case (1, 2, <i>n</i> 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, table 7
Justification of choice of data or description of measurement methods and	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 <i>t</i> value for the 95% confidence level

procedures applied procedures (if any)	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 <i>ex ante</i> for each baseline period

Data / Parameter	$E_{REDD,WPS,SS,i, Pool\#}$
Data unit	t CO ₂ e
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 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 <i>ex ante</i> estimation were 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, <i>n</i> 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	<i>Ex ante</i> the uncertainty in the project carbon stocks and sources shall be equal to the calculated baseline uncertainty

Data and Parameters Monitored

VM0007: METHODOLOGY FRAMEWORK (REDD-MF)

Data / Parameter:	$\Delta C_{WPS-REDD}$
Data unit:	t CO ₂ e
Description:	Net GHG emissions in the REDD project scenario up to year t*
Equations	2
Source of data:	Module M-REDD
Description of measurement methods and procedures to be applied:	See module M-REDD
Frequency of monitoring/recording:	See module M-REDD
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	$\Delta C_{LK-AS, unplanned}$
Data unit	t CO ₂ e
Description	Net greenhouse gas emissions due to activity shifting for projects preventing unplanned deforestation
Equations	4
Source of data	Module LK-ASU
Value applied	Annex 12 of PDD-VCS, table 16
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

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
Description	Area of sample plots in ha
Equations	2, 6, 14
Source of data	(Yepes, et al., 2011)

Description of measurement methods and procedures to be applied	50 x 50 meters (0.25 ha) (Yepes et al. IDEAM, 2011. Protocol for national and sub-carbon biomass estimate in Colombia, table 9 page 52)
Frequency of monitoring/recording	Monitoring must occur at least every ten years for baseline renewal.
QA/QC procedures to be applied	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)
Comments	This parameter was known ex-ante.

Data / Parameter	<i>N</i>
Data unit	Dimensionless
Description	Number of sample points
Equations	4, 8
Source of data	(Yepes, et al., 2011)
Description of measurement methods and procedures to be applied	According to Yepes, 2011. (Protocol for national and sub-estimation of biomass carbon in Colombia, page 24)
Frequency of monitoring/recording	Monitoring must occur at least every ten years for baseline renewal.
QA/QC procedures to be applied	Permanent consultation and supervision
Purpose of data	Determination of number of plots to realize field work and then calculate aboveground and below biomass
Comments	This parameter was known ex-ante.

Data / Parameter	<i>DBH</i>
Data unit	cm
Description	Diameter at breast height of a tree in cm
Equations	1, 3
Source of data	Field measurements in sample plots
Description of measurement methods and procedures to be applied	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.
Frequency of monitoring/recording	Monitoring will occur every ten years for baseline renewal.
QA/QC procedures to be applied	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 from 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
Comments	This parameter was known ex-ante.

Data / Parameter	<i>H</i>
Data unit	m
Description	Total height of tree
Equations	1, 3
Source of data	Field measurements in sample plots
Description of measurement methods and procedures to be applied	The heights of the trees were taken, but this variable was not taken into account in the allometric equation
Frequency of monitoring/recording	Monitoring may occur at least every ten years for baseline renewal.
QA/QC procedures to be applied	This does not apply
Purpose of data	This does not apply
Calculation method	This does not apply
Comments	This parameter was known ex-ante.

VMD0004: Estimation of stocks in the soil organic carbon pool (CP-S)

Data / Parameter	<i>C_{SOCsample}</i>
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)
Frequency of monitoring	Soil organic carbon is an included pool, monitoring will occur 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	<i>BD_{sample}</i>

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
Frequency monitoring	Soil organic carbon is an included pool, monitoring will occur 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 from 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:	<i>Any spatial feature included in the spatial model that is subject to changes over time (Factor Maps)</i>
Data unit	Depending on the spatial features selected
Used 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 is revisited (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:	<i>Risk Maps</i>
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) to reach the best FOM.
Monitoring frequency:	It will be adjusted every 10 years at baseline assessment.
QA/QC procedures:	By FOM model validation.
Any Comments	Without comment

Data / Parameter:	<i>Baseline Deforestation Maps</i>
Data unit:	Depending on the spatial features selected
Used 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 is revisited (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:	<i>AA_U</i>
Data unit	%
Used in equations	Part 2, Section 2.1.4
Description	Evaluation of the accuracy of unplanned deforestation rate (greater than or equal to 90%)
Source of data	Protocol digital image processing for quantitation of reforestation in Colombia, fine and gross national scale, IDEAM, chapter "Quality assessment Theme, p. 29 ". (Cabrera, Galindo, & Vargas, Protocolo de Procesamiento Digital de Imágenes para la Cuantificación de la Deforestación en Colombia, Nivel Nacional Escala Gruesa y Fina, 2011)
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 assessment.
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 (Cabrera et al. 2011) and field verification.
Any Comment:	Without comment

Data / Parameter:	<i>Correct</i>
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 assessment.
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:	<i>E_{rrA}</i>
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 in the evaluation of baseline.
QA/QC procedures:	By FOM model validation.
Any comment:	Without comment

Data / Parameter:	<i>E_{rrB}</i>
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 assessment.
QA/QC procedures:	By FOM model validation.
Any comment:	Without comment

Data / Parameter:	<i>FOM</i>
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) to reach the best FOM.
Monitoring frequency:	It will be adjusted every 10 years at baseline assessment.
QA/QC procedures:	By FOM model validation.
Any comment:	Without comment

Data / Parameter:	<i>LB</i>
Data unit:	ha
Used in equations:	6, to calculate P_{LK}
Description:	Leakage belt área. 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 "Protocol of digital image processing to quantify deforestation in Colombia" IDEAM and supported by (GOFC-GOLD, 2013).
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 "Protocol of digital image processing to quantify deforestation in Colombia" IDEAM.
Monitoring frequency:	It will be updated each time the baseline is revisited (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:	<i>PA</i>
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 "Protocol of digital image processing to quantify deforestation in Colombia" IDEAM and supported by GOFC-GOLD (2011).
Monitoring frequency:	It will be updated each time the baseline is revisited (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:	<i>P_{LK}</i>
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 is revisited (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 is revisited). 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 <i>RRD</i>
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 is revisited (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 is revisited). 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 "Protocol of digital image processing to quantify deforestation in Colombia" IDEAM and supported by GOFC-GOLD (2011).
Monitoring frequency:	Annual monitoring shall be adapted every 10 years in the evaluation of the baseline.
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 is revisited (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:	<i>Factor Maps</i>
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 assessment.
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

Data / Parameter	<i>Project Forest Cover Monitoring Map</i>
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:	Every year with images. Verification of deforested areas will be permanent in field by the surveillance carried out by the monitoring equipment.
Quality Assurance / Quality Control	Permanent verification of the area of the project surfaces.
Any comments	Stratification is the same as the one used at the beginning of the term.

Data / Parameter	<i>Leakage Belt Forest Cover Monitoring Map</i>
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:	<i>Every year with images.</i>
Quality Assurance / Quality Control	Permanent verification of the area of the project surfaces. Also, through the accuracy assessment.
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 bi-annual); examination must occur prior to any verification event
QA/QC procedures to be applied:	See Section 9.3 of REDD-MF (Annex 9 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 bi-annual); examination must occur prior to any verification event

QA/QC procedures to be applied:	See Section 9.3 of REDD-MF (Annex 9 VM0007)
Purpose of data	Calculation of leakage emissions
Calculation method	According to national data, consulted in the corresponding period of monitoring
Comments	Without comment

Data / Parameter	TOTFOR
Data unit	ha
Description	Total available national forest area
	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 5km of roads and rivers suitable for conversion to agriculture / livestock According to procedures applied by <i>IDEAM - Ministerio de Ambiente y Desarrollo Sostenible</i> to define total forests in Colombia.
Frequency of Monitoring/ recording	It will be monitored when verification occurs (annual or bi-annual); examination must occur prior to any verification event
QA/QC procedures to be applied:	See Section 9.3 of REDD-MF (Annex 9 VM0007)
Purpose of data	Calculation of leakage emissions
Calculation method	According to national data, consulted in the corresponding period of monitoring
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 *(M-MON Annex 11 VMD0015)
Description of measurement methods and procedures to be applied:	It was calculated according to the method of the equation 2, Annex 11 See module M-MON (Annex 11 VMD0015)
Frequency of Monitoring/ recording	See module M-REDD (M-MON Annex 11 VMD0015)
QA/QC procedures to be applied:	See chapter 9.3 of REDD-MF (Annex 9 VM0007)
Purpose of data	Calculation of leakage emissions
Calculation method	Annex 11 ecuation 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 2km 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 bi-annual); examination must occur prior to any verification event
QA/QC procedures to be applied:	See Section 9.3 of REDD-MF (Annex 9 VM0007)
Purpose of data	Calculation of leakage emissions
Calculation method	According to national data (DANE), consulted in the corresponding period of monitoring
Any comments	Without comment

Data / Parameter	<i>PROP_{RES}</i>
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 2km 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 bi-annual); examination must occur prior to any verification event
QA/QC procedures to be applied:	See Section 9.3 of REDD-MF (Annex 9 VM0007)
Purpose of data	Calculation of leakage emissions.
Calculation method	According to national data (DANE), consulted in the corresponding period of monitoring
Any comments	Without comment

Data / Parameter	<i>A_{DefLB,i,t}</i>

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 <i>M-REDD</i> (M-MON Annex 11 VMD0015)
Description of measurement methods and procedures to be applied:	See Module M-REDD (M-MON Annex 11 VMD0015)
Frequency of Monitoring/ recording	See Module M-REDD (M-MON Annex 11 VMD0015)
QA/QC procedures to be applied:	See section 9.3 of REDD-MF (Annex 9 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 <i>M-REDD</i> (M-MON Annex 11 VMD0015)
Description of measurement methods and procedures to be applied:	See Module M-REDD (M-MON Annex 11 VMD0015)
Frequency of Monitoring/ recording	See Module M-REDD (M-MON Annex 11 VMD0015)
QA/QC procedures to be applied:	See section 9.3 of REDD-MF (Annex 9 VM0007)
Purpose of data	Calculation of leakage emissions
Calculation method	This data is given by GIS analysis.
Comments	Without comment

Data / Parameter	<i>Leakage Belt Forest Cover Benchmark Map</i>
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 Annex 11 VMD0015)
Description of measurement	See Module M-REDD (M-MON Annex 11 VMD0015)

methods and procedures to be applied:	
Frequency of Monitoring/ recording	See Module M-REDD (M-MON Annex 11 VMD0015)
QA/QC procedures to be applied:	See section 9.3 of REDD-MF (Annex 9 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	<i>Project Forest Cover Monitoring Map</i>
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: It will be monitored when verification occurs (annual or bi-annual); examination must occur prior to any verification event
Any comments	Without comment
Used in equations	3

Data / Parameter	<i>Leakage Belt Forest Cover Monitoring Map</i>
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. <i>Frequency:</i> It will be monitored when verification occurs (annual or bi-annual); examination must occur prior to any verification event
Any comments	Without comment
Used in equations	3, 8

Data / Parameter	<i>A_{DefPA, i,g,t}</i>
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. <i>Frequency:</i> It will be monitored when verification occurs (annual or bi-annual); 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	$A_{DefLB, i, u, t}$
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.
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: $\left(\sum_{t=1}^t (1 - PROP_{IMM}) * A_{BSL, LK, unplanned, t} \right) * (1 - PROP_{LPA})$ 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 PROPLPA 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: It will be monitored when verification occurs (annual or bi-annual); 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

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 2006GL 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
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 2006GL 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
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 2006GL 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
Any comments	Without comment
Used in equations	16

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
QA/QC procedures to be applied	See Section 9.3 of REDD-MF (Annex 9 VM0007)
Purpose of data	Calculation of project emissions
Calculation method	This data is given by GIS analysis.
Comments	Without comment

The monitoring to “Data and Parameters Available at Validation” and the “Data and Parameters Monitored” are based on the characteristics of the variables, where the description of each data, corresponding equation, source of data, description of measurement methods and procedures to be applied, value applied, justification of choice of data or description of measurement methods and procedures applied, frequency of monitoring/recording, QA/QC procedures to be applied, purpose of data, and/or calculation method are specified (according each of the selected Modules of the Methodology REDD-MF VM0007 applied for the

REDD+ Project RIU-SM, as it is explained in the validated PDD-VCS, Section “2.1 Title and reference of methodology”, page 123).

The Monitoring Plan is also based on all variables that let to track the avoided deforestation, selected carbon pools, emissions sources and leakage, as it is specified in following Sections of validated PDD-VCS:

“4.3 Monitoring Plan”, page 265 of validated PDD-VCS, including:

- i) the process and methods for obtaining, measuring, recording, storing, aggregating, compiling, collating, reporting, and analyzing the monitored data and parameters (Sub-section “4.3.1 Technical description of the tasks of monitoring”, page 265),
- ii) the schedule (Sub-section “4.3.2 Duration of monitoring period and date of monitoring start”, page 279),
- iii) the mitigation measures to risks (Sub-section “4.3.3 Mitigation Measures and Monitoring actions”, page 280),
- iv) the document management (Sub-section “4.3.4 Monitoring and documentation of mitigation measures. Adaptive Management Plan”, page 309), and
- v) the organizational structure for monitoring (Sub-section “4.3.5 Organizational structure”, page 311).

3.4.2 Dissemination of Monitoring Plan and Results (CL4.2)

As it is explained in the Sections “2.3.1 Stakeholder Access to Project Documents” and “2.3.2 Dissemination of Summary Project Documents” of this document, the mechanisms to disseminate and publish all the Project documents (including the description, implementation, and results of monitoring plan) and the means are based on:

- Documentation available in the offices of ACATISEMA in *Cumaribo* and *Inírida*, and in the offices of MEDIAMOS in *Cali*, in digital format and (if required) in printed format.
- Verra Registry, under ID 1566 (<https://registry.verra.org/app/projectDetail/VCS/1566>), where it is completely accessible to the general public and to any stakeholder.
- Means of information, communication and transportation, which includes tasks of disseminating data and results of the Project achieved by the execution of all Activities, year after year, between the members of the Indigenous Reservation and the ACATISEMA Association.
- Through socialization workshops, the details about the REDD+ Project RIU-SM are explained to the communities. This includes design aspects, benefits, and implementation of every Project Activity, as well as the results of the validation and verification processes.
- Through newsletters and brochures, written and graphic information with the different aspects and results of the Project are provided, what the Zonal Coordinators, Sectorial authorities - *Cabildos*, Captains, leaders, and community members disseminate to the indigenous population of the RIU-SM, and orally in each language, in a way that is more understandable to the general indigenous population.
- Through webpage <https://www.selvamatavenredd.org> and in the social media

(<https://www.facebook.com/selvamatavenredd/>, <https://www.facebook.com/mataven.redd.mas>,
<https://www.linkedin.com/company/mataven-redd-project/>, <https://www.instagram.com/matavenredd/>),
the general public is being permanently informed about the evolution of the Project Activities.

3.5 Optional Criterion: Climate Change Adaptation Benefits

3.5.1 Regional Climate Change Scenarios (GL1.1)

Likely regional or sub-national climate change, climate variability scenarios and impacts

According to MADS, the climate change would impact to Colombia as follows ²⁰:

- *Floods*: By 2030, it is estimated that 2% of the total population will be affected and a capital value in the order of 2.2% of the Gross Domestic Product - GDP.
- *Vulnerability of water resources*:
 - 50% of the national territory affected by the modification in the functioning of the hydrological regime, with consequences on economic activities, population supply and natural hazard levels.
 - The Amazonía and Orinoquía regions (among others) would register an alteration in the average annual rainfall, causing increases that will be followed by flooding.
- *Vulnerability of vegetation cover and ecosystems*
- *The agricultural sector and soils will be affected as follows*:
 - Increase in 3,576,068 ha. of areas with a high desertification potential.
 - Affectation of one third of the areas that are currently agro-ecosystems.
 - Threats to the population and human health will result in an increase in areas vulnerable to malaria, dengue fever and a larger population affected by flooding.

According to IDEAM, in the department of Vichada (where the REDD+ Project RIU-SM is being implemented), a climate change scenario could be presented as follows ²¹:

- Overall, between 2011-2040 the temperature could increase by 0.9 °C; between 2041-2070 the temperature could increase by 1.8 °C (medium-high increase) and between 2071-2100 the temperature could increase by 2.6 °C (high increase).
- Towards the Orinoco River, the average temperature could increase from 28-29 °C to 31-32 °C in the driest periods, with consequent effects on the soil, habitats and crops of the human population.
- Towards the region where the RIU-SM is located, average precipitation could increase from 2,500-3,000 to 4,000 mm in the rainiest season, with consequent flooding and losses to settlements and their livelihood resources.

²⁰ <https://www.minambiente.gov.co/index.php/cambio-climatico/que-es-cambio-climatico/impacto-del-cambio-climatico-en-colombia>

²¹ http://documentacion.ideam.gov.co/openbiblio/bvirtual/022963/fichas_departamentales/vichada_fichatecnica.pdf

Potential changes in the local land use scenario due to these climate change scenarios in the absence of the Project

According to FAO²², climate change significantly affects the soil, since a decrease in humidity may increase the need for irrigation in agriculture and lead to lower yields and even desertification, with possible drastic repercussions on food production.

Changes in seasonal temperatures can also modify the annual cycles of plants and animals, causing lower yields.

With population growth expected, food production must increase rather than decrease. This depends to a large extent on the maintenance of healthy soil and sustainable management of agricultural areas, which is an essential factor in the RIU-SM territory, as indigenous communities depend and subsist, almost exclusively, on products derived from their agricultural activities and the fruits of the forest, which will also be affected, so that the food supply would be severely impacted by climate change in a no-project scenario.

Another impact of climate change refers to effects on the soil, the most worrisome being erosion, which can be accelerated by extreme weather events, such as heavy rains, drought, heat waves and storms.

In relation to land use, climate change may render some agricultural areas unusable or reduce their productivity, mainly in hot areas.

As it was explained in the Section “2.1.3 Physical Parameters” of this document, the RIU-SM soil is characterized by a marked shortage of nutrients and, according to the FAO, this resource would be seriously affected, which would lead to a search for better surrounding land for food cultivation practices, land that corresponds specifically to forests near the communities, triggering further deforestation, which would further aggravate the problem of climate change. Without the REDD+ Project RIU-SM, there would be no alternatives to preserve and improve land use and food production.

3.5.2 Climate Change Impacts (GL1.2)**Impacts of current or anticipated climate changes on community well-being**

- Impact on food guarantee due to:
 - The accelerated loss of soil quality will affect food production, which impacts the well-being of communities.
 - Reduced water availability in summer, increasing the frequency of droughts, affecting the availability of water for the indigenous communities, which obtain water from streams and lagoons near the settlements.
 - Alterations in the timing and intensity of rainfall, which affects crops, productive projects that depend on water sources and fishing periods, generating food losses and shortages.
- Droughts also cause problems for transportation between communities, due to the reduction in the water levels of the main rivers and streams, which affects communication between indigenous communities, the supply of goods and the surveillance and control of the territory by river.
- Impact on the health of the vulnerable population of indigenous communities, mainly children, women and the elderly, due to heat waves that can affect these people who are less resistant to severe weather

²² <https://www.eea.europa.eu/es/senales/senales-2019/articulos/el-suelo-la-tierra-y>

conditions.

- Affecting indigenous communities, which has already occurred in 2017 and 2018, when there was an unusual flood that, according to the ancestral knowledge of the inhabitants of the RIU-SM, occurs, more or less, every 10 years, but this time caused havoc in Zones 3, 4 and 5, causing serious losses of houses, crops and animals.
- Flooding of land near indigenous communities also causes an increase in the proliferation of mosquitoes and other agents of disease transmission, which affects the population of indigenous communities, especially children.

Impacts of current or anticipated climate changes on biodiversity conservation status

- The increase in temperature would affect different aspects of the flora, such as natural savannas, regenerating vegetation and forests. There would be more fires in the dry grasses and shrubs that would not be able to develop, losing an important resource for the renewal and recovery of the forests, in addition to deforestation due to the burning of trees, which would weaken the tree cover of the *Selva de Matavén*.
- The unusual increase in rainfall causes drastic increases in the water levels of the main rivers in the area, which has modified the landscape when the waters change their course and the flow accelerates, causing erosion around the new riverbeds and damage to forests that cannot withstand flooding.
- The natural habitats of different species of animals are affected by the destruction of breeding sites, feeding grounds and corridors, which are essential for their survival. This is in consideration that in the *Selva de Matavén* there are native and unique species, some in danger of extinction and others for which this territory is of seasonal importance in certain time.
- Changes in temperature cause alterations in the intensity and speed of winds, which causes trees to fall and fuels forest fires, resulting in the loss of individuals of plant species and the loss of habitats for fauna species.

3.5.3 Measures Needed and Designed for Adaptation (GL1.3)

The implementation of the Sustainable Management Plan for Land and Forest and the Project Activities to achieve the expected Products/Results (such as measures to control deforestation, mainly), and other actions that generate benefits (in improving the provision of health services, improvement of water supply, improvement of housing, attention to special population and attention to calamities) as it is described in Section “2.1.8 Project Activities and Theory of Change” of this document, contribute to mitigate climate change and generate capacities for the indigenous population and natural resources to cope with the probable impacts of climate change (as also explained in Sections 4.5 and 5.5 of this document). The following Table 41 shows the most important aspects of the benefits achieved with the implementation of the Project for the adaptation of communities and biodiversity to the impacts of climate change.

Table 41. Benefits to communities and biodiversity with the implementation of Project to adapt to the probable impacts of climate change

Activities / Measures	Benefits to communities and biodiversity to adapt to the probable impacts of climate change
Product / Result 1: Measures to reduce the vulnerability of the RIU-SM generated by external factors, designed and implemented	It mitigates the vulnerability that would affect the RIU-SM due to external threats that would affect the natural resources and cause detriment to the conditions on which the sustainability of the communities and the good health of the Matavén Forest, with all its biodiversity richness, depend.
Activity A1.1: Monitor and control the conservation and recovery of forests and lands of the RIU-SM	The surveillance and control of the entire RIU-SM territory allows the indigenous guard and the communities to protect the forests and to be aware of events and disturbances, such as floods, fires and affectations caused by foreign agents (illegal logging, mining and illicit crops, among others), which could affect the natural resources on which the indigenous population depends.
Activity A1.2: Develop and to implement a system of communication and information at the RIU-SM	Communication and transportation systems contribute as mechanisms to improve the capacity to disseminate basic traditional subsistence knowledge, and for indigenous communities to be in contact with each other, which is also useful to generate an exchange of alerts about events and disturbances that may affect them, so that they can react in a timely manner.
Activity A1.3: Develop and to implement a governance for development and sustainability system of ACATISEMA Association	The strengthening of governance in the territory of the Indigenous Reserve, through the improvement of the capacities of the authorities and officials of the ACATISEMA association to manage the territory and resources of the RIU-SM, contributes to improve the knowledge and management of basic aspects such as the rules of collective use, participatory management plans, financial resources and better management of the wealth of flora and fauna, so as to have adequate skills for the care of indigenous communities, which may be affected by events and alterations that harm the territory, the population and natural resources.
Product / Result 2: Implemented sustainable production system	Capacities are developed for communities to apply alternative land use practices in order to ensure the food sustainability of the population while protecting natural resources.
Activity A2.1: Establish and to develop a Family Agri-food Production Units System (FAPUS)	With the implementation of the Family Agri-Food Production Units System (FAPUS) strategy and technical assistance, tools are provided for indigenous communities to improve their sustainable agricultural production practices to obtain better food in quantity and quality, which is an advantage in the face of unforeseen situations that damage some production areas, in addition to reduce dependence on natural resource consumption, benefiting the recovery and conservation of forests and soils.
Activity A2.2: Design and to develop a training programs plan to administration and management of natural resources of the RIU-SM	With the training events for indigenous leaders in environmental aspects and protection-conservation of natural resources, and with the support to young people and adults to be trained in management and administration of the natural resources of the RIU-SM, through the development of higher education programs in technical, technological and university institutions, it is sought that these members of the indigenous communities achieve the best capabilities to promote the development of the RIU-SM in the short, medium and long term, in such a way that the implementation of the activities of the Project is

Activities / Measures	Benefits to communities and biodiversity to adapt to the probable impacts of climate change
	enhanced to ensure the benefits and generate benefits for the communities and environmental sustainability.
Activity A2.3: Manage resources for project design and establishment of production chains	With the resources generated by the Project and invested in the implementation of pilot projects in productive chains, the project is providing the opportunity to develop economic alternatives through sustainable initiatives (particularly agroforestry, silvopastoral projects -integral farms-, nature tourism, fish farming -for consumption and ornamental-, handicrafts, minor species, and provision of alternative energy production structures), supported by the indigenous Cooperative, which have adequate technical assistance, initiatives that do not compete with the forest component, but rather enhance them and contribute to their protection, which together, provides better means to subsist in the face of derived effects of the impact of climate change and generates greater resilience in natural resources.
Product / Result 3: A mechanism for valuation and compensation for environmental services generated in the RIU-SM, validated and verified	The Project provides financial resources that contribute to strengthening the economic capacity of the indigenous communities, which have what they need to implement Project activities and to address contingencies that may affect both to them and to the environment on which they depend.
Activity 3.1: Validate a REDD+ Project with international standards / Activity 3.2: Verify Project and to register units of forest compensation for avoided deforestation	The fulfillment of these Activities provides the means to generate the financial resources with which all Project Activities are sustained, thus providing elements to strengthen the capacity of the indigenous communities to respond and attend to the urgent needs of the population affected by the probable impacts of climate change.
Other actions to generate benefits	These actions seek to provide benefits to cover the basic needs, such as health care, supply of treated water, housing improvement, attention to special population (such as children, women, elderly and disabled), and attention to calamities, with which some characteristics in which there are deficiencies are being strengthened, to provide well-being and quality of life, and that are aspects with which events that affect the communities can be overcome.

Additionally, according to Adaptive Management Plan (validated PDD-VCS, Section “4.3.3 Mitigation Measures and Monitoring actions”, page 280), some measures were designed (among other) to improve, also, the capabilities to mitigate and adapt, the communities and the biodiversity, to the likely impacts of climate change. The mentioned mitigation measures are:

- ✓ Keep the implementation of Adaptive Management Plan, based on the mitigation measures that have been defined and presented.
- ✓ Maintain forest patrols by the REDD+ Project RIU-SM to prevent intrusions by outside actors into the project area and violation of rights, particularly through of monthly patrols in each zone of the Indigenous Reservation. This activity is an ongoing enforcement and tends the protection of 100% of the carbon

stock of the project area.

- ✓ 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.
- ✓ Have in account within the control system planned for the REDD+ Project RIU-SM, the monitoring of fires and burns.
- ✓ 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.
- ✓ Keeping track of early warnings issued by the IDEAM and *Corporinoquia* on areas that are susceptible to forest fires and act accordingly.
- ✓ Permanently maintain 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.
- ✓ Strengthen ACATISEMA governance through unity and compliance with its Statutes.
- ✓ Consolidate these rights and duties by applying ACATISEMA Statutes in the constitutional and legal framework.
- ✓ Maintain the administrative and technical offices of the REDD+ Project RIU-SM.
- ✓ 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.
- ✓ Expand the management and coordination to ensure the participation and support of other external actors.
- ✓ 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.
- ✓ Keep food production activities through FAPUS.
- ✓ Prioritize resources management and strengthening the FAPUS.
- ✓ 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.
- ✓ Keep training workshops on governance at the level of all communities, allowing aware of organizational importance and its operating mechanisms.
- ✓ Train and educate communities about their rights and duties on Indigenous Reservation in the constitutional and legal framework of the country.
- ✓ Train Captains, *Cabildos* Board, Board of ACATISEMA, Coordinator Committee and Zonal Coordinators on good governance practices and relationships.
- ✓ Make management with universities at regional and national level so that some Indigenous people can study, in accordance with defined training plan at project level.
- ✓ Streamline management of resources for the establishment of sub-projects of productive chains already selected.

- ✓ Mainly train Captains and women on the management of production projects through regional workshops
- ✓ Keep and consolidate alliances and agreements with institutions that defined their support for the Project and maintain the management to form new strategic alliances with national and regional institutions.
- ✓ Monitor improving social and economic conditions of indigenous peoples of the Indigenous Reservation.
- ✓ Promoting the project is maintained and extended by ACATISEMA for at least another cycle of 30 years.
- ✓ 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.
- ✓ 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.
- ✓ Manage project resources, mainly financial, maintaining and respecting all mechanisms and measures necessary internal and external control.
- ✓ Intensifying business strategy presales and sales of VCUs from 2016 through agreements with specialized agents.

All these actions, that help to climate mitigation and adaptation, are monitored through climate, social, and environmental indicators, as it is explained in the correspond Sections “2.1.8 Project Activities and Theory of Change” (related to Matrix of Logical Structure) “3.4 Climate Impact Monitoring”, “4.4 Community Impact Monitoring” and “5.4 Biodiversity Impact Monitoring”.

4 COMMUNITY

4.1 Without-Project Community Scenario

4.1.1 Descriptions of Communities at Project Start (CM1.1)

The indigenous communities of the *Resguardo Indígena Unificado - Selva de Matavén*, due to their diversity of origin, founded towns around the mythical centers from which each migrant nucleus comes. By forming settlements, indigenous communities, together, shaped the territory in which converge several cultural and environmental riches.

Over time they have been improving their organization. This is how since 1983 the territories of the indigenous communities, which were located around the "Heart of the Jungle", managed to be recognized by the State as 16 indigenous reservations, thus gaining more representativeness, autonomy and self-determination.

In 2002 the authorities of the 16 indigenous reservations created the *Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén* – ACATISEMA. This association was recognized in the "Registry of Associations of Authorities and/or *Cabildos*" by the *Ministerio del Interior* through Resolution 177, 2002 (Annex 2.1.1 of validated PDD-VCS), and began to assume its commitment to carry in its hands the processes of the proposals made by the indigenous leaders of the region. As a representative of the RIU-SM, has an established organizational structure that is made up of a Coordinator Committee, in charge of implementing policies, programs and projects, the General Assembly and a *Cabildos* Board, as management bodies.

Under the management of the Association, the 16 reservations (which are now the RIU-SM Sectors) achieved their unification and the addition of a central region that they call "The Heart of the Jungle". The *Resguardo Indígena Unificado – Selva de Matavén* was formed, in this way, in 2003 with the Resolution 037 of July 22nd issued by the INCORA (Annex 2.2.1 of validated PDD-VCS).

With the unification of RIU-SM, the indigenous communities share (in addition to the territory and its associated natural resources) social, economic, psychological, spiritual and medical characteristics, among others, and this constitutes a cultural order of the northeast of the Amazon, but also conserving its particularities as indigenous people of 6 different ethnicities (*Cubeo, Curripaco, Piapoco, Piaroa, Puinave* and *Sikuani*).

The RIU-SM has been the subject of various studies, especially in this new millennium, by various entities (officials and NGOs), in order to characterize aspects such as governance, life-plans, women, and biodiversity. Different proposals have been drawn up for the development of the territory and its inhabitants, and with the implementation of the REDD+ Project RIU-SM, derived from the Strategic Alliance Agreement signed in 2013 between ACATISEMA and MEDIAMOS F&M S.A.S. (Annex 2.1.11 of validated PDD-VCS), indigenous communities have been able to develop many of the plans that had been proposed.

Community characteristics and well-being information

The following are characteristics of the indigenous communities, from the collective and individual approaches, at the beginning of the REDD+ Project RIU-SM Project.



Children of the Sikuani ethnic group (Puerto Esperanza community, Zone 1)

Culture and social-environmental relations

The common element of the indigenous peoples of the 6 ethnic groups is horticulture, through which they share crops that are common to them (such as, bitter yucca and chili), which constitutes elements of the universe of the northwestern Amazon. They also converge, in the tradition of "shamanic" thinking, knowledge plants that differentiate them, such as the culture of *yopo*, common to the *Sikuani*, *Piaroa*, *Curripaco* and *Piapoco*, and which marks a difference with the use of *yagé* by the *Piaroa* and *Cubeo*. Another element common to all six peoples is the presence, in many of their communities, of the New Tribes Mission religious organization and, to a very small extent, the Catholic Church.

Another aspect of indigenous communities corresponds to the relationship between social organization and territorial planning, which serves as a cultural basis for Amazonian peoples. The social organization is based on kinship structures (consanguinity and conjugal ties), linked to the use of the territory and consumption of natural resources, which also develop levels of governance through a scheme of relationship with the State-Nation, strengthened with the creation of the ACATISEMA Association and the unification of the indigenous reservation.

The kinship structure is based on patrilineal exogamy for some ethnic groups and matrilineal for others. Currently, in the *Selva de Matavén*, the kinship nuclei include rules of related relationships with other groups that traditionally did not do so, including forms of affinity for close and distant groups, generating new forms of social fabric and organization, which are strengthened by cultural exchange and families formed with fathers and mothers from different ethnic groups, where incest regulation guidelines, marriage models and control guidelines for the social management of sexuality are traced. This kinship system is the one that guarantees the permanence in time of the ethnic unit and constitutes the marker of the identity and integrity of these peoples.

Each of the 6 ethnic groups has a system of values promoted by mythological elements and traditional rituals, as well as religious codes of Christian and Protestant origin due to interethnic contact with the

Colombian-Venezuelan institutional system. The mythical heritage is the great cohesive element of the languages and ancestral practices, and is developed through ritual-ancestral and ritual-Christian systems, which shape individual and collective behaviors. The values and codes of customary law are based on prayers and myths regulated by the control of the etiology of the disease, i.e., breaking the values triggers the disease, not only individual, but also collective. The same happens with the handling and management of resources of the territory, which is associated with this etiology, i.e., the evil caused to the resources is returned, since both animals and forest resources have "owners" or spiritual entities with the capacity to take revenge against the community, so they must go through a permit from entities of the forest, which must be repaid with a system of prohibitions of food consumption and use of resources linked to the rules of clan kinship.

On the other hand, within the peoples of the 6 ethnic groups there is a hierarchy between one value system and another, the most important being the mythical and traditional ritual system that links ceremonies that are not always evident, ranging from birth baptism with the assignment of a name, the rituals of passage from childhood to adolescence (where the menarche ritual is decisive), to the rituals of illness and death. The struggle between evangelical and Catholic religious values and the values of illegal economies is a determining factor in the differentiation between communities. Without losing sight of the leading role that surrounds the young people who have achieved some level of education, handle an acceptable Spanish and have accessed the numerical systems, reaching a very important status those who have access to digital systems. These young people generally become *Cabildos*, rotate in ACATISEMA and work as teachers. It will always be marginal the system of values that behave the illegal economies, which move against all the mentioned systems.

The relationship with natural resources is also given through an ancestral link of spiritual and mythical character. Indigenous peoples feel connected to nature and feel part of the system in which they live. Natural resources are considered as shared property, are respected as such and are used through mechanisms that establish norms and rules that, in many cases, when broken, lead to illness, loss of crops and even death for those who break these laws and their families. By protecting natural resources, such as forests and rivers, many indigenous communities help mitigate the effects of climate change.

In this social environment, the main communication system is the oral tradition structured in long prosodic speeches that maintain and enrich, on a daily basis, the complex cosmogonic system of the peoples of the north-eastern Amazon.

Another variable of cultural generation is the civilizational frontier represented by inter-ethnic contact, which cultivates the presence of dissident armed movements supported by illegal extractive economies and social conflict, nourished by the scarce presence of the State's institutional system in the borders of the Orinoco River basin.

Traditional authority structures

In terms of traditional authority structures, the clan system maintains a hierarchy of origin that differentiates between elders and minors, and is common to all six villages. However, other aspects of these clan systems vary ostensibly from one people to another, constituting kinship organizations and consanguineous links, equally different, but which are those that preserve the hierarchies within each ethnic society. Likewise, hierarchical distribution and access to hunting, fishing, gathering, horticulture and seed varieties depend on affinity ties, which constitute different marriage models for each group. Clan hierarchy and affinity ties are determinant for distribution in the territory. This model of authority linked to territorial distribution shows changes in recently populated multiethnic territories, as in the *Selva de Matavén*, since marriages are now

common that, in other conditions, were not common among the *Puinave*, *Cubeo* and *Curripaco*. Among the *Sikuani*, *Piaroa* and *Piapoco*. Such alliance structures affect the distribution of territory and, consequently, the exercise of territorial control.

Another model of authority is represented by the shamans, herbalists common to all ethnic groups, but for the *Curripaco* the *Malirri* is the representative of this figure, for the *Piaroa* the *Cacique* and for the *Sikuani*, *Piapoco* and *Puinave* the sorcerer. These are, above all, authorities of knowledge and handlers of myths, prayers and botanical derivatives of the cure. Another constant authority is the person in charge of dealing with the Colombian institutional system, whose name is Captain, common to all six villages. This captaincy is shared, in many communities, with a preponderant figure, the evangelical pastor, who is a specifically moral authority, common to those who profess that faith. The role played by the elders of all the communities is important, who, due to geographical proximity or affinity, form a figure that is not very evident or formal, which could be called Council of Elders.

History

The history of this territory is related to the populations of the *Caribe* linguistic families, which came from the Guianas, descended through the *Caura* and *Ventuari* rivers, to enter through the Orinoco Fluvial Star to the Orinoco-Amazonas interfluvium. The Eastern *Tucano* linguistic family ascended through the Vaupés River and converged with the geography of the northwestern Amazon, to also meet there with the peoples of the *Arawak* linguistic family, who ascended from the Amazon River valley through the Negro River. The same happened with the *Makú* *Puinave* and *Piaroa* peoples, who came from the transition-rainforest belt and attended the cosmopolitan encounter.

The arrival of the Europeans is found with a civilizational hatching sedimented with 3000 years of antiquity and with a rich territorial organization based on a mythological and ritual assembly. In 1500, the Dutch, Portuguese, Spanish and Germans further energized this civilizational order, the first two with a history of attacks and invasions that extended into the XVI, XVII and part of the XVIII centuries, always confronted by the Bourbons who, from Spain, fought for the abolition of slavery and the establishment of the religious mission headed by the Jesuits.

These events affirm a history of wars based on correlations of forces that, since pre-European times, already brought the native peoples, and that for the nineteenth and twentieth centuries triggered a period of extractive bonanzas, ranging from sarsaparilla to cinchona, from this to rubber and coca and, belatedly, to gold mining and black sands.

The history of the armed social movements for this sector can be outlined initially with the arrival of Bolívar who, in flight with the Almeida brothers, rescued Santander from death and took him to the present department of Casanare, to leave him in the hands of the hosts of Bravo Páez and give rise there to a vigorous social movement that later stood out with the uprisings of the plains (Guillen, Fernando. *El poder político en Colombia*, Bogotá 1979, ED. Punta de lanza). By 1900, according to Fals Borda, they concluded with the laws of the plains. This was to be the beginning of the liberal guerrillas of the plains, which marked in an important way the territory of the *Selva de Matavén*, with the recovery of the hybrid cocoa crops promoted by the Jesuits. In the 1960s, important *Sikuani* displacements, coming from the department of Meta, moved towards the *Selva de Matavén* territory as a consequence of the indigenous uprising led by Rafael Jaramillo Ulloa, an event known as the Jaramillo War.

It was the environment of the extractive bonanzas of rubber, *chiqui-chiqui* fiber and coca, the determinant in the movements of ethnic population to the territory, hence its diverse ethnic composition, since the common for the area are the territories occupied by a single ethnic group.

Between 1983 and 1985 Juan Pablo Rodríguez, "El Zorro", (*Sikuani*) along with others, some who have already died, Severiano López (Piaroa, who was president of "*Organización Nacional Indígena de Colombia*" - ONIC -National Indigenous Organization of Colombia-), and José Manuel Cariban, had the leadership to manage the creation of the first reservations in sectors 1 and 2, which was called "*Triplovía*". Then, 16 reservations had been recognized through different Resolutions issued by INCORA from 1983 to 1991.

Next, the Table 42 presents some data of the indigenous reservations before the unification.

Table 42. Resolutions by which the previous indigenous reservations were recognized, quantity of communities and population in some years

Indigenous Reservations before unification	Recognition resolution	Communities			Population		
		1983/1991	2000	2003	1983/1991	2000	2003
<i>Caño Cavasi</i>	No. 48 - July 21, 1983	29	29	32	167	1,661	1,577
<i>Aiva Cuna, Tsepajibo</i>	No. 39 - July 21, 1983	17	17	19	580	1,446	1,754
<i>Bajo Vichada</i>	No. 27 - May 8, 1984	52	52	69	3,347	3,286	4,604
<i>Atana - Pirariame</i>	No. 7 - February 5, 1985	8	8	9	446	334	445
<i>Caño Zama</i>	No. 5 - February 5, 1985	3	3	4	102	133	107
<i>Mataven Fruta</i>	No. 4 - February 5, 1985	4	4	4	165	268	276
<i>Berrocal - Ajota</i>	No. 12 - May 20, 1991	6	6	6	350	496	479
<i>Lagunas Negra y Cacao</i>	No. 31 - April 30, 1986	3	3	4	101	321	396
<i>Sejalito – San Benito</i>	No. 37 - May 13, 1987		2	4	112	328	287
<i>Laguna Anguilla - La Macarena</i>	No. 65 - October 1, 1986		9	9	158	630	594
<i>Barranquito - Laguna Colorada</i>	No. 85 - October 8, 1896		5	6	242	421	496
<i>Caño Bocón</i>	No. 66 - October 1, 1986		1	1	103	249	101
<i>Cumaral</i>	No. 70 - October 1, 1986		1	1	111	112	154
<i>Yuri</i>	No. 67 - October 1, 1986		1	2	30	62	133
<i>Giro</i>	No. 68 - October 1, 1986		1	1	110	75	73
<i>Morocoto – Buenavista - Manajua</i>	No. 69 - October 1, 1986		7	4	326	617	576
Total			149	175	6,450	10,439	12,052

Source: ACATISEMA, 2003

After the indigenous reservations were created, the zonal indigenous organizations arose: in the Orinoco zone, the "*Lucha Organización Indígena Uthöja Colombiana*" - LOIUC (Struggle Colombian Uthöja Indigenous Organization) was created by Seberiano López. In Cavasi (Sector 1) Marcelino Sosa created a confederation, because he was in an organizational competition with "*Consejo Regional Indígena del Vichada*" – CRIVI (Regional Indigenous Council of Vichada), who generated their own organizational structures, so some leaders organized themselves in ACATISEMA, without being affiliated with CRIVI and ONIC, and for this reason, this indigenous Association does not have any national affiliation. The first proposals for associations were made by health promoters with OPROSRIVI (between the *Aiwa Kuna* and *Cavasi* Sectors) on the Vichada river, ASPIRSON on the Orinoco river and CEZIP Guaviare and Brazo Matavén, accompanied by Etnollano, who signed agreements with national and regional entities, such as Vichada Departmental Health Secretary.

Since 1991, when the new Constitution was issued, a series of rights of indigenous communities have been

recognized in terms of ethnic diversity, their own official language in their territories, the implementation of ethno-education (bilingual), the declaration that the Native group lands are inalienable, imprescriptible and unattachable and the recognition to the indigenous authorities in their own jurisdictions (among others), rights that further boosted organizational efforts in the territory.

In 1991, the study process on food guarantee started into an agreement with the Etnollano Foundation, which consisted of food evaluation and recovery of traditional foods, studies on seeds and types of sown fruits. It was suggested that the food was in the "Heart of the *Selva de Matavén*" (hunting, fishing for wild fruits, water from the springs, lagoons that were the breeders of the fish). In 1996 the promoters named the *Selva de Matavén* as the "Heart of Health". They found then that this jungle was considered by the state as a wasteland, unaware that there was the pantry of these indigenous settlements. The promoters began to work on the unification in a Great Reservation that includes the *Selva de Matavén*, to recover that territory where food sovereignty was concentrated.

The consolidation of the current territory is based on health; It started as a project in 1998 - 1999 and was later formed as a promotion and prevention, development and control program for the benefit of children. The health promoters began to reflect on the territory motivated by an agreement with the Etnollano Foundation and the Health Service of the Vichada Department, which brought them closer to community captains and other authorities.

Between 1996 and 2002 the leadership passed from the health promoters to the *Cabildos*, to achieve a unified territory. From this leadership emerged "*Coordinadora Selva de Matavén*" - COSEMA. Etnollano advised the assemblies together with the government ministries and other institutions, protected by Decree 1088 of 1983, in order to create ACATISEMA, in order to appropriate the *Selva de Matavén*.

In 2002 the authorities of the 16 indigenous reservations created the *Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén* – ACATISEMA. This association was recognized in the "Registry of Associations of Authorities and/or *Cabildos*" by the *Ministerio del Interior* through Resolution 177, 2002, and began to assume its commitment to carry in its hands the processes of the proposals made by the indigenous leaders of the region. As a representative of the RIU-SM, has an established organizational structure that is made up of a Coordinator Committee, in charge of implementing policies, programs and projects, the General Assembly and a *Cabildos* Board, as management bodies.

With the management of the Association, the 16 reservations (which are now the RIU-SM Sectors) achieved their unification and the addition of a central region that they call "The Heart of the Jungle". The *Resguardo Indígena Unificado – Selva de Matavén* was formed, in this way, in 2003 under the Resolution 037 of July 22nd issued by the INCORA.

Mythology

According to Ferguson (1986) and Correa (1992), the worldview of the *Cubeo*, *Furna Minali* or *Kuwai* made this world habitable by defeating *Kemeine*, a cannibal anaconda, which he sent into space and turned into the Milky Way. In the beginning there was nothing, neither land nor water, then *Kuwai*, by means of an anaconda, initiated the flow of rivers and lagoons and, breaking into pieces, left the anchor-settlements that gave rise to the clans. *Kuwai* organized human society and gave each people its language.

In this way, they enjoy an abundant mythology, whose validity is ratified by the strength of the kinship relations still in force today.

For the *Curripaco* the origin of the world is located in *Jiipana*, where the stars rained on a stone with four holes, and from each hole came out a *Curripaco* language: *Karro*, *Ñame*, *Kurry* and *Kjenim*. Upon leaving each hole, each language marched to a river and there the clans and *phratries* originated. The cultural hero

Iñapirricuri delivered the yucca and the culinary arts, with which they organized the rich civilizational order they have today.

For the *Piaroa*, according to their mythology, the center of origin of the world is located in the *Autana* hill (Venezuela). The *Tepui* is the stump of the sacred tree of the fruits of the universe, the tree was as high as infinity and its branches were full of fruits that when falling gave life to the Amazon. The cultural hero transforms himself into a limpet and cuts the tree to obtain all the fruits at once, from the branches that fell the rivers arose and with its trunk the mountains of the *Sipapo* river are formed. In one of the rivers that were formed was trapped a payara that, trying to escape, hits the trunk of the fallen tree and with each blow forms the cave of *Autana*.

The *Puinave* ancestrally come from enemies they call the “true *Puinave*”, from whose abductions of women and infants the clans evolved. Their cultural hero *Dujin* organized the territory and the clans, and brought the first fruits together with his brother, with which they developed horticulture. In the struggle with the victimizers of his brother, he developed culinary knowledge to achieve peace and social organization. The fundamental fact of his mythology comes from the process of hominization, when animals lose their tails and man appears, who, through the myths left by *Dujin*, regulates incest and the organization of kinship.

According to Kondo (1978), the *Sikuani* consider the universe constituted in superimposed levels: the superior one, the Milky Way; the following one, that of other stars; then that of the earth, which has seas to the east and west and, crossing them, other worlds; a subway level and another, lower, underwater, under the sea and the lagoons. The maps of the upper levels are known to the *Sikuani*, who have names for the stars and constellations and use their knowledge to manage the climatic calendar for horticultural management and hunting, fishing and gathering cycles. The link between the daily habitat and the macrocosm is given by essential elements in the life of the *Sikuani* such as water, plants and territory.

They consider that the goods enjoyed by humanity come from the action of four brothers: *Tsamani*, *Liwirnei*, *Batatuaba* and *Kajuyali*, who climbed to the sky by a liana and can be seen in the constellation of the Pleiades. In addition, *Kutsikutsi* discovered and managed to bring down, with the help of the squirrel, the *Kaliawirinaí* tree, from which sprouted life, all edible and cultivable plants and the solidarity of the community or *Unuma*. *Tsamani* granted the traditional medicine and the *Dopatubinü* shaman can communicate with him by inhaling the *yopo* (dopa). The most important rite is that of menarche or “prayer of the fish”, female initiation into sexual life as a collective fact of the woman in readiness for marriage.

Language

The common language is Spanish, although very limited because its use is restricted to interethnic relations, but it is useful in commerce, the educational system and the religious ceremonial system.

The *Cubeo* language, *Pâmîé* or *Pâmi Kâmu*, belongs to the eastern *Tucano* linguistic family, central or middle branch. Its grammar reflects an *Arawak* influence, while there are also mutual borrowings with the *Makú* languages, especially *Kakwa* and *Nukak*. *Cubeo* is spoken both by the members of the *Cubeo phratries* and by various peoples of the Vaupés basin, where, at certain times, it served as a general language (Berrío Zapata 1982).

The *Curripaco* have 4 dialectal variables, of which the Kurri variable is found in the territory (Romero, 1993). These, together with the *Piapoco*, belong to the *Arawak* linguistic family (Sudo, 1976).

Most specialists consider the *Puinave* language to be a language isolate called *Makú-Puinave*; some linguists have proposed that it is related to the *Makú* languages. In anthropological literature it is associated with the name *GuaiPuinave* and with the *Caberres* (Triana, 1985).

The *Sikuani* language belongs to the *Guahibana* family and possibly formed a dialectal continuum with the *Cuiba* language. The main *Sikuani* dialects are *Waü* (western) and *Parawá* (eastern). *Newütjü* (*Tigrero*) is a transitional form between the two. *Hamorúa* is an extreme form of *Parawá*, while there are several transitional dialects between *Sikuani* and *Cuiba*: *Dome* (Playero), from the Arauca river, plus *Sikuani*; *Waüpiwi* (*Wipiwi*, *Yomati*) from the *Uachadía* and Alto-Tomo rivers; *Siripuji* (*Tsiripu* or *Siripu*) from the Aguacalara river; and *Mayaraji* or *Mayalero* (Mariposo), from the Arauca river. The *Piaroa* speak the *Sáliba* language and only recently has a writing system been developed for this language (Arango and Sánchez. 2004).

Medicine

From the collective management of the etiology of the disease, a model of disease prevention and care emerges. However, there is a rich herbal heritage that rests on the knowledge of the botanical potential of the territory that, sometimes mixed with prayers and rituals, establishes a system of prevention and health care. The shielding against illness is established by rites and prayers in the hands of wise people trained for generations who maintain and develop the ancestral capacity to manage the illnesses that most affect them, such as snake bites, menstruation disorders and tropical diseases.

Health institutions are scarce for indigenous communities to access. In the municipality of Cumaribo, department of Vichada, there have been two medical centers (a public one in the municipal capital and a private one in the community of Santa Rita) and two medical centers in Inírida, therefore, the coverage is minimal for the extension of the territory, the number of communities and families that exist in the *Resguardo Indígena Unificado - Selva de Matavén*. When a person gets sick and wants to seek care at a health center, it is difficult to reach the municipal capital, which is not so close to the indigenous reservation due to the remoteness of most communities. The low institutional coverage generates low opportunities to expand the population's life expectancy, limiting them to basic care for conditions that are beyond their ancestral knowledge.

Economy

The relationship of indigenous communities with the environment (forest, water, flora, fauna) is established through a commitment to protection and dependence on natural resources, in particular through the use of the forest near the settlements, through a productive base represented in Amazonian horticulture (Table 43) to produce food in areas called "*conucos*", the collection of forest fruits (*seje*, *chontaduro*) and palms used for roofs, hardwoods used as structural material for the construction of houses, hunting of species of mammals, reptiles, birds and amphibians (Table 44) and traditional fish fishing as a protein source, which constitutes an essential element of beliefs in daily life and the basis of their sovereignty and food and economic autonomy (Plata, 2006).

Table 43. Main crops in the conucos

Zone	In Summer	During the rainy season	Products most marketed	Major commercialization sites
1	Cassava, banana and ñame	Corn and rice	Mañoco, casave, plantain	Cumaribo

Zone	In Summer	During the rainy season	Products most marketed	Major commercialization sites
2	Cassava, banana and ñame	Corn, banana and sugarcane	<i>Mañoco</i> , <i>casave</i> , plantain and corn	Cumaribo, Santa Rita and border with Venezuela
3	Cassava, sugarcane and pineapple	Corn and chili	<i>Mañoco</i> , <i>casave</i>	Border with Venezuela
4	Cassava, banana	Corn, chili and plantain	<i>Mañoco</i> , <i>casave</i> , plantain and corn	Puerto Inírida
5	Cassava, sugarcane and pineapple	Banana	<i>Mañoco</i> and pineapple	Puerto Inírida

Source: REDD+ Project RIU-SM. Survey to Captains (2013)

Table 44. Main domestic and wild species of consumption

Zone	breeding animals	other types of animals
1	Hen, pig	<i>Cachicamo</i> pig. Other poultry, tapir, tapir, capuche, <i>paca</i> , <i>mico</i> , deer, <i>picure</i>
2	Poultry, pig, cattle	Armadillo, <i>picure</i> , Tapir, <i>cajucho</i> , <i>lapa</i> , deer, fish, <i>paujil</i> , <i>shigueto</i> , <i>pava</i> , <i>mico</i> , duck, macaw, <i>saino</i>
3	Poultry, pork, pig	Hunting in the jungle and peccaries
4	Poultry, pig, cattle	Bushhunting: macaw, tapir, <i>paujil</i> , <i>saino</i> , <i>picure</i> , morroco, turtle and fish
5	Poultry	hunting, jungle animals and fish

Source: REDD+ Project RIU-SM. Survey to Captains (2013)



Caribbean fishing (piranha) (Caño Bocón community, Zone 5)

Traditionally, these subsistence systems have specificities by sub-region and ethnic group. They coincide in an important contribution to biodiversity, with alternative horticultural practices represented in species, for multiple bio-geophysical, chemical and biological conditions of the soils of the biomes, contributing to the diversification of nutrients of substrates that generate other qualities of ecosystem services.

Economic activity is based on a traditional ritual system of exchanging surplus products, either in traditional ceremonies or in the annual organization of Christian ceremonies, and in trade with nearby towns, systems that were strengthened with the unification of the indigenous reservation in 2003. Its economic organization presents important indices of human development derived from ecological management and the management and knowledge of the geographic and environmental surroundings, structuring important standards of living derived from its productive activities.

Monetized income comes from the local commercialization of horticultural surpluses (especially yucca and its derivatives "mañoco" and "casave"), bush meat, fish, as well as wild seeds, handicrafts (consisting of the production of culinary and domestic objects of material culture that are exchanged for derivatives of botanical origin) and some precious stones. The different extractive bonanzas that, some time ago, consisted of *chiqui-chiqui* fiber, bejuco, coca and, more recently, gold and black sands, play a sporadic role, without these becoming a monetized means of access to foreign products that today form part of their family basket.

As for labor opportunities, these come from day labor in small cattle ranches (outside the indigenous reservation) and other activities typical of contact with non-indigenous extractive economies, such as mining and illegal crops.

In addition, the Indigenous Reserve receives, with the intermediation of the Municipal, Departmental and National administrative entities, resources from the Transfer Law, whose issuer is the National Planning Department with a specific destination. The resources of the education and health systems are decentralized to the department of Vichada, the municipality of Cumaribo and the RIU-SM.

Relationships with specific sites of historical, cultural and spiritual importance

The indigenous communities of the RIU-SM are related to the use of sites that are customarily inherited in the subsistence activities of hunting, fishing, gathering and horticultural activities and food production in conucos. In addition, in *Matavén* Creek there are some abandoned settlements with archeological value due to the existence of ceramic remains and extensive areas of anthropic soils.

The following sites are of historical importance to the communities:

- La Estrella Fluvial del Orinoco, for being the place of passage of different linguistic families, already mentioned, and place of settlement, from early times of conquest, of Father Gumilla in republican times, of the Varón de Humboldt and the Varón del chicle Tomás Funes.
- Santa Rita, on the Vichada River, became famous in the 1960s with the well-known war of the three leaps, in which local liberals took up arms.
- In the same decade, the Guaviare River was the site of the war of the *tigrilleros*, when the Colombian government prohibited the commercialization of wildlife skins. In the 50s, this river was a transit point for Guadalupe Salcedo and Dumar Aljure's troops, and later, in the 80s, with the development of coca crops, it evolved into the headquarters of the northern Valle cartel with the FARC's 16th front, already established by the same time.
- The "Heart of the Jungle", which corresponds to the central region between the RIU-SM Sectors.

The sites of greatest cultural importance, for each of these peoples, are not necessarily located within the territory of the Matavén Jungle, since their centers of the world, as already mentioned, are located in:

- Autana -border with Venezuela and Colombia- (Piaroa and Sikuani,).
- On the border with Brazil and Colombia (Curripaco).
- On the border of the departments of Vaupés and Guainía in Colombia (Puinave).
- In the savannah-forest transition strip (Piapoco)
- In the *Jirijirimo* stream, in the department of Vaupés (Cubeo).

The schools of the Ministry of National Education and the education contracted with the Apostolic Vicariate are gaining more and more spatial presence.

The Vive Digital Plan, which establishes internet access points, is increasingly highlighted, with which the communities are linked to digital communication to interact with the global news, to which satellite television is added, constituting the television set a virtual access point to the new indigenous reality.

As for the spiritual aspect, the following stand out:

- The sites of "*shamanic*" activity for the handling of plants of knowledge that, in cases such as the *Piaroa* and the *Sikuani*, achieve concurrences of collective importance for the use of ritual plants, cosmogonic activities, of sacred chants, mythical recitatives and music linked to ritual knowledge. The whole psychotropic consciousness responds to mythical structures very defined by narrative cycles that are recited by the knower, who is in charge of different ceremonies. For example, the *Sikuani* ceremony of the fish prayer, which presents the young girl who transitions from infancy to the sexed body with menarche, or the *Piaroa* ceremony of cleansing and protection, in which the cacique in charge has musical assistants for ritual activities, also supported by a group of wise men with the same status. They use *yopo*, unlike the cacique who uses *yagé*, forming a ritual structure in which the recitative of the narration, in the manner of a script, develops the action of cleansing and protection, using a protective shield for him and the participants in the ceremony.

- Among the *Piaroa*, the *churuata* increasingly acquires the status of ceremonial center.
- The *Curripaco* of Laguna Negra have a musical tradition based on the music of the *yapururu*, related to the festivities of the abundance of fruits. Also, as in many other communities, a community dining room is developed, which is nothing more than a temple attached to evangelical activities.

Relations with traditional institutions and rules governing the use of resources and sites.

The institutional framework in the RIU-SM is through the authorities of the indigenous reservation (Captains, *Cabildos*, indigenous guard) and the directives of the ACATISEMA association (*Cabildos* Board, Coordinator Committee). It is through these authorities that the customary use of the resources of their territory is monitored and controlled.

In relation to some other characteristics of the indigenous communities of the RIU-SM (such as settlements where the population resides, economic activities and socio-cultural information), see the Section "2.1.4 Social Parameters" of this document (which corresponds to what is presented in the validated PDD-VCS, Section "1.10.9 Social, cultural, economic and environmental aspects of the indigenous population", page 89).

About community groups, they correspond to sets of indigenous people who belong to the same communities of the RIU-SM, that share common characteristics according to occupation, ethnicity and importance among the people of the indigenous reservation. The characterization of community groups is presented in following Table 45 in order to, subsequently, establish the interactions between the communities and these groups, required in Section 4.1.2 of this document.

Table 45. Characteristics of Community Groups

Community Groups	Characteristics
Women/Men	Women are one of the most representative community groups since they are the ones who carry out the main productive tasks in the <i>conucos</i> (growing areas for their food products, mainly bitter cassava). During the year, they dedicate themselves to planting the <i>Conuco</i>, taking care of it, harvesting the products, transporting them and transforming them into food, such as <i>el mañoco (fariña)</i>, <i>el casave</i>, starch and others. They represent 48.5% of the population in the RIU-SM. Women are also in charge of the artisan elaboration of the necessary utensils for the loading of the cassava, its grating and dehydration, as well as the elaboration of other utensils for domestic use, such as baskets of lianas. For their part, the group of men (51.5% of the population in the RIU-SM) is dedicated to hunting, fishing, gathering fruits and vegetables, preparing the <i>conucos</i> for planting (felling, burning and cleaning), building houses, canoes and utensils for hunting and fishing. They are also in charge of the trade and exchange with other communities, settlers and White merchants.
Youths	Women and men among 15 and 25 years old that represent 22% of the population in the RIU-SM. They begin their apprenticeship by being trained in their homes by their parents, elders and the clan's knowers, receiving not only training in housework, agriculture, hunting,

Community Groups	Characteristics
	fishing and gathering, but are also educated in the ancestral knowledge of their mythologies, beliefs and respect for natural resources, since each animal, plant, mountain, pond, and river have their own entity that protects them and determines the times in which they can be used for their benefit. This ancestral knowledge is transmitted from generation to generation and determines the laws and order of things. In this way, a harmonious relationship with their territory and the natural resources is developed.
Traditional authorities	Another important community group is made up of the traditional authorities, constituted by Captains, <i>Cabildos</i>, shamans, traditional doctors, healers and pastors. The Captains represent each of the RIU-SM communities, they are elected within them and meet every three years in the General Assembly of ACATISEMA to establish the policies of the Association, elect the members of the Coordinator Committee, define the plans and programs to execute and approve financial balances, among others (according to ACATISEMA Statutes, Article 16 -Annex 2.1.2 of validated PDD-VCS). Each <i>cabildo</i> is elected for each of the RIU-SM Sectors to represent it before the entire Indigenous Reservation. They meet at the Council of <i>Cabildos</i> (sometimes with the ACATISEMA Coordinator Committee) and participate in the Assembly together with the Captains. They are in charge of informing and agreeing with all the communities of their Sector the decisions made in the meetings, deciding and attending to the budget execution and giving reports to those they represent (according to ACATISEMA Statutes, Articles 28 and 29 -Annex 2.1.2 of validated PDD-VCS). Shamans, traditional doctors, healers and pastors perform functions of great importance within the communities, applying their ancestral knowledge and developing ritual activities to take care of the physical, mental and spiritual health of the indigenous people. They also act as educators and participate in decision-making in all communities. They are generally adults with particular qualities and a specific training to carry out these tasks.
	Ethnic groups: The different ethnic groups of the Indigenous Reservatoin are also considered as community groups: <i>Cubeo</i>, <i>Curripaco</i>, <i>Piapoco</i>, <i>Piaroa</i>, <i>Puinave</i> and <i>Sikuani</i>. In the previous description of the community characteristics, elements were raised about culture, values, economy, etc. and they also apply to these ethnic groups, considering that the inhabitants of these communities belong to one of the 6 ethnic groups. Each group has a name, a territory and some linguistic particularities, and is independent of the others. Specific complementation elements for each group are represented below.
Cubeo ethnic group	The <i>Cubeo</i> are an indigenous people that inhabit in the Vaupés river basin, especially along its tributaries, Caduyarí and Querarí, as well as Pirabotón and Cabiýú in the upper Vaupés. They are around 7.000 people (not all of them inhabitants of the RIU-SM), most of whom live east of the department of Vaupés, a part in the departments of Guaviare and Guainía, and the other part in Brazil (Zambrano, 1975; Salser, 1978).
Curripaco ethnic group	The <i>Curripaco</i> are indigenous people that inhabit in the basins of the Isana, Atabapo and Guainía rivers, as well as in the Bajo Inírida and the Alto Orinoco in the Colombian department of Guainía, between the Guaviare and Orinoco rivers, in the department of Vichada. They are also located in the state of Amazonas (Venezuela); in the Ayarí and São

Community Groups	Characteristics
	Gabriel da Cachoeira, state of Amazonas (Brazil). Tosso (1980). The organization of most of the communities follows a pattern promoted by the evangelical missionaries, to the detriment of the original indigenous organization. The pastor exerts his own autonomous religious authority. In general, the single-family dwellings surround a rectangular plaza where there is a communal hall for assemblies and conferences and, occasionally, a chapel. Although each family may eat at home, the pastor frequently organizes communal meals in which everyone contributes and participates (Castro, 2000). Each clan has its own territory where different communities are established and whose members seek wives in other clans or among the neighboring <i>Cubeo</i>, <i>Puinave</i> o <i>Piapoco</i> (Wilbert, 1960).
Piapoco ethnic group	The <i>Wenaiwikas</i>, <i>Enaguas</i>, <i>Yapaco</i>, <i>Cuipoco</i>, <i>Cumanaica</i>, <i>Wenéiwika</i> o <i>Piapoco</i> are an indigenous people that inhabit different localities between the Meta and Guaviare rivers, in the Colombian departments of Meta and Vichada, and on the banks of the Orinoco river, in the Venezuelan state of Amazonas. There are more than 4.000 people. Their <i>Sikuani</i> neighbors call them <i>Deja</i>. It is estimated that their descendants are approximately 6.300 people (not all inhabitants of the RIU-SM) and their language is the <i>Piapoco</i>. According to their stories, they come from the Negro River basin, from where they migrated through the Vaupés river, and then crossed the Guaviare to reach the territory they currently inhabit. (Klumpp y Deloris, 1979).
Piaroa ethnic group	The <i>Piaroa</i> are an indigenous people living in the banks of the Orinoco, in its tributary rivers in present-day Venezuela and in some other areas of Colombia. The total population is estimated at 15,267 people (not all grouped in the RIU-SM). The material and economic culture of the <i>Piaroa</i> is typical of the Guayanese-Amazon region (Arango & Sánchez, 2004). The purest redoubt of the traditional <i>Piaroa</i> culture is located in Alto Cuao, an area of difficult access, characterized by a very rugged topography and cover by a dense layer of forest. There, the inhabitants maintain relatively autochthonous cultural forms, such as dispersed and semi-nomadic, a simple technology in which traditional artifacts are still conspicuous, a subsistence economy, a network of micro-circuits of commercial exchanges between neighboring communities and autochthonous religion. They also maintain elements of their material culture, such as decorated white cotton <i>guayucos</i>, conical-elliptical community houses with roofs made of palm that reach the ground, blowguns with arrows moistened with curare, vegetable paintings, monoxyl boats and paddles. The <i>Piaroa</i> culture is the product of the miscegenation of the survivors of other indigenous groups that inhabited its current territory and that, by an effect of demographic gravitation, were concentrated and mixed with other of the <i>Piaroa</i> mountain groups, who had managed to better resist the depopulating effects of colonization, thanks to their demographic dispersion and the difficult access to their territories. Therefore, one of the most outstanding profiles of their sociocultural conformation is the mixture features, which at some point must have belonged to groups that have disappeared from their current territory, such as the <i>Maipuri</i>, the <i>Avani</i>, the <i>Sereu</i>, the <i>Mabu</i>, the <i>Quiruba</i> and the <i>Atures</i>, among others. Other <i>Piaroa</i> who have migrated are more trans-cultural. They live in nucleated and sedentary communities. They have adopted non-traditional clothing, are integrated into

Community Groups	Characteristics												
	regional markets, have frequent contact with the creole peoples and have adopted western religions. Regarding their social organization, one fact that stands up about the <i>Piaroa</i> is their absolute refusal to use physical or verbal violence. Severe in their self-control (when there are no disturbing factors such as alcohol), rigorous and disciplined, they are horrified by those who are not able to control their emotions. For this reason, when faced intemperance, they tend to flee in fear of the danger represented by lack of control. Homicide is unknown, due to the belief that whoever commits it dies immediately in horrible conditions (Amodio, 2007).												
Puinave	The <i>Puinave</i> are an Amerindian people living in scattered villages in the Inírida river basin, in the department of Guaviare. The <i>Puinave</i> are related to the <i>Makú</i> of Guainía and the east of the department of Guaviare, in the east of Colombia and on the borders with Venezuela and Brazil. They occupy a transitional zone between the Amazon rainforest and the <i>Orinoqía</i> plains (Ministry of Culture, 2010).												
Sikuani	They are also known as <i>Guahibo</i>, <i>Jivi</i>, <i>Wayafopijíwi</i>, <i>Chiricoa</i>. They are located in the plains of the Orinoco, between the rivers Guaviare, Meta and Arauca, in the Colombian departments of Vichada, Meta (Puerto Gaitan and Mapiripán), Arauca, Guaviare, Guainía and Casanare; and in Venezuela, to the west of the states of Amazonas, Bolivar and south of Apure. It is considered that they have descent in both Colombia and Venezuela. They practice their traditional religion, permeated by traits of Christianity. Other related ethnic groups are <i>Kuiba</i>, <i>Hitnü</i> and <i>Guayabero</i> (Castro, 2000). The <i>Sikuani</i> are an indigenous people of approximately 40,000 people (26,000 in Colombia and 14,000 in Venezuela). They form the largest group in the Orinoco's zone of influence. Their language is part of the <i>Guahiban</i> language family. Some authors have related this family to the Arawak family, as emigrants from the Guianas. The <i>Sikuani</i> are also placed as the main trunk and as a subgroup. However, <i>Queixalós</i> (1993) considers that the relationships between <i>Guahibo</i> and <i>Arawak</i> are merely lexical, through word borrowings, and do not reflect genetic kinship. In 2005, DANE reported a population of 19,791 self-identified <i>Sikuani</i> in Colombia, of which 51.1% corresponded to 10,118 men and 48.9% to 9,673 women. In the departments shown in Table 46, 90.8% of the <i>Sikuani</i> people are concentrated, which corresponds to 1.4% of the indigenous population in Colombia. Table 46. Population distribution by department (2005) <table><tr><th>Department</th><th>Percentage</th><th>Inhabitants</th></tr><tr><td>Arauca</td><td>4,5 %</td><td>891</td></tr><tr><td>Meta</td><td>25,1 %</td><td>4.966</td></tr><tr><td>Vichada</td><td>61,2 %</td><td>12.119</td></tr></table>	Department	Percentage	Inhabitants	Arauca	4,5 %	891	Meta	25,1 %	4.966	Vichada	61,2 %	12.119
Department	Percentage	Inhabitants											
Arauca	4,5 %	891											
Meta	25,1 %	4.966											
Vichada	61,2 %	12.119											

Community Groups	Characteristics
	Source: DANE, Census 2005

The following Table 47 shows the distribution of the number of communities in the indigenous reservation, by Zones and Sectors, at the beginning of the Project (year 2013), taking into account the ethnic groups.

Table 47. Quantity of communities, at Project start (2013)

#	Sectors	Ethnicity	At Project start 2013	%
ZONE 1: Vichada River Middle Zone				
1	Caño Cavasi	Sikuani	44	17.6
2	Aiwa-Cuna, Tsepajivo	Sikuani	25	10.0
	Subtotal Z1		69	27.6
ZONE 2: Vichada River Low Zone				
3a	Bajo Río Vichada 1	Sikuani	46	18.4
3b	Bajo Río Vichada 2	Sikuani	52	20.8
	Subtotal Z2		98	39.2
ZONE 3: Orinoco River Zone				
4	Atana-Pirariami	Sikuani, Piaroa	15	6.0
5	Caño Zama	Piaraa	3	1.2
6	Matavén Fruta	Piaraa	5	2.0
7	Berrocal-Ajota	Piaraa, Puinave	8	3.2
	Subtotal Z3		31	12.4
ZONE 4: Guaviare River Zone – Brazo Amanavén I				
8	Lagunas Negra y Cacao	Curripaco, Cubeo, Puinave	4	1.6
9	Sejalito –San Benito	Sikuani, Piapoco	5	2.0
10	Laguna Anguilla- La Macarena	Sikuani	11	4.4
11	Barranquito-Laguna Colorada	Sikuani	9	3.6
	Subtotal Z4		29	11.6
ZONE 5: Guaviare River Zone – Brazo Amanavén I				
12	Caño Bocón	Puinave	2	0.8
13	Cumaral	Piaraa	2	0.8
14	Yuri	Piapoco	1	0.4
15	Giro	Piapoco	4	1.6
16	Morocoto-Buenavista-Manajuaire	Puinave	14	5.6
	Subtotal Z5		23	9.2
	TOTAL		250	100%

Source: Ethnic Groups by ACATISEMA / Resolution 037, 2003 and socioeconomic survey 2013.

In Table 4 “Distribution of quantity of families and population in RIU-SM by Sectors, 2013 and 2018” of the Section “2.1.4 Social Parameters” of this document, the distribution of the population of the Indigenous Reservation, by Zones and Sectors, at the beginning of the Project (year 2013) is presented and in the

Annex 1 of this document, the entire list of all communities of the RIU-SM is presented.

Diversity within the community

The social, economic and cultural diversity of the communities is presented in relation to these differentiated characteristics for each of the ethnic groups of the RIU-SM.

The *Cubeo* social organization is based on the relationships between sets and segments, so that the collective promotes the autonomy of each of the parts and, at the same time, their interrelationships. The collective generates a safe zone that reinforces the autonomy of the segments and strengthens their linkage. The emphasis on the growth of the individual is based on the community and the whole.

There are these exogamous *Cubeo* "phratries": *Pâmiwâ*, the largest, and *Yurema* (snake), of *Curripaco* origin (*Arawak* family) and their members are bilingual. It is considered that the members of a phratry descend from a common ancestor and therefore cannot, in any case, marry or have sexual relations between them. The ideal marriage is with someone from another *Cubeo* phratry (ethnic endogamy). Each phratry is divided into several "sib" or clans, one of which (*Bahúkûwâ*) comes from the *Macú Kakwa*. (Ministry of Culture, 2012).

The phratry has no chiefs, but it does have its own stories, symbology and rituals. In each community there is a *habokû*, "Captain" who practices the traditional authority in the respective community, currently made up of single-family houses (*kûrâmi*), although previously communal houses were built (ancestral and cultural house) with large two-slope roofs, which are now used for rituals or assemblies. The "Captain" must consult the elders and older adults before making decisions, while the Shaman or "payé" (*yavi pôekû*) possesses profound knowledge of the cosmos, stories, spirits, rituals and traditional medicine, and therefore plays a fundamental role in community life.

Although by adopting Christianity, most *Curripaco* have abandoned their traditional beliefs and ritual practices, they have kept intact their organization into six *phratries*, each composed of clans and exogamous patrilineal segments. They retain their marriage and kinship rules, and the memory of traditional stories, as well as their knowledge of the forest, rivers and stars (Castro, 2000).

As for the *Piapoco*, they are originally a phratry made up of exogamous patrilineal clans. The main authorities are the in-laws (parents of the wife), around whom extensive families and residential units are formed. Currently, in addition to respecting exogamy within each lineage, each residential unit or locality is exogamous and, in addition to maintaining marital relations between them, marriage exchange alliances have been established with the *Sikuani*, the *Curripaco*, the *Sáliba* and the *Achagua*, so that they have reached a vision of a clan system that could be considered over ethnic belonging. The communities live in indigenous reserves, whose collective property is recognized by the State, and generally share with communities with which they have established marital alliances (Klumpp. 1979; Arango and Sanchez. 2004).

The hierarchy of the *Piaroa* is modest and although the communal leaders are always men, some experts even doubt the male dominance over the inhabitants (Amodio. 2007).

As for the *Puinave*, according to the studies of the Ministry of the Interior for the safeguarding of ancestral traditions and the history of the *Puinave* people, their history can be observed as follows:

At the time of the conquest, the *Sáliba* were the nation of the Barragán, a province that extended along the Orinoco to the mouth of the Arauca River. During the successive explorations of the Jesuit order, missions were populated with *Sáliba* people. In Meta, for example, they formed the Jesuit mission of San Miguel de Macuco, the richest hacienda-mission on the Meta River (Franco 1997).

It is important to recognize the significance of traditional medicine among the *Puinave* people, as it is an indispensable part of their culture. Traditional doctors have learned this practice by oral tradition, regularly from grandparents to grandchildren, parents to children. To be a healer requires certain characteristics, such as concentration, observation and interest in teaching (when the teacher or elder identifies the person who is best suited for this type of learning). This empirical knowledge, product of observation, added to the mythical-heritage knowledge of the ancestors, gives the healer the necessary knowledge to cure and allow the sick person to recover his health (Life plan. Corporation for the Sustainable Development of the North and East Amazon).

As for the *Sikuani*, they live in rectangular houses, with thatched roofs and palm leaves, which were previously covered to the ground with banana leaves to protect themselves from mosquitoes, a practice that has been replaced by the use of awnings in hammocks. They also build camps during the hunt and, near the main house, a small house for the women during menstruation. When the family grows too large, the sons-in-law become their own family (Kondo, 1978).

On the other hand, the economic diversity in the *Resguardo Indígena Unificado - Selva de Matavén* is shown in the previously presented and now complemented, which is linked to the occupations of each ethnic group (mentioned in the table of community groups) and varies according to the leaders at each moment in the history of the territory, with the common characteristic of not using wood for sale or charcoal production.

The *Cubeo* economy is egalitarian and oriented to the subsistence of the whole. The productivity of a community is subordinated to kinship, the satisfaction of social obligations, public ethics and couple relationships.

Subsistence depends mainly on itinerant horticulture and fishing. In the *chagra* (*hio*) they grow various crops, including bitter cassava (*küi*), along with corn (*wea*), yams, chonque (*hômüka*), chili (*bia*), coca (*pátu*), sugar cane (*kawa mene*), bananas (*ôrêwe*), chontaduro (*ürêdû*), pineapple (*ihibo*), guama (*meneme*) and other fruit trees. The man is in charge of disassembling a clearing (*tava*) using the slash-and-burn method, and the woman is in charge of planting, caring for and harvesting the crops, as well as processing the cassava to extract and purify the starch and roast it as "*casave*" (*âurô* tortilla) or "*fariña*" (*hütüra* granulated flour).

For fishing and transportation, they build canoes out of tree trunks. Fishing is abundant during the summer. In the past, they hunted with blowguns, bows and arrows, with which they obtained tapirs (*vekü*), deer (*ñama*), peccaries (*wârîwa*), limpets (*hemevo*), agoutis (*buü*) and various birds. They complement their diet by collecting seje (*kôhâ*), wild fruits and edible insects such as ants (*meawâ jojaimeawa varuhina, urarawa*) and larvae of wasps and palm beetles ("*mojoyoy*": *Rynchophorus spp.*). They also collect fibers, for example, from the cumare (*betoñü*), to make various handicrafts such as the colander (*pediva*), balay (*jahuova*), matafrío (*nadañu*), baskets (*puea*), among others.

They maintain traditional product exchange relationships through barter with other ethnic groups in the region and raise chickens, ducks and pigs to sell and obtain items of industrial origins, or produced in remote areas (Ministry of Culture, 2012a).

The *Piapoco*'s economy is based on horticulture, fishing and hunting. They grow bitter yucca, corn, beans, chontaduro, pineapple, chili peppers, plantains, rice and sugar cane. The processing of the bitter yucca is an important part of the women's lives. They obtain the starch to make "*casave*" (tortilla) and "*fariña*" (toasted flour) and the squeezed juice to cook it as "*mingao*", a typical drink.

The women practice pottery. They make the *púali* or "*budare*", a large pan for roasting cassava starch, and the day they mold it, the potters must not bathe or drink water, so that the object they make does not deform or break. They also make clay pots and cups for sale. Men and women make hammocks from cumare palm

fibers, some of which they wear, and other very fine and beautiful ones are sold. Other handicrafts they produce are baskets, in the first place, the *mapíri* to keep the "*fariña*".

The bow and arrow are used for both hunting and fishing, which are especially important during the summer. They raise chickens, pigs and cattle (Arango and Sanchez, 2004. Amodio, 2007)

In the *Piaroa* economy, subsistence is based on rotational cultivation, hunting, fishing and the collection of wild plants and microfauna, such as spiders, caterpillars, worms, bachacos, termites, cicadas and larvae. In addition to activities directly aimed at obtaining food, an integral aspect of their subsistence economy is the manufacture of various artifacts: baskets, pottery, woodwork, paintings, poisons, weavings, rope, torches, plumage, necklaces, waxes, rubber bands, masks, blowguns, bark cloth and totumas.

This native industry is based on the knowledge and use of a large number of plants of the *Piaroa* habitat. The artifacts are not only used in exploitative, domestic and religious work, but also form the basis of an inter-community system of exchange, through which the *Piaroa* also obtain western utensils (knives, fishhooks, clothing, mustard, etc.).

The *Piaroa* are considered reliable trading partners of the Amazon, whose activity is a defining feature of the sociology of this group. However, trade activity, which used to be extremely diversified and included goods of different items such as work tools, foodstuffs, ornaments, ritual goods, resins and dyes, has now been limited to agricultural goods required by the Creole populations. A good proportion of fruits and yucca by-products consumed in Puerto Ayacucho arrive thanks to trade with the *Piaroa*.

The *Piaroa* are also notable for the egalitarian nature of their societies, which some researchers describe as anarchistic. They place great value on individual autonomy and freedom and are conscious of the importance of ensuring that no one is under someone else's orders. To this end, they are also concerned that no one should take control over socioeconomic resources that would limit the freedom of others (Arango and Sanchez, 2004).

For the *Puinave* and *Curripaco*, their economy is based on horticulture, fishing, hunting and gathering wild products. The chagras (*jarokiti*) have 100 to 200 m² opened by tomb and burning. They grow cassava (*kiinaki*) of which they know 50 varieties, corn, *chontaduro*, sweet potato, *chonque*, yam, chili, banana, pineapple, lulo, papaya, sugar cane, achiote and *herriwai* (to obtain fiber).

Fishing is an important source of protein in summer and is carried out in the rivers (*onimakapeki*), streams (*oripau*) and lagoons (*kalita*). They hunt deer, tapirs, peccaries, capybaras, agoutis, *babillas*, various birds, armadillos and turtles, and collect shrimp and frogs. Handicrafts are an activity that generates income in the market. They make "*bijao*" baskets, *budares* and rays for sale. They also collect "*chiquichiqui*" (*Leopoldinia piassaba*) fiber in the forest to make brooms and sell it to intermediary traders (Ministerio de Cultura, 2010; Ministerio de Cultura (2012b).

In the *Sikuani* economy, the planting, care, harvesting and processing of bitter cassava is a main activity to which women are dedicated, using fiber instruments such as the squeezer or *sebucán* (*yobot*) and various baskets. With the cured dough they prepare a tortilla or *casave* and a grain of roasted flour or *fariña*, which they always have available (Kondo, 1978). In addition to cassava, they grow plantain, corn, rice, tomato, sweet potato, yam, chili, pineapple and sugar cane. Although the collection of wild products tends to decrease, it is still maintained.

Hunting with bow and arrow has the traditional prestige, while fishing has increased its weight in the daily diet, to the extent that they have massively incorporated the use of hooks and nets. The manufacture of canoes and rafts is sustained and some communities have outboard motors. Many families raise chickens and pigs and some communities have cattle (MEDIAMOS F&M S.A.S., 2017).

Additionally, diversity within the community is also given in terms of cultural richness, corresponding to the

indigenous ethnic groups that converge in the territory of the RIU-SM. They remain rooted in the customs that their ancestors have left them as a legacy, and that at a given moment have changed, adjusting to subsist in a shared territory. These changes are due to the need to reconcile the use of common territories and vital resources for their subsistence.

The *Cubeo*, *Curripaco*, *Piapoco*, *Piaroa* and *Puinave* coincide with these indigenous ethnic groups in the designation of family roles by gender and in maintaining exogamous patrilineal segments. As previously presented, women maintain the role of gathering firewood and maintaining the home, kitchen and food, and men have the role of hunters, fishermen and gatherers; however, to maintain the conucos or planting sites in good condition, the whole family is involved, including the children from a very early age (Kondo, 1978).

The *Sikuani* men are still skilled weavers and make hammocks of *cumare* and moriche fibers, baskets, mats, flutes and *sebucares*. The women mold the clay *budares*, essential for roasting the yucca dough, and some still make pots, *múcuras* and clay plates. The *Sikuani* form a patriarchal society, in which the family unit consists of an older couple with their unmarried sons, daughters and their husbands and children.

Parents, siblings and children, as well as uncles and aunts of the same gender as the parents (the father's brothers and the mother's sisters) are considered direct family. Cousins who are children of the father's brothers and the mother's sisters are considered close relatives. There is a third category, the allies, which includes the brothers of the mother and the sisters of the father, considered as in-laws; they have a tendency to endogamy.

The women undergo an initiation ritual, the "fish prayer", which is a community event; the young woman is confined in a small house closed with mats (*tulimabo*), isolated for several months and put on a diet, to finally participate in the celebration. The *itomo* is the second funeral ceremony of every Guahibo deceased person (Castro, 2000).

Another aspect of diversity is the age of the indigenous population in the RIU-SM. According to Table 48 below, 42% of the inhabitants of the Indigenous Reserve are children (up to 15 years old), 22% are between 15 and 25 years old, almost 31% are considered adults and almost 5% are over 60 years old. In general, the number of women is 3% less than the number of men.

Table 48. Population distribution in the RIU-SM, by age and gender (2013)

	# children (1-15 years)		# youth (15-25 years)		# adults (25-60 years)		# elders (>60 years)		Subtotals	
	F	M	F	M	F	M	F	M	F	M
Subtotal	2,508	2,548	1,311	1,323	1,713	1,950	263	321	5,795	6,142
TOTAL	5,382		2,798		3,910		627		12,717	
%	42.3%		22.0%		30.7%		4.9%		48.5%	51.5%

Source: REDD+ Project RIU-SM. Survey of Captains (2013)

4.1.2 Interactions between Communities and Community Groups (CM1.1)

Taking into account the community characteristics and community groups described in Section 4.1.1, the interactions between these community groups and the communities at the beginning of the Project are presented below.

Community groups and communities are constantly interacting, in fact, as mentioned above, each of the

inhabitants of the RIU-SM belongs to one of the 6 ethnic groups, and the different community groups interact in the same area, for example, people from different ethnic groups can live together in the same community, sharing work spaces, food supply and materials and ancestral knowledge, as a fundamental basis for the occupation of the territory.

The women's group carries out activities of production of bitter cassava and its transformation into *mañoco*, casave and starch, representing the main food of the communities. These horticultural practices are ancestral and have always been carried out by women, and their knowledge has been transmitted from generation to generation, representing the food and cultural base of all the communities living in the indigenous reservation. They also have a preponderant role in health management, as midwives and caregivers of the sick.

The group of traditional authorities, such as the *Cabildos* and Captains, meet periodically to make decisions about events and activities that involve all the communities of the RIU-SM, through the association ACATISEMA.

Likewise, the wise men, shamans, traditional doctors and shepherds are a group that interacts strongly with the communities, as they represent the wealth of mythological, spiritual and ancestral knowledge. They participate in the decisions that are made and carry out educational activities for children and youth, maintaining this knowledge for future generations.

Hunters, gatherers and fishermen are also groups composed exclusively of men, who begin their training in these arts as children, becoming the providers of protein for their families.

In this way, the interactions between the communities and the community groups of the RIU-SM are constant and determine the natural relationships of the population of the indigenous reservation.

4.1.3 High Conservation Values (CM1.2)

Description of HCV 4: Areas providing critical ecosystem services (supporting and regulating)

Table 49. HCV 4.1 - Regulation and support areas: forest areas along the banks of large rivers and around communities

HCV 4.1	Regulation and support areas: forest areas along the banks of large rivers and around communities. They provide the service of protecting natural forests that, in turn, protect riverbanks and communities.
Qualified Attribute	They provide ecosystem services in critical situations important for the protection of primary forest and communities from landslides and erosion in the ravines of the four main rivers (Vichada, Orinoco, Brazo Amanavén and Orinoco).
Focal area	Primary forest near communities and adjacent to the banks of the main rivers in the project area. The communities are located around the main navigable rivers no more than 5 kilometers from the shore. It has been detected that during the rainy season the normal process of erosion of the riverbanks eliminates vegetation cover and increases the risk of flooding in nearby communities. (Consult referenced areas in Map 14 in the Section "2.1.5 Project Zone Map" of this

	document).

Table 50. HCV 4.2 - Regulation and support areas: high forest areas and flood zones

HCV 4.2	Regulation and support areas: high forest areas and flood zones. They provide the service of soil regulation and control or bio-geophysical conditions, such as soil and aquifer formation.
Qualified Attribute	They provide ecosystem services in the maintenance and protection of vulnerable soils (Heterogeneous Agricultural Areas -HAA- or conucos) and aquifers. They also protect soil fertility, preventing erosion and nutrient loss.
Focal Area	Nearby forests bordering lagoons and streams. Primary forests bordering Heterogeneous Agricultural Areas (conucos). Primary forest near communities where burning and firewood supply is carried out. (Consult referenced areas in Map 14 in the Section "2.1.5 Project Zone Map" of this document).

Description of HCV 5: Areas that are fundamental to the livelihoods of communities (sourcing)

Table 51. HCV 5.1 - Food resource supply areas

AVC 5.1	Food resource supply areas: Forest areas that provide fruits (<i>seje</i> , <i>chontaduro</i> , <i>guama</i>), medicinal plants (<i>cordoncillo</i> , cashew, cat's claw, plants of the <i>Costaceae</i> family) and game animals (deer, tapirs, peccaries, capybaras, agoutis, <i>babillas</i> , various birds, armadillos and turtles). It also includes the flooded forests, in terms of fish supply and hunting. And the bodies of water that contain fish for food for the communities. Heterogeneous Agricultural Areas -AAH- as agroforestry systems, called by the indigenous people as conucos. Areas of forest conversion to pasture (sown pastures), where food is provided for livestock, which in turn is a food source for the communities. Areas of primary forest and secondary forest to supply energy sources (firewood) near the communities.
Qualified Attribute	These are fundamental areas for the food sustenance of the indigenous communities of the RIU Selva Matavén. For example, in the flooded forest areas, called by the indigenous people as fishing areas, in addition to collecting fruits and medicinal plants. The AAH are areas where the inhabitants of the RIU-SM develop their traditional agricultural activity, cultivating diverse products to provide food for their families, mainly yucca, from which they obtain derivatives such as <i>mañoco</i> and <i>casave</i> , and others such as corn, plantain and some fruit trees.

	Livestock pastures are areas converted from forest to pasture; savanna grasslands are not used for this food purpose. Also included are primary and secondary forests near the communities, which provide food through fauna and forest fruits.
Focal Area	Flooded forests, wetlands, AAH and grasslands in the Project Zone, which are close to the communities. (Consult referenced areas in Maps 15 and 16 in the Section "2.1.5 Project Zone Map" of this document).

Table 52. HCV 5.2 - Material supply areas

HCV 5.2	Material supply areas
Qualified Attribute	Areas of forest that provide materials for the construction of houses and canoes, as well as for the manufacture of traditional utensils, handicrafts and other materials and tools for agroforestry systems in the conucos.
Focal Area	Secondary and riparian forests (where the <i>morichales</i> are), close to the communities (distances to 5 km). Secondary forest near the main rivers. (Consult referenced areas in Maps 15 and 16 in the Section "2.1.5 Project Zone Map" of this document).

Description of HCV 6: Areas that are critical to the traditional cultural identity of communities

Table 53. HCV 6.1 - Sacred sites

HCV 6.1	Sacred sites: They represent places where the gods who protect the lagoons, hills, animals and bushes live.
Qualified Attribute	They are respected and protected places, since they are inhabited by the spirits of animals and non-human beings who care for and protect the resources of the jungle. These places are not visited so as not to anger these beings and prevent people or their communities from being punished with diseases, loss of crops, scarcity of animals for fishing and hunting and even death.
Focal Area	Mouths of Vichada river. <i>Tonina</i>: stone in the shape of a <i>tonina</i> and a manatee lying down. Mouth of <i>Zama</i> creek at the edge of the Orinoco River: a stone in the shape of a snake. Mouth of <i>Matavén</i> creek a stone with petroglyphs at the entrance of the village Piedra Pintada. <i>Matavén</i> creek: sacred creek because there is food there, water protection

	Sacred lagoon in the Berrocal Ajota Sector. Site close to the Guayabal Anapo community. Special sites in the depths of the <i>Selva de Matavén</i>: “water births”, where shamans bury precious stones as an offering to guarantee the water source. (Consult referenced areas in Map 17 in the Section “2.1.5 Project Zone Map” of this document).

4.1.4 Without-Project Scenario: Community (CM1.3)

Expected changes in the welfare conditions of the communities and community groups in the land use scenario without Project implementation.

In the absence of the REDD+ Project RIU-SM, the greatest impacts would derive from deforestation, as described in the defined baseline (validated PDD-VCS, Section “2.4 Baseline Scenario”, page 149). In this scenario, where the threat of forest cover loss is expected in the Project Area and, also, in the Leakage Belt (where the threat of deforestation has been projected and located and where the RIU-SM communities are located), there would be a loss of vital subsistence trees (with a consequent decrease in forest species that provide edible fruits), soil quality would decline (which would affect food production and cause even more deforestation and burning to generate nutrients in new conucos), habitats for fauna species would be lost (which also provide protein), and there would be no resources to respond to the particular needs of the communities, as detailed below:

- The bio-geophysical conditions of the soil in the scenario without the project correspond to compacted soils, with loss of nutrients due to forest burning practices and without the presence of nitrogen-fixing bacteria for plant assimilation. In addition to population growth, there will be an increase in the demand for food and a decrease in the favorable conditions of the soil to provide nutrients (Villarreal Leal , et al., 2009).
- Detrimental to the conditions of HCVs, which would affect the sustainability of the communities given the negative impacts on the regulation and support areas (those related to water, at the edge of large rivers and around communities and in high and flood zones), food and material supply areas and sacred sites.
- There would be few opportunities to bring together sectoral leaders (*Cabildos*) and communities to make decisions on the use and administration of the territory and its resources, due to difficulties in financing and accessing means of communication and transportation, which would affect the development of governance in the territory.
- Low or no visibility of the welfare conditions of the communities in the RIU-SM and, consequently:
 - Little or no strengthening of local capacities to improve productive schemes.
 - The low or non-existent presence of basic sanitation units in households.
 - Few or no opportunities for health services or campaigns in indigenous communities.
 - Scarce possibilities to strengthen education services (offered by the State).
 - The low or limited availability of treated water supply services for consumption in some communities.
- Bad practices would be intensified and the lack of knowledge of traditional knowledge by the new generations would mean that the conditions and capacity to generate quality environmental services in

the RIU-SM would diminish. The opportunity to obtain the benefits of the forest, such as carbon sequestration and oxygen generation for human wellbeing, would be lost.

- Few or low communication opportunities do not favor governance scenarios, which corresponds to or is reflected in the low self-determination of the communities and the participation of the communities and the indigenous reservations.
- Knowledge of cultural services, related to mythology, spiritual knowledge and practices that have to do with the friendly relationship between man and nature in the context of the use of traditional spaces and territories, would be lost.
- Ancestral practices and knowledge would be lost, related to the cultural value of each ethnic group, according to their traditional customs, beliefs, forest management and control strategies and worldview.
- In general, the need to acquire resources would allow the commercialization of their natural resources, such as hunting, fishing, and plant materials outside the RIU-SM, and would not allow the development of productive projects to promote the development of the communities.

The analysis of the above impacts on the well-being of the local communities of the RIU-SM is consistent with documents that support an unfavorable outlook in a scenario where deforestation continues to develop:

- In the document “*Informe del Taller internacional sobre la deforestación y los derechos de los pueblos de los bosques*”²³ it is mentioned that in Colombia:
 - The majority of the forest area is inhabited by indigenous peoples, Afro-descendants and rural communities.
 - The rate of deforestation in Colombia is among the highest in the world and is accelerating, particularly in the Amazonian foothills and the Colombian Pacific region.
 - The main direct causes of forest loss are the expansion of the agricultural frontier, particularly for cattle ranching, oil palm, agrofuels, and illicit crops, often by economic migrants and internally displaced peoples, logging, mining, and oil extraction, as well as road construction and other infrastructure.
 - The country's severely unequal land distribution is reflected in deforestation patterns. With huge areas devoted to commercial cattle ranching, more than half of the land use changes recorded between 2005 and 2010 were carried out to create pasture for cattle.
 - Agribusiness requires the clearing of forests and depletes and degrades biodiversity, fresh drinking water and soils. It also imposes extensive monocultures on forest peoples' lands, displacing communities, destroying their food sovereignty and economic self-sufficiency, and causing shortages of local food staples and price speculation.
 - Large-scale production of coca leaf for the narcotics trade, concentrated in areas with high forest cover, has driven localized deforestation in Colombia for more than thirty years. Government aerial spraying of glyphosate to eradicate the illegal drug trade partially degrades cleared forest lands and has harmful impacts on the health of forest-dwelling communities.
 - Many concessions are located in forest reserves and in the territories of indigenous peoples and Afro-descendant communities, often resulting in conflicts between mining companies and local forest-

²³ Salvando los bosques, garantizando los derechos - Informe del Taller internacional sobre la deforestación y los derechos de los pueblos de los bosques. Palangka Raya, Indonesia, marzo de 2014 (<https://www.forestpeoples.org/sites/fpp/files/publication/2014/09/prreportinternet.pdf>).

dependent peoples.

- Biofuels are seen by the government as a solution to climate change. However, agrofuel cultivation in Colombia is responsible for forest loss and human rights violations.
 - The national economy externalizes and underestimates environmental and social impacts, which fall disproportionately on forests and the communities that depend on them.
 - When the State seeks to protect forests, its approach is fragmented and undermines the autonomy and rights of communities.
 - Indigenous peoples' right to free, prior and informed consent (FPIC) with respect to decisions and actions that may affect them, especially in relation to their lands and territories has been routinely abused through the imposition of mining and hydrocarbon concessions, and other destructive development projects that reduce and fragment communities' customary forests, often accompanied by claims that these lands are "empty".
 - Progressive Constitutional Court rulings on FPIC, including recognition that some of the country's indigenous peoples are in danger of extinction, have not been implemented.
 - Legal and economic incentives for agrofuels have driven the expansion of large-scale sugarcane and oil palm cultivation, at the expense of indigenous, peasant and Afro-Colombian lands and forests. The new laws are also opening up more areas for oil and gas extraction and development.
 - Colombia's forest peoples, i.e., indigenous peoples, Afro-descendants and other rural communities, depend heavily on forest resources for their livelihoods.
 - For indigenous peoples, this close relationship with nature also has powerful social, cultural and spiritual dimensions that are the basis of their collective cultural identity, cultural heritage, spirituality, language, customs and daily practices that date back to the time immemorial of their ancestors.
- In the document "*Deforestación en Colombia: Retos y perspectivas*"²⁴ it is mentioned that in Colombia:
- Forests globally are being rapidly lost.
 - The services provided by these ecosystems are being degraded or used unsustainably, including those associated with freshwater, capture fisheries, air and water purification, regional and local climate regulation, and natural hazard prevention.
 - The total costs of the loss and degradation of these ecosystem services, while difficult to measure, can be of considerable magnitude.
 - Many of these ecosystems have been degraded by activities to increase the supply of other services, such as food.
 - In 20 years (1990-2010), 5.4 million hectares of forest were lost, an area the size of Costa Rica. The most affected areas are the northern Andes, the Caribbean Region and the Amazon (IDEAM, 2011).
 - Deforestation exacerbates natural risk. Colombia is the most vulnerable country in the region to extreme weather events. In 2010 it was the country with the third highest losses associated with climate events (Global Climate Risk Index, 2012).

²⁴ García R., Helena. Deforestación en Colombia: Retos y perspectivas. FEDESARROLLO.
([https://www.repository.fedesarrollo.org.co/bitstream/handle/11445/337/KAS%20SOPLA Deforestacion%20en%20Colombia%20Retos%20y%20perspectivas.pdf?sequence=2&isAllowed=1](https://www.repository.fedesarrollo.org.co/bitstream/handle/11445/337/KAS%20SOPLA%20Deforestacion%20en%20Colombia%20Retos%20y%20perspectivas.pdf?sequence=2&isAllowed=1))

- Deforestation aggravates the situation by increasing erosion and sedimentation of watersheds and rivers. It is not surprising that these rivers run out of their channels when it rains more intensely than normal.
 - The loss of forests affects water supply and availability. In a scenario of growing demand for water resources due to population growth, 84% of the municipalities present a medium to very high threat of water shortage in years of average climatic conditions, municipalities in which 67% of the national population lives (IDEAM, 2001).
 - An analysis of deforestation by region shows that during this period, the highest levels of transformation occurred in the Amazon Region with an average deforestation of 119,802 ha per year. This is the region with the most hectares deforested, mainly to introduce pasture for cattle. However, while deforestation in the Amazon Region decreased in the 2000-2010 period, it increased in all other regions, particularly in the Pacific and Orinoco regions.
 - Deforestation in Colombia is an environmental and social problem with costs today and in the future. These costs include biodiversity loss, soil impoverishment, erosion, carbon emissions, and in the future a reduced capacity to adapt to climate change, as well as reduced development opportunities for communities.
- In the document *“Deforestación en Colombia: ‘una verdadera guerra contra los mundos relacionales’*²⁵ it is mentioned that in Colombia:
- Regarding the problem of forest loss, it is stated that the main causes of deforestation have been related to forest encroachment, illicit crops, extensive cattle ranching, legal and illegal expansion of the agricultural frontier, excessive titling of vacant land by the State, and trafficking in fauna, flora and timber.
 - Despite knowing some of its causes, deforestation in the country has not been halted, which has had negative impacts on the indigenous peoples that inhabit Colombian territory.
 - The felling of forests for extensive cattle ranching, mining and oil extraction, and monocultures have put the survival of a large part of the country's indigenous populations at risk, given that they are displaced by companies, governments, cattle ranchers and other actors interested in accumulating capital from the extraction of natural resources in indigenous territories.
 - This problem has generated that indigenous leaders, who defend their territories from extractive processes, indiscriminate logging, pollution and the dynamics of the internal armed conflict have been threatened and killed.
 - With the peace agreement with the FARC-EP, violence against indigenous communities has increased significantly, giving rise to an unprecedented humanitarian crisis.
 - According to ONIC, between 2016 and 2019, 158 indigenous leaders have been murdered, which is due to the fact that these communities "inhabit strategic sites where economic interests of all kinds converge and serve as important strategic corridors for illegal activities."
 - Indigenous peoples struggle for their survival in the midst of a voracious capitalist economic system that is deteriorating their territory by leaps and bounds and an armed conflict that is worsening in the country.

²⁵ Rozo, Damaris. Deforestación en Colombia: “una verdadera guerra contra los mundos relacionales”. Documento de investigación. Programa de Investigación de Política Exterior Colombiana - PIPEC. 2020.
(<https://repositorio.uniandes.edu.co/bitstream/handle/1992/47904/Documento%20de%20Investigaci%C3%B3n%20Damaris%20Rozo.pdf?sequence=1>)

- In the document “*Socioeconomic approach to the territory of the transitional jungle of Cumaribo, Vichada (Colombia)*”²⁶ in relation to the transitional forests of the municipality of Cumaribo (Vichada), it is mentioned that:
 - Currently, government initiatives consider the Orinoquia as one of the natural regions with the greatest agroindustrial and extractive projection in the country.
 - Illegal activities, particularly those related to coca cultivation, have exerted environmental pressures on the territory of interest through deforestation and biodiversity loss. The ecosystem services affected include provisioning (timber, game prey, wild fruits, medicinal plants), regulation (water, nutrient and climate regulation through carbon sequestration and influence of cover) and support (primary production, soil formation and retention, genetic resources).
 - There is an increased demand for goods and services such as food, water and energy, which may eventually exceed the carrying capacity of ecosystems and actively contribute to their degradation.
 - The increase in agricultural costs due to greater demand for agro-inputs, as a result of the loss of ecosystem services, can lead to food insecurity, exacerbate social conflicts over access to land and increase vulnerability to climate change and the incidence of tropical diseases.
 - Extractive activities are related to landscape deterioration, unplanned urban growth, changes in the commercial value of land, urban segregation, increased waste generation, precarious public services, and the emergence of pockets of violence, drug addiction and prostitution.
 - Deforestation was identified as the main threat to biodiversity in the “Transitional Forests of Cumaribo” territory. Although timber extraction begins selectively, it is transformed into generalized logging in the medium term and land conversion for other productive activities, mainly subsistence and illicit crops and cattle ranching.
 - These changes in land use deteriorate the availability and quality of environmental resources and services by increasing erosion, sedimentation of water bodies, landscape fragmentation, species extinction, and alteration of biogeochemical cycles.
- In the document “*Perspectiva del pueblo indígena frente a la deforestación y degradación del territorio*”²⁷ it is mentioned, in relation to the indigenous reserves and the Selva Matavén, that:
 - According to information provided by IDEAM, deforestation in indigenous reserves in 2016 was 18,327.46 ha, which corresponded to 10.26% of national deforestation that same year. Analyses indicate that deforestation in Indigenous Reserves has increased in the last four years in a worrying manner, especially from 2015 to 2016, where this process increased by approximately 6,838.69 ha.
 - Taking deforestation in indigenous reservations for 2016 as a reference, in 15 of them more than 57% of the total deforestation of the more than 890 reservations in Colombia occurred.
 - The Indigenous Reservation Selva de Matavén is in a sixth place, with a deforestation of 4.4% with

²⁶ Niño, Larry. Socioeconomic approach to the territory of the transitional jungle of Cumaribo, Vichada (Colombia). Instituto de Ciencias Naturales, Universidad Nacional de Colombia. 2019.
(https://www.researchgate.net/publication/339662857_Aproximacion_socioeconomica_al_territorio_de_las_selvas_transicionales_de_Cumaribo_Vichada_Colombia)

²⁷ García, Paola, et al. Perspectiva del pueblo indígena frente a la deforestación y degradación del territorio. Programa ONU-REDD. 2018.

respect to the total deforestation in the 15 indigenous reservations analyzed during 2016.

- In regions such as Selva Matavén the indigenous communities expressed that, although the communities have ownership of the territory, there are conflicts associated with the sanitation of the indigenous reservations and respect for their boundaries, which causes people outside the communities to invade these territories for natural resource extraction purposes without any control.

On the other hand, the living conditions in which the RIU-SM communities subsist, and which are characterized by multiple Unsatisfied Basic Needs, are another factor that supports a difficult scenario for the human population of the indigenous reservation, if there are no resources that could only be obtained to some extent with the development of activities that are detrimental to natural resources (deforestation to seek the expansion of land for agriculture, timber harvesting, unpunished development of mining, massive extraction of flora and fauna elements, etc.), or with the implementation of the REDD+ Project RIU-SM.

- According to DANE (and based on the National Population and Housing Census - CNPV, 2018²⁸), the rural area of the municipality of Cumaribo (in whose area the RIU-SM is located) is in the following conditions:
 - Municipal multidimensional poverty measure: 94.9%.
 - Illiteracy: 28.1%.
 - Low educational attainment: 89.7%.
 - Barriers to early childhood care services: 20.5%.
 - Dependency rate: 88%.
 - Critical overcrowding: 38.9%.
 - Inadequate excreta disposal: 88.9%.
 - School non-attendance: 23%.
 - School backwardness: 50%.
 - No access to an improved water source: 86.3%.
 - No health insurance: 46.8%.
 - Informal work: 97.7%.
- Based on this same source ²⁹, it is found that in the dispersed rural area of the municipality of Cumaribo:
 - 92.5% of the people have Unsatisfied Basic Needs.
 - 79.4% of the people are in extreme poverty.
 - 80.4% of the people have Unsatisfied Basic Needs in terms of housing.
 - 77.4% of the people have Unsatisfied Basic Needs in terms of services.
 - 49% of the people are overcrowded.

²⁸ <https://dane.maps.arcgis.com/apps/MapJournal/index.html?appid=54595086fdd74b6c9effd2fb8a9500dc>

²⁹ <https://www.dane.gov.co/index.php/estadisticas-por-tema/pobreza-y-condiciones-de-vida/necesidades-basicas-insatisfechas-nbi>

- 14.4% of the people have Unsatisfied Basic Needs in terms of assistance.

These data complement the living conditions of the indigenous communities at the time of starting the considerations on the CCB Standard.

- In this same sense, the information provided by Captains and leaders of the RIU-SM communities in the zonal workshops held in November 2017 (Annex 1.8 of verified Monitoring Report - VCS 2018 & 2019), allows us to determine the situation through which the population of the indigenous reservation is passing, which translates into problems related to:
 - There is a lack of communication and transportation mechanisms for the communities (means and logistics for meetings and socialization, boats, motors, automobiles, fuel).
 - Roads in poor condition and lack of bridges where needed.
 - Communication with civilian and military authorities in Cumaribo needs to be improved.
 - There is a lack of communication with other communities in other indigenous reserves.
 - Weakness in the self-government system (political-social organization, duties of indigenous leaders, oversight, education).
 - There is a lack of integration of the female population in leadership positions.
 - Many boundary problems need to be resolved.
 - The processes of formulating life plans need to be strengthened.
 - There is no adequate infrastructure or equipment for the operation of the Association and the provision of services to the indigenous population of the RIU-SM (community headquarters, social / cultural / educational / recreational spaces, equipment).
 - Lack of data on the population of the indigenous reservation.
 - Failure to develop their own cultural events.
 - Lack of equipment/equipment/tools to improve food security.
 - Lack of attention to the school population in basic education (ethno-education, teachers, infrastructure / classrooms / dining rooms, equipment / school kits / sports kits / equipment / uniforms / Community Education Project - PEC, libraries, food, school transportation).
 - There is no support for higher education students (tuition, support, materials, transportation in careers such as administration, economics, project management, accounting, law, environmental engineering / forestry, education / degree, medicine / nursing / bacteriology, veterinary, among others).
 - There is no training on literacy, sustainable means of land use, environment.
 - There is a lack of training for the female population in productive projects.
 - There is a lack of productive projects (silvopastoral, agricultural, minor species, fish farming, handicrafts, dressmaking, tourism, cooperative) and the provision of economic capital, training, equipment/tools to generate goods and services.
 - There is no adequate health care (care, infrastructure, equipment, patient transportation, own IPS, prevention programs, strengthening of traditional medicine).

- There is not an adequate basic sanitation system (access to potable water, sanitary units).
- There is no decent housing for the indigenous population of the RIU-SM.
- There is insufficient supply of alternative sources of electricity.
- Elderly and disabled people in the RIU-SM do not receive the attention they deserve.

This compendium of needs makes it possible to visualize what the situation is like in terms of what the indigenous communities require and that some could have a tendency to become critical problems for the population.

4.2 Net Positive Community Impacts

4.2.1 Expected Community Impacts (CM2.1)

The actions applied in the scenario with Project, which encompasses the implementation of the Sustainable Management Plan for Land and Forest (Annex 4 of validated PDD-VCS) from which the expected Outputs/Results and Project Activities are derived and which are scaled in the Theory of Change (Section "2.1.8 Project Activities and Theory of Change" of this document), generate the positive impacts described below.

The impacts described below (in Table 54) are for all the community groups described in Section "4.1.1 Description of the Communities at Project Start / Table 45" of this document, where it is established that there are relationships and overlaps between them, so the benefits are oriented towards all of them, as a whole.

Table 54. Expected community impacts, according to community groups

Community Groups	Women / Men Youth Traditional authorities: Shamans, traditional doctors, healers and shepherds. Ethnic groups: <i>Cubeo, Curripaco, Piapoco, Piaroa, Puinave and Sikuani.</i>
Impact	Impact 1: Improved capacity to develop ecosystem service quality monitoring and participatory surveillance, in particular, specific measures in the recovery and enhancement of community HCVs, described in Section "4.2.2 Mitigation of Negative Community Impact / Measures for the maintenance or enhancement of HCV attributes related to community well-being" of this document.
Type of Benefit/Cost/Risk	Expected impact, direct, benefit
Change in Well-being	The magnitude of the change in this impact is estimated through the following indicators: • 600 personas of RIU-SM trained in monitoring the quality of ecosystem services.

	• 315 indigenous guards and 315 Captains trained in participatory monitoring. • 12 courses, meetings and workshops related to improving the capacity to develop monitoring of the quality of ecosystem services and participatory surveillance. All these indicators will be presented specifying the number of people according to gender, age group, traditional authority and ethnicity (corresponding to community groups).

Community Groups	Women / Men Youth Traditional authorities: Shamans, traditional doctors, healers and shepherds. Ethnic groups: <i>Cubeo, Curripaco, Piapoco, Piaroa, Puinave</i> and <i>Sikuani</i>.
Impact	Impact 2: Recovery and improvement of the conditions of community HCVs, as described in Section "4.1.3" of this document.
Type of Benefit/Cost/Risk	Expected impact, indirect, benefit
Change in Well-being	The magnitude of the change in this impact is estimated through the following indicators: • Number of hectares of natural forest that provide the service of riverbank and community protection, specified by Sector (HCV 4.1). • Number of hectares of natural forest that provide the service of soil regulation and control or bio-geophysical conditions, such as soil and aquifer formation, indicating those corresponding to high and flood zones (HCV 4.2). • Number of hectares of natural forest that provide food resources, fruits, medicinal plants and animals for hunting, specifying those corresponding to floodable forest (HCV 5.1). • Number of hectares of Heterogeneous Agricultural Areas (HCV 5.1). • Number of hectares of forest conversion to pastures that provide food for livestock, which in turn is a food source for the communities (HCV 5.1). • Number of hectares of primary and secondary forest to supply energy sources (firewood) near the communities (HCV 5.1). • Number of hectares of secondary, riparian and flood forest of the main rivers that supply materials for the construction of houses and canoes, as well as for the manufacture of traditional utensils, handicrafts and other materials and tools for agroforestry systems in the conucos (HCV 5.2). (HCV 5.2). • Number of sacred sites and their location that are critical for the traditional cultural identity of the communities (HCV 6.1).

Community	Women / Men

Groups	Youth Traditional authorities: Shamans, traditional doctors, healers and shepherds. Ethnic groups: <i>Cubeo, Curripaco, Piapoco, Piaroa, Puinave</i> and <i>Sikuani</i>.
Impact	Impact 3: Improvement and strengthening of ACATISEMA's governance in the <i>Resguardo Indígena Unificado - Selva de Matavén</i>, for decision making.. There will be a direct impact on strengthening the social capital of the ACATISEMA Association, particularly in areas including local economic development and protection of natural resources (validated PDD-VCS, p. 318). Development is foreseen in the ACATISEMA headquarters, which did not exist at the beginning of the Project. A review of ACATISEMA's Statutes is also foreseen for improvement.
Type of Benefit/Cost/Risk	Expected, direct impact, benefit.
Change in Well-being	The magnitude of the change in this impact is estimated through the following indicators: • Number of members of the Coordinator Committee, number of <i>Cabildos</i>, number of Captains, number of Zonal Coordinators of ACATISEMA improve and apply knowledge in the statutory and organizational aspects in the surveillance, control and monitoring of the indigenous reservation. This improvement of knowledge is obtained through courses, workshops and meetings duly designed and with its corresponding educational materials; statistical values related to these methods will also be presented. • Number of teachers, students, women, youth people and other members of the Indigenous Reservation (not less than 150) who reach a good level in the application of environmental knowledge. • Number of indigenous guards to carry out the surveillance, control and monitoring of the RIU-SM, who receive training, endowment, fluvial equipment, food and control stations. The number of control stations, billboards and equipment used will be determined. All these indicators will be presented specifying the number of people according to gender, age group, traditional authority and ethnicity (corresponding to community groups).

Community Groups	Women / Men Youth Traditional authorities: Shamans, traditional doctors, healers and shepherds. Ethnic groups: <i>Cubeo, Curripaco, Piapoco, Piaroa, Puinave</i> and <i>Sikuani</i>.
Impact	Impact 4: Increased level of participation of people from community groups in activities related to the REDD+ Project RIU-SM. There will be an establishment and improvement of communication, information and transportation channels between communities, which will reveal the progress of the

	Project and the various initiatives in community work, education, productive projects, etc.; there will also be the development of a system that allows a quick response to requests and proposals from community members and participation in various community activities, in order to listen to their arguments and respond to their concerns. An expansion of this impact is developed in Section "4.2.2 Mitigation of Negative Community Impact / Measures for the maintenance or improvement of HCV attributes related to community well-being" of this document.
Type of Benefit/Cost/Risk	Real, direct impact, benefit.
Change in Well-being	The magnitude of change in this impact is estimated through the following indicators: • Number of people participating in the REDD+ Project RIU-SM. • Number of people trained in climate change and in the nature and characteristics of the REDD+ Project RIU-SM. • Number of meetings and workshops to improve skills on climate change and REDD+ projects. All these indicators will be presented specifying the number of people according to gender, age group, traditional authority and ethnicity (corresponding to community groups).

Community Groups	Women / Men Youth Traditional authorities: Shamans, traditional doctors, healers and shepherds. Ethnic groups: <i>Cubeo, Curripaco, Piapoco, Piaroa, Puinave</i> and <i>Sikuani</i>.
Impact	Impact 5: Improved food supply at the family level (FAPUS) through the implementation of food guarantee projects and support to the Captains and other people involved in this system (women, men and youth). The populations closest to the project area will benefit from the extension and investment in basic services included in the REDD+ Project RIU-SM. The project's actions can be complemented with other public or private investments, as this is a sector that requires a lot of investment and unity of effort and resources for the provision of basic services in areas of high geographic dispersion (PDD-VCS validated, p. 318). Environmental management and the generation of productive alternatives in the communities will be strengthened (validated PDD-VCS, p. 318).
Type of Benefit/Cost/Risk	Expected, direct impact, benefit.
Change in Well-being	The estimation of the magnitude of change in this impact is done through the following indicators: • Number of Family Agrifood Production Units (FAPUS) established and area per Sector.

	• Number of people from the communities per Sector who are trained in the application of environmental knowledge and agri-food production. • Number of food guarantee projects established by Sector. • Value of support to Captains and other persons participating in the FAPUS System. These indicators will specify beneficiaries by gender, age group and ethnicity, corresponding to community groups.
Community Groups	Women / Men Youth Traditional authorities: Shamans, traditional doctors, healers and shepherds. Ethnic groups: <i>Cubeo, Curripaco, Piapoco, Piaroa, Puinave and Sikuani.</i>
Impact	Impact 6: Improved environmental knowledge of the communities about the state of the forests, soils and fauna that inhabit them, for timely decision making. Indigenous communities will have the opportunity to access information and means of communication for the construction of a forest conservation policy. Information and environmental education strategies will be implemented to sensitize local communities on the importance of protecting the environment; disseminate the REDD+ Project RIU-SM so that all communities understand in depth the benefits of environmental protection, supporting local environmental education initiatives (PDD-VCS validated, p. 316). Support will be provided for basic education (for children and young people) and for access to higher education for young people and adults. There will also be other types of training for young people and adults in different areas, particularly education for work, enabling access to technical and productive training courses and, above all, generating options for future work and employment for them.
Type of Benefit/Cost/Risk	Expected, direct impact, benefit.
Change in Well-being	The magnitude of the change in this impact is estimated through the following indicators: • Number of graduated high school students who have started their training and educational programs for the integral-sustainable management of forests and lands of the RIU-SM. • Number of persons of the communities of the 16 Sectors and 5 Zones who are trained in the application of environmental knowledge concerning the condition of forests, soils and the fauna that inhabits them. • Number of people supported to develop basic education (children and youth) and higher education, with emphasis on the environmental aspect, particularly in relation to the state of forests, soils and the fauna that inhabits them. • Number of courses, workshops, meetings on the status of forests, soils and the fauna

	that inhabit them for timely decision making. All these indicators will be presented specifying the number of people according to gender, age group, traditional authority and ethnicity (corresponding to community groups).
Community Groups	Women / Men Youth Traditional authorities: Shamans, traditional doctors, healers and shepherds. Ethnic groups: <i>Cubeo, Curripaco, Piapoco, Piaroa, Puinave and Sikuani</i>.
Impact	Impact 7: Improvement of the economic income conditions of the families of each community group, through the commercialization of surpluses and the strengthening of productive chains. With the development of sustainable production projects promoted by the REDD+ Project RIU-SM, the viability of sustainable economic activities will reduce pressure on the forests, providing economic opportunities for local residents and native families (PDD-VCS, p. 318). An elaboration of this impact is developed in Section "4.2.2 Mitigation of Negative Community Impact / Measures for the maintenance or enhancement of HCV attributes related to community well-being" of this document. Commercial interaction: Indigenous communities that due to the negotiation of the REDD+ Project RIU-SM, will energize the commercial relations necessary for the advancement of goods and services within the project's region (Annex 4 of validated PDD-VCS).
Type of Benefit/Cost/Risk	Expected, direct impact, benefit.
Change in Well-being	The magnitude of the change in this impact is estimated using the following indicators: • Number of productive chain projects to be established, indicating their characteristics (agroforestry, silvopastoral), type of project, area and number of beneficiary communities and families. • Number of people associated with a multipurpose cooperative that includes the production, processing and marketing of the products of the chain projects. • Number of families benefiting from improved marketing of surpluses. • Value of the economic income of the families from the establishment and development of the chain production projects. All these indicators will be presented specifying the number of people according to gender, age group, traditional authority and ethnicity (corresponding to community groups).

Community Groups	Women / Men Youth Traditional authorities: Shamans, traditional doctors, healers and shepherds. Ethnic groups: <i>Cubeo, Curripaco, Piapoco, Piaroa, Puinave</i> and <i>Sikuani</i>.
Impact	Impact 8: Availability of financial resources that will contribute to the sustainability and improvement of the living conditions of the indigenous communities of the RIU-SM. Through the planned development of Activities A3.1 and A3.2, these financial resources will be available. <i>Expected Product / Result 3: A mechanism for valuation and compensation for environmental services generated in the RIU-SM, validated and verified.</i> - <i>Activity A3.1: Validate a REDD+ Project with international standards.</i> - <i>Activity A3.2: Verify Project and to register units of forest compensation for avoided deforestation.</i> The possible financing of the Project Activities would be made through entry due to the commercialization of the carbon credits derived from the REDD+ Project RIU-SM.
Type of Benefit/Cost/Risk	Real, direct impact, benefit.
Change in Well-being	The estimation of the magnitude of change in this impact is done through the following indicators: • Number of VCUs that are certified at validation and at each of the Project verifications. • Estimated monetary values of sales of these VCUs. • Estimated monetary values distributed by Project Activities. These indicators will be presented specifying the number of beneficiaries by gender, age group, traditional authority and ethnicity (corresponding to community groups).

Key assumptions and rationale

The key assumptions and their rationale are identified based on the Project Logical Framework, which is presented in the validated PDD-VCS, Section “1.8 Description of the Project activity”, page 45. It is done according to the objectives and expected outputs.

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".

Key assumptions:

1. Government changes do not affect the development of the Project.
Rationale: The Project has wide social and institutional acceptance (internal and external).
2. The key development strategy of environmental sustainability projects in Colombia continues, as defined

by the National Council for Economic and Social Policy through the document CONPES 3700 (2011).

Rationale: The national, regional and departmental governments permanently express their approval of this type of initiative with this type of objective, through the strategies and policies of sustainable development in Colombia, which persist and are strengthened, such as laws and different institutional documents (see Section “2.5.7 National and Local Laws” of this document).

3. The institutional and legal framework on indigenous communities is respected.

Rationale: It is part of the principle of respect for the customary rights of indigenous communities, which must be maintained by all institutions and people who enter the territory of indigenous reservations; rights set forth in the National Political Constitution of the Republic of Colombia.

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”.

Key assumptions:

4. Captains, Board of *Cabildos*, Coordination Committee and Zonal Coordinators undertake and participate in the development of the Project.

Rationale: Participatory methodologies for dialogue of knowledge are the backbone of decision-making exercises, socioeconomic and biodiversity monitoring, as well as different prospective studies. The Statutes of ACATISEMA establish and regulate these participatory methodologies.

5. National institutional support for the development of the project is maintained.

Rationale: Support is essential within the political and legal framework for this type of project, as it has been effectively fulfilling.

6. The autonomy of indigenous peoples is respected in accordance with the legal framework.

Rationale: It is part of the principle of respect for the customary rights of indigenous communities, which must be maintained by all institutions and people who enter the territory of indigenous reservations; rights set forth in the National Political Constitution of the Republic of Colombia.

The intervention of the Project is carried out, considering the principles of customary uses of the indigenous communities, implementing participatory methodologies to determine the sustainability of the actions of global events that are being experienced.

Of the Products (expected results):

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

Associated Activities:

- *Activity A1.1: Monitor and control the conservation and recovery of forests and lands of the RIU-SM.*
- *Activity A1.2: Develop and to implement a system of communication and information at the RIU-SM.*
- *Activity A1.3: Develop and to implement a governance for development and sustainability system of ACATISEMA Association.*

Key assumptions:

7. External actors involved in Project participate in the implementation through an appropriate institutional coordination.

Rationale: The participation of external actors in the Project implies the development of inclusive methodologies that facilitate the participation of these actors, particularly MEDIAMOS, as an ally in the formulation and development of the Project.

8. External actors do not interfere with the stability of the ACATISEMA governance.

Rationale: The climate of trust and social security in the territory ensures that other external actors do not interfere with the stability of ACATISEMA's governance and its territorial organizational structure.

Product 2: Implemented sustainable production system.

Associated Activities:

- *Activity A2.1: Establish and to develop a Family Agri-food Production Units System (FAPUS)*
- *Activity A2.2: Design and to develop a training program plan to administration and management of natural resources of the RIU-SM.*
- *Activity A2.3: Manage resources for project design and establishment of production chains.*

Key assumptions:

9. Community leaders, by the statutory entities of the organization, resolve internal conflicts that hinder the development of the Project and maintain work disposition integrated and concerted.

Rationale: Strengthening the competencies of community leaders, particularly ACATISEMA, guarantee sustainability and operability by resolving internal conflicts that may arise, through their own authorities, established in the Statutes, and that allow the agreement and maintenance of the integrated collaborative disposition.

10. The unit of local communities and their willingness to work together maintains integrated and concerted.

Rationale: Without the unity and their willingness to work together, the integration and coordination essential for the development of the Project would not be possible. Through the meetings, workshops and training courses, it is expected to increase the inclusion and strengthening of the social fabric that allows guaranteeing the positive collective impact.

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

Associated Activities:

- *Activity A3.1: Validate a REDD+ Project with international standards.*
- *Activity A3.2: Verify Project and to register units of forest compensation for avoided deforestation.*

Key assumptions:

11. It maintains and strengthens the strategic partnership between ACATISEMA and MEDIAMOS F & M S.A.S.

Rationale: The active integration and permanent bond of the directors and professionals of MEDIAMOS F&M S.A.S. with ACATISEMA management bodies, such as the Council of *Cabildos*, the Coordinator

Committee, the zonal assemblies and the general assembly together with the professionals and technicians of ACATISEMA who participate in the project, is decisive for the development and achievement of the objectives and impacts of the project

Methodological choices

Methodologies used:

- Common Guidance for the HIGH CONSERVATION VALUES – A good practice guide for identifying HCVs across different ecosystems and production systems (Brown et al -EDS-, 2013)
- Social and Biodiversity Impact Assessment (SBIA) Manual for REDD+ projects; and the conservation agreements of the conservation for development programs, according to the methodology of the Conservation Steward Program (CSP) issued by Conservation International.
- Sustainable Management Plan for Land and Forest that conducts to Matrix of Logic Structure (MLS) with Products/Results and Activities (validated PDD-VCS, Section “1.8 Description of the Project activity”, page 42).
- Theory of change, according to Social and Biodiversity Impact Assessment (SBIA) - Manual for REDD+ projects, Part 1 (Richards & Panfil, 2011).

Participation of affected groups in impact assessment

According to Social and Biodiversity Impact Assessment (SBIA) - Manual for REDD+ projects, Part 1 (Richards & Panfil, 2011), Section “7. SBIA Stage 5: Identification of Indicators” ensures that this approach is based on the recognition that the local population is capable of identifying and measuring their own indicators of change.

Undoubtedly, in the design of the Project and its development, the participation of all the groups of the reservation, already characterized above, has been considered essential to design the Activities and measures that allow evaluating the impacts previously presented. In the validated PDD-VCS, all the references of the different meetings and Assemblies in which the analysis of the Project and its impacts have been made have been identified (Annex 1 of validated PDD-VCS).

Section 2.11.2 of Annex 22 of the validated PDD-VCS illustrates the process of participation and consultation with the communities, as follows:

With respect to the process of participation and consultation in the inside of the communities in relation to the themes that required their analysis and that have to do with the participation of government and private agencies and proposals, agreements, contracts, etc. Forums and meetings have been developed, where the following is observed:

- The gradual building of government, in such a great region and with so few resources, it is a significant challenge to establish an infrastructure with representation and participation of the communities.
- A permanent interest on behalf of the organization ACATISEMA for better living conditions for the associates and the search for backing from public and private organizations to accomplished such feat.
- More participation from the women in the community process, they are more involved starting with the committee coordinator. There is a special place for the development and respect of the women within the reservation.

- More involvement from the youth in the different process as part of the strengthening of the organization and a united criteria.
- A massive assistance and participation in the different meetings, forums, talks and visits, this demonstrates an interest in the future activities and a desire to participate.
- The process to establish a Life Plan, where the cornerstone is a fundamental community participation.

4.2.2 Negative Community Impact Mitigation (CM2.2)

Impacts on indigenous community in the “Without project” scenario and their mitigation measures:

- The absence of the REDD+ Project will produce a negative influence on the different sectors of the indigenous communities that are part of the RIU-SM; as it would not be possible to develop the proposed activities to benefit the community, due to lack of funding. This lack of investment will not provide injection of a significant amount of financial resources that would have contributed to the sustainability and development of many indigenous communities.

Mitigation Measures: In the Project design, two important Activities related to the Product / Result 3 listed above have been defined.

- Activity A3.1: Validate a REDD+ Project with international standards.
- Activity A3.2: Verify Project and to register units of forest compensation for avoided deforestation.

The possible financing of the Project Activities would be made through entry due to the commercialization of the carbon credits derived from a REDD+ Project.

The impacts on the social components in “Without project” scenario:

- The offer opportunities to access information and mechanisms of education regarding with models of sustainable forest use will be smaller and limited considering that the presence of the Government and Non-Governmental Institutions in the area is uncertain and a very low coverage.

Mitigation Measures: In the Project design, two important Activities related to the Products / Results 1 and 2 listed above have been defined, which would be financed with the resources from the commercialization of the Carbon credits derived from the REDD+ Project:

- Activity A1.2: Develop and to implement a system of communication and information at the RIU-SM.
- Activity A2.2: Design and to develop a training program plan to administration and management of natural resources of the RIU-SM.
- There would be less opportunities to inform a population of over 13,000 people, including children and adults, who currently live in a situation of poverty and with very limited support of State entities.

Mitigation Measure: In the Project design, an important Activity related to Product / Result 1, listed above, has been defined, which would be financed with the resources from the commercialization of Carbon credits derived from the REDD+ Project:

- Activity A1.2: Develop and to implement a system of communication and information at the RIU-SM.

Communication with these communities will help to enrich the dialogue orientated to cover topics as sustainable development, culture protection, sustainable management, etc.

- The lack of a strategy to promote and provide financial support to communities for the protection and care of their territory, is a factor that leads to the perpetuation of the informal management of production practices, such as mining, ranching and land invasion (colonization).

Mitigation Measures: In the design of the Project, two important Activities related to the Products / Results 1, 2 and 3 listed above have been defined, which would be financed with the resources from the commercialization of the Carbon credits derived from the REDD+ Project:

- Activity A1.3: Develop and to implement a governance for development and sustainability system of ACATISEMA Association.
- Activity A2.1: Establish and to develop a Family Agri-food Production Units System (FAPUS)
- Activity A2.3: Manage resources for project design and establishment of production chains.
- Activity A3.1: Validate a REDD+ Project with international standards.
- Activity A3.2: Verify Project and to register units of forest compensation for avoided deforestation.
- Although State agencies have issued laws for protection, conservation, for the extensive territory and the riches it holds, there is no guarantee that this protection is effective; on the contrary it will continue the process of deforestation that is taking on an increasing scale. In the Section "3.1.2.6 Projected deforested areas" of the validated PDD-VCS, page 207, in which the situation of the Reservation is described in the absence of the Project, the future deforestation has been projected in which the increase in deforested areas is also demonstrated.

Mitigation Measure: In the project design, two important Activities related to the Product / Result 1 listed above have been defined, which would be financed with the resources from the commercialization of the Carbon credits derived from the REDD+ Project:

- Activity A1.1: Monitor and control the conservation and recovery of forests and lands of the RIU-SM. In this Activity the indigenous guard is formed and the surveillance and control patrols are defined.
- Activity A1.3: Develop and to implement a governance for development and sustainability system of ACATISEMA Association.

Socioeconomic impacts on components in a "Without Project" scenario

- It will not be possible to generate new jobs and productive projects that improve the quality of life of people living in the RIU-SM.
- It will continue the survival mechanisms with high aggressiveness towards the forests.

Mitigation Measure: In the design of the Project, two important Activities related to Product / Result 2 listed above have been defined and other complementary actions that are financed with the resources from the commercialization of Carbon credits derived from the REDD+ Project.:

- Activity A2.1: Establish and to develop a Family Agri-food Production Units System (FAPUS)
- Activity A2.3: Manage resources for project design and establishment of production chains.

With these Complementary Activities and Actions (in terms of water supply, housing improvement, health care, attention to the special population), the aim is to specifically improve living conditions. They will also generate jobs and productive projects in which the communities will also participate. These measures

also contribute to the protection of forests by avoiding their deforestation by generating alternative economic activities that will arise within communities as a strategy for improving farming practices, livestock and trade.

Measure to mitigate any negative impact arising from internal conflicts within the communities.

Conflict management process: in the presence of internal conflicts within indigenous communities and the issues that arise within them, they must be resolved by the same authorities and indigenous communities in the context of their autonomy and in accordance with their own internal rules and go hand in hand with procedures staying within the dispute resolution, mechanisms that have been established in their domestic law and within the framework of their uses and customs.

ACATISEMA Association counts with approved statutes by the Assembly which regulates among others, internal conflicts as management and resolution mechanisms of these statutes.

Consistency of these measures with the precautionary principle

In the Project Activities that have been designed and described above, in accordance with the precautionary principle, no serious risk to public health or the environment is identified; on the contrary, their positive impact has been proven.

Measures for the maintenance or improvement of HCV attributes related to community well-being

The measures for the maintenance or improvement of the HCV attributes related to the well-being of the RIU-SM communities are focused on the protection, conservation and recovery of the forests and lands of the Indigenous Reservation, based on the implementation of the Sustainable Management Plan for Land and Forest (Annex 4 of the PDD-VCS), through its Strategic Elements and Project Activities. Following Table 55 shows these measures.

Table 55. Measures for the maintenance or improvement of HCV attributes related to community well-being

HCVs	Qualifying Attributes of HCVs related to the well-being of communities	Measures to maintain or improve HCV attributes related to community welfare
HCV 4.1: Regulating and supporting areas: forest areas at the edge of large rivers and around communities	They provide ecosystem services in critical situations important for the protection of primary forest and communities from landslides and erosion in the ravines of the four main rivers (Vichada, Orinoco, <i>Brazo Amanavén</i> and Orinoco).	The following specific measures are complementary to the general measures described above: • Protect of the banks of the 4 main rivers to prevent erosion and landslides on the edges. • Regulate, monitor and prevent landslides on these banks. • Surveillance and control by the indigenous guard and the river communities in 16 Sectors, through the implementation on the 100% of river surveillance routes.

HCVs	Qualifying Attributes of HCVs related to the well-being of communities	Measures to maintain or improve HCV attributes related to community welfare
		• Train 100% of indigenous guards, of the 100% of communities, on monitoring and prevention of fires and impacts of strong winds, considering IDEAM early warnings. • Develop 1 participatory action plan designed with the indigenous guard, authorities, and communities for the implementation of these specific measures.
HCV 4.2: Regulating and supporting areas: upland and floodplain forest areas	They provide ecosystem services in the maintenance and protection of vulnerable soils (Heterogeneous Agricultural Areas -HAA- or conucos) and aquifers. They also protect soil fertility, preventing erosion and nutrient loss. This is an indispensable element for the food sustainability of the communities.	The following specific measures are complementary to the general measures described above: • Develop the Sustainable Management Plan for Land and Forest for the protection of forest areas in high and flood zones. • Implement at least 2 control and surveillance routes over land and 3 over rivers, per sector for the attention by the indigenous guard and the communities of the early warnings surrounding at least the 50% of the forest areas in high and floodable zones. • Monitor and prevent at least the 50% of fires and impacts of strong winds, considering IDEAM early warnings. • Train at least the 80% of Indigenous Guardians, authorities, and communities in the implementation of previous specific measures, following the good practices to prevent and mitigate the not planned fires plan action.
HCV 5.1: Food resource supply areas	These are fundamental areas for the food sustenance of the indigenous communities of the RIU Selva Matavén. For example, in the areas of flooded forest called by the indigenous people as fishing ponds, in addition to collecting fruits and medicinal plants. The Heterogeneous Agricultural Areas -HAA- are areas where the inhabitants of the RIU-SM develop their traditional agricultural activity,	The following specific measures are complementary to the general measures described above: • Protect at least the 50% of Heterogeneous Agricultural Areas (HAA), pastures and floodable forests near the communities. • Surveillance and control by the indigenous guard and the communities surrounding the Heterogeneous Agricultural Areas (HAA), pastures and floodable forests near the communities, through the implementation of 3 fluvial and 3 land surveillance routes. • Monitor and prevent at least the 50% of fires and impacts of strong winds, taking into account

HCVs	Qualifying Attributes of HCVs related to the well-being of communities	Measures to maintain or improve HCV attributes related to community welfare
	cultivating diverse products to provide food for their families, mainly cassava, from which they obtain derivatives such as <i>mañoco</i> and <i>casave</i>, and others such as corn, plantain and some fruit trees. Cattle pastures are areas converted from forest to pasture; savanna grasslands are not used for this feeding purpose. Also included are primary and secondary forests near the communities, which provide food through fauna and fruits of the forest.	IDEAM early warnings. • Train at least the 80% of the indigenous guardians, authorities and communities in the implementation of the specific measures to monitor and prevent fires. • Train the 10% of beneficiaries of productive projects in short term, 50% in medium term, and 100% in long term, in the implementation of collection plans and sustainable use of products generated in Heterogeneous Agricultural Areas - HAA-, pastures and floodable forests. • Train the 10% of beneficiaries of productive projects in short term, 50% in medium term, and 100% in long term, in the implementation of productive projects (nurseries for the maintenance of seeds and germplasm bank of native species of traditional use for nutrition; technical assistance) in the Heterogeneous Agricultural Areas -HAA- and floodable forests. • Train the 10% of beneficiaries of productive projects in short term, 50% in medium term, and 100% in long term, in the implementation of productive projects and zoo-breeding of minor species, with the purpose of occupying the population dedicated to the hunting of wild species; and to encourage the sustainable management of hunting. • Train the 10% of beneficiaries of productive projects in short term, 50% in medium term, and 100% in long term, in the elaboration and application of compost and friendly organic supplements as good agricultural practices within the framework of productive projects. • Train at least the 80% of Captains and indigenous guardians in water management on the communities, a necessary element for the Heterogeneous Agricultural Areas -HAA-, pastures and floodable forests.
HCV 5.2: Material supply areas	Areas of forest that provide materials for the construction of houses and canoes, as well	The following specific measures are complementary to the general measures described above: • Protect the 10% in short term, 50% in medium

HCVs	Qualifying Attributes of HCVs related to the well-being of communities	Measures to maintain or improve HCV attributes related to community welfare
	as for the manufacture of traditional utensils, handicrafts and other materials and tools for agroforestry systems in the conucos.	term, and 100% in long term, of material supply areas. • Surveillance and control by the indigenous guard and the communities of the 10% in short term, 50% in medium term, and 100% in long term, of the material supply areas close to the communities, through the implementation of fluvial and land surveillance routes. • Monitor and prevent the 10% of forest in short term, 50% in medium term, and 100% in long term of fires and impacts of strong winds, taking into account IDEAM early warnings. • Train at least the 80% of the indigenous guard, authorities and communities in the implementation of the specific measures to monitor and prevent fires and impacts of strong winds. • Train at least the 80% of Captains and indigenous guard in the design and development of sustainable forest harvesting and utilization plans for the construction of houses and canoes, as well as for the manufacture of traditional utensils, handicrafts and other materials and tools for agroforestry systems in the conucos.
HCV 6.1: Sacred sites	They are respected and protected places, since they are inhabited by the spirits of animals and non-human beings who care for and protect the resources of the jungle. These places are not visited so as not to anger these beings and prevent people or their communities from being punished with diseases, loss of crops, scarcity of animals for fishing and hunting and even death.	The following specific measures are complementary to the general measures described above: • Protect the 10% in short term, 50% in medium term, and 100% in long term, of the areas where there are sacred sites. • Surveillance and control, by the indigenous guard and the communities, of the 10% in short term, 50% in medium term, and 100% in long term, of the surrounding sacred sites. • Train at least the 80% of the indigenous guard, authorities and communities in the implementation of the specific measures to monitor and control the surrounding sacred sites. • Train at least the 80% of indigenous guard in the monitoring of places of spiritual and cultural value. • Develop one document to plan guidelines for a pilot project for responsible and sustainable nature

HCVs	Qualifying Attributes of HCVs related to the well-being of communities	Measures to maintain or improve HCV attributes related to community welfare
		tourism in areas of cultural importance for recreation and relaxation. • Train the 10% in short term, 50% in medium term, and 100% in long term of the communities in the cultural and environmental management of the tourism projects they develop.

4.2.3 Net Positive Community Well-Being (CM2.3, GL1.4)

Following Table 56 shows anticipated net well-being impacts of the project that are predicted to be positive for all identified community groups, achieved by implementation of Sustainable Management Plan for Land and Forest, Project Activities and ACATISEMA Reserves (as it is described in Section “2.1.8 Project Activities and Theory of Change” of this document), compared with anticipated well-being conditions under the without-project land use scenario.

Table 56. Demonstration that the net impacts of the Project on the well-being of communities will be positive compared to the no-project land use scenario

Positive impacts on the wellbeing of all community groups	Anticipated well-being conditions under the without-project scenario vs. expected anticipated net well-being impacts all community groups
Impact 1: Improved capacity to develop monitoring of the quality of ecosystem services and participatory surveillance, in particular, of specific measures in the recovery and improvement of community HCVs.	Without the project, there are no monitoring programs in the territory to determine and verify the conservation status of ecosystem services for regulating water flows and levels and their impacts. These conditions will be resolved with the implementation of Project Activity A1.1: <i>Monitor and control the conservation and recovery of forests and lands of the RIU-SM</i>, achieving the following impacts: ○ Surveillance and control of the forests and lands of the RIU-SM to avoid deforestation and degradation are developed. ○ Quality of ecosystem services is monitored. ○ Captains, indigenous leaders and community members participate in the task of guard the territory and its natural resources ○ Participatory monitoring and, in particular, the improvement of community HCVs is strengthened. ○ Early warnings issued by the IDEAM on areas susceptible to forest fires within RIU-SM are attended.
Impact 2: Recovery and improvement of the conditions of community HCVs, as described in	Without the project there is no identification of HCVs and, therefore, no improvement or recovery of their conditions.

Positive impacts on the wellbeing of all community groups	Anticipated well-being conditions under the without-project scenario vs. expected anticipated net well-being impacts all community groups
Section "4.1.3" of this document.	With the Project, the identification and characterization of the HCVs, as described in Section 4.1.3 of this document, the conditions of the different areas that make up each of the HCVs are improved (according the measures explained in the Annex 2 of this document: strategic element 7 of Sustainable Management Plan for Land and Forest), particularly the care, protection and recovery of forests through the improvement of their bio-physical factors (such as soils) and their consequences in the improvement of their productive conditions and, therefore, the improvement of the food conditions of the communities.
Impact 3: Improvement and strengthening of ACATISEMA's governance in the <i>Resguardo Indígena Unificado - Selva de Matavén</i> , for decision making.	Without the project, there are not ability to hold meetings, develop and apply regulations, formulate life plans, resolve conflicts, adapt headquarters/offices, solve boundary problems, remunerate indigenous authorities, train indigenous people, provide attention to the needs of the communities and manage the budget execution of Project Activities. These conditions will be resolved with the implementation of Project Activity A1.3: <i>Develop and implement a governance for development and sustainability system of ACATISEMA Association</i>, achieving the following impacts: ○ Spaces for holding meetings and making decisions are provided. ○ Normative and regulatory aspects of ACATISEMA are developed. ○ Life Plans of ethnic groups in RIU-SM are formulated. ○ Problems with boundaries and conflicts are resolved. ○ ACATISEMA headquarters, in <i>Cumaribo, Inírida</i> and in the Sectors are built. ○ Sports facilities are built. ○ Remuneration to authorities, Indigenous Guard, and Captains is provided. ○ Economic support to students is provided. ○ Transport services in RIU-SM is provided. ○ Autochthonous games and cultural events are developed. ○ Internal financial audit is performed.
Impact 4: Increased level of participation of people from community groups in activities related to the REDD+ Project RIU-SM.	In the absence of the Project, there are no facilities for participation of community groups in activities. With the Project Activities implementation, the communities have spaces to develop actions that will provide benefits not only for themselves, but also for the Climate and Biodiversity components,

Positive impacts on the wellbeing of all community groups	Anticipated well-being conditions under the without-project scenario vs. expected anticipated net well-being impacts all community groups
	actions that are described in the Project Activities.
Impact 5: Improved food supply at the family level (FAPUS) through the implementation of food guarantee projects and support to the Captains and other people who participate in this system (women, men and youth).	Without advice, economic support and accompaniment, alternative food production systems are neither sustainable nor attractive to indigenous people. With strategies 4, 5, and 6 of Sustainable Management Plan for Land and Forest, actions are implemented to contribute to food security of the communities and the develop of productive projects, through the improvement of management practices on the areas that are part of Familiar Agri-food Production Units System – FAPUS, rivers and wetlands, and to generate economic income by trade of surpluses. This is consistent with the implementation of Project Activities A2.1 and A2.3.
Impact 6: Improved environmental knowledge of the communities about the state of the forests, soils and fauna that inhabit them, for timely decision making.	Without the project, information relevant to the sustainability of the forest ecosystems and the well-being of the RIU-SM communities is not disseminated, which prevents the improvement of environmental knowledge. If the ecological importance of the natural capital that sustains the quality of life is unknown, there is no awareness of the impact generated by inappropriate behavior. The methods and measures established in the Project for the improvement of environmental knowledge and its dissemination will be sufficiently supported through the financing of these measures in the frame of implementation of Project Activity A2.2. The dissemination material shared is relevant to the needs of the communities that inhabit the territory.
Impact 7: Improvement of the economic income conditions of the families of each community group, through the commercialization of surpluses and the strengthening of productive chains.	The socioeconomic conditions described in Sections “2.1.4 Social Parameters” and “4.1.1 Descriptions of Communities at Project Start” of this document indicate no or low level of income for families in each community group under the current production schemes. Through the implementation of Project Activity A2.3 alternative forms of production that generate better economic income conditions for the families of each community group and improves marketing mechanisms are developed. The productive projects with which this impact would be achieved are: ○ Agro-forest project with cocoa, corn, plantain and abarco (Colombian mahogany). ○ Agro-silvo-pastoral project. ○ Community nature tourism. ○ Ornamental fish production project (self-sufficient integral community farms).

Positive impacts on the wellbeing of all community groups	Anticipated well-being conditions under the without-project scenario vs. expected anticipated net well-being impacts all community groups
	○ Cassava cultivation project to obtain <i>mañoco</i>. ○ <i>Panelera</i> cane production project. ○ Minor species (hens) production project. ○ Crop fish in floating cages (fish farming for food safety). ○ Training and accompaniment in handcraft processes.
Impact 8: Availability of financial resources that will contribute to the sustainability and improvement of the living conditions of the indigenous communities of the RIU-SM.	In the absence of the Project, there are no sufficient and adequate financial resources available to contribute to the establishment of measures for the sustainability and improvement of the living conditions of the indigenous communities. Whit the Project Activities A3.1 and A3.2, a mechanism for the evaluation and compensation for environmental services of the forest resources of the Indigenous Reservation is established, which generate the availability of financial resources that will contribute to the sustainability and improvement of the living conditions of the indigenous communities.

From the information presented in the Table, it is shown that the net welfare impacts of the Project for all identified community groups are predicted to be positive compared to their predicted welfare conditions under the without-Project land use scenario.

Contribution of Project Activities to achieving community adaptation to the likely impacts of climate change (Gold Level)

The various presentations in the previous Sections of this document identify the following likely impacts of climate change and their consequences on the well-being of communities:

- Increase in global temperature generated by the accumulation of GHGs, which are produced by anthropogenic activities (particularly deforestation and degradation). The consequences of these impacts lead to changing climatic conditions that cause the loss of territorial sustainability. Likewise, agricultural food production capacity is lost due to soil degradation.
- On the other hand, if there is deforestation of forests, there is a loss of vegetation cover, fragmentation, desertification, flooding, loss of soil quality, impact on water sources, migration of populations (human and animal), which, in turn, leads to loss of productivity of forests and soils of the RIU-SM, loss of habitats and ecosystem connectivity, and that leads to degradation and loss of biodiversity (extinction of trigger species), with the consequence of the deterioration of the well-being of communities.
- Frequent river flooding, due to strong climatic variations, generates erosion on the riverbanks near communities, a very specific situation that occurs in several places in the RIU-SM.
- Also, the drying up of the streams and the reduction in the level of the lagoons during intense droughts due to climate change make it difficult to supply water to cover the basic needs of the communities, because they have to bring water from more distant sources, a situation that is also frequent in many

places of the RIU-SM. Floods also affect housing, crops and productive systems in the communities.

- It is also important to highlight a very particular event, which is the exuberant growth of grasslands - *guayacanas* and soil degradation that hinders the process of natural succession; an event also observed in several sites of the RIU-SM.

The main adaptation to these climate change impacts derives from the conservation and protection of forests, establishing measures to mitigate the threats to this conservation and protection, i.e. the threats of deforestation, as well as the establishment of alternative sustainable production systems, mainly for food. These measures, which correspond to the Project Activities, will help the communities to adapt to the probable impacts of climate change, since the communities are the main executors of these Activities and measures.

The following Table 57 shows how the Project Activities will help communities adapt to the likely impacts of climate change.

Table 57. How the Activity helps communities adapt to the likely impacts of climate change (GL1)

Project Activities	How the Activity helps communities adapt to the likely impacts of climate change (GL1)
Activity A1.1: Monitor and control the conservation and recovery of forests and lands of the RIU-SM	Activity to mitigate deforestation threats. This involves the implementation and strengthening of community control and surveillance programs that seek to reduce the anthropogenic impact generated by deforestation. In this activity, communities at risk should be identified in order to develop better planning for land erosion control on riverbanks near communities. A complementary measure in this activity is to develop a flood risk map to plan the new land use, so that vulnerable areas can be identified and the corresponding decisions can be made.
Activity A1.2: Develop and to implement a system of communication and information at the RIU-SM	Activity that complements the mitigation of deforestation threats, improving strategies and communication methods essential to assist in the monitoring and control of forests and lands of the Indigenous Reservation.
Activity A1.3: Develop and to implement a governance for development and sustainability system of ACATISEMA Association	Another activity considered essential for the mitigation of deforestation threats involves strengthening the governance of community organization, which involves collective use norms and participatory management plans.
Activity A2.1: Establish and to develop a Family Agri-food Production Units System (FAPUS)	This activity contributes to the establishment of alternative agri-food production systems that will adapt to the impact of climate change, particularly to improve production for food guarantee. It will thus contribute to reducing dependence on natural resources, which has an impact on the conservation of forests and soils.

Project Activities	How the Activity helps communities adapt to the likely impacts of climate change (GL1)
	In this Activity it is important, for water regulation, to plan the establishment of deep wells and community aqueducts that allow a better adaptation to climate change.
Activity A2.2: Design and to develop a training program plan to administration and management of natural resources of the RIU-SM	This activity is absolutely necessary for the establishment of new alternative production systems adapted to climate change and consists of training and educating people in the community on management and human welfare issues related to climate change adaptation.
Activity A2.3: Manage resources for project design and establishment of production chains	Activity that complements the establishment of alternative production systems through production chain projects to improve crop and soil management alternatives.
Activity 3.1: Validate a REDD+ Project with international standards Activity 3.2: Verify Project and to register units of forest compensation for avoided deforestation	Activities related to the establishment of a valuation and compensation mechanism for environmental services generated in the RIU-SM, which makes it possible to obtain economic resources to finance Project Activities and, therefore, adaptation to the impacts of climate change, as mentioned above.

4.2.4 High Conservation Values Protected (CM2.4)

The above sections demonstrate that none of the HCVs related to community well-being will be negatively affected by the Project. On the contrary, the Project activities are shown to positively impact the community wellbeing-related HCVs.

In Section 4.4.1 of this document, monitoring actions are presented to evaluate the effectiveness of measures taken to maintain or improve all identified HCVs related to community well-being. The aim will be to detect warning or alarm situations in areas with HCVs.

4.3 Other Stakeholder Impacts

4.3.1 Impacts on Other Stakeholders (CM3.1)

Based on the actions identified in the RIU-SM Sustainable Management Plan for Land and Forest, Project Products / Results and Activities, the potential impacts likely to be caused by Project implementation on the well-being of other stakeholders are described below, in Table 58.

Table 58. Potential impacts that the Project Activities are likely to cause on the well-being of other stakeholders.

Other stakeholders	Potential impacts that the Project Activities are likely to cause on the well-being of other stakeholders	
	Positives	Negatives
Primary and secondary basic education teachers of the <i>Resguardo Indígena Unificado – Selva de Matavén</i>	In particular, Project Activities A.1.2 (communication and transportation), A1.3 (governance) and A2.2 (education) have a direct positive impact on basic and secondary school teachers. The expected positive impacts for teachers are: ✓ By improving communication and transportation systems, it facilitates the educational activity of teachers in communities where there are educational centers (Activity A1.2). ✓ By improving governance in the territory, they benefit from the provisions and support that the ACATISEMA Association provides to the communities and to the educational processes. In the ACATISEMA Coordinator Committee there are two people in charge of coordinating these educational aspects (Activity A1.3). ✓ By offering financial support for higher education studies, teachers in particular will benefit, as they will have easier access to universities (Activity A2.2). ✓ Teachers are facilitated in obtaining appropriate material for their pedagogical purposes through the distribution of school kits in the different communities (Activity A2.2). ✓ The teachers will benefit from other measures that the ACATISEMA Association develops with the resources of the Project, such as health posts, housing improvement, provision of drinking water, among others. The other Activities (A1.1 -monitoring and control of the territory-, A2.1 -food sustainability- and A2.3 -productive projects-) benefit the teachers because of the results that the other indigenous people of the communities obtain with their work in these Activities. Likewise, with Activities A3.1 and A3.2 that favor equally all the people of the Indigenous Reservation.	No negative impacts identified
Settlers	✓ They benefit from the environmental protection of the reservation forests, in terms of their land and crops (Activity A1.1). ✓ They also benefit from the Project Activities for the mitigation of climate change impacts (Activity A1.1). ✓ They benefit from the care and improvement of the HCVs of the RIU-SM territory, particularly those of critical ecosystem services (regulation and support areas: forest areas at the edge of large rivers and around communities) and those supplying food and material resources (Activity A1.1). ✓ In addition, the settlers benefit from the improvement of their	No negative impacts identified

Other stakeholders	Potential impacts that the Project Activities are likely to cause on the well-being of other stakeholders	
	Positives	Negatives
	income, which they can achieve through the economic exchange of products with the indigenous people of the RIU-SM (Activities A2.1 and A2.3).	
Government Institutions	✓ The Project's progress detected with the monitoring system established in the Project will allow the institutions to have in-situ information that will facilitate the environmental evaluation and planning systems at the national and regional levels. The Project generates a system of indicators that produce, in turn, statistics that allow for monitoring over time, providing elements to complete the data they want to handle. These institutions, or some, generate information systems where data is recorded that contributes to fulfilling their commitments. For example, the MADS will establish RENARE so that REDD+ projects like this one register information on emission reductions (although the scope that it will give it remains to be specified). Another institution, Corporinoquía, will be able to obtain information on the environmental and natural resource dynamics of the RIU-SM, in compliance with its functions. The CDA will have a direct approach in the framework of implementation of the RAMSAR initiative, receiving contributions in information and procedures. ✓ The Project, through its Activities, also contributes to the achievement of objectives and goals of its institutions in terms of their functions related to climate change mitigation and adaptation.	No negative impacts identified
Non-governmental institutions	✓ The project activities and their results create opportunities for coordination and collaboration with non-governmental institutions whose main objective is the environmental aspects and protection of the forest and the communities, in this case, indigenous communities. ✓ It will be possible to establish very concrete relation with expert institutions in the development of productive projects (agroforestry and silvopastoral systems, etc.) and specific studies (biodiversity studies, life plan studies, among others), receiving contributions from the Project as part of cooperation agreements. For example, Fedecacao, who is providing technical guidance to develop the agroforestry project, fulfilling its corporate purpose and receiving contributions from the REDD+ Project to execute this productive initiative.	No negative impacts identified

Other stakeholders	Potential impacts that the Project Activities are likely to cause on the well-being of other stakeholders	
	Positives	Negatives
	Similar agreements will be made with other entities.	
Other indigenous reservations	✓ The indigenous reservations neighboring the RIU-SM will benefit from the positive impacts expected from the Project, as described above, in particular, an economic and cultural exchange can be achieved, based on the results of the Project Activities with the communities of other indigenous reservations. ✓ These reservations can also be based on the REDD+ Project RIU-SM to implement their own climate change mitigation initiatives.	No negative impacts identified

4.3.2 Mitigation of Negative Impacts on Other Stakeholders (CM3.2)

As no specific negative impacts on the welfare of other stakeholders are anticipated with the implementation of the Project Activities, therefore, no specific mitigation measures have been foreseen in this regard. However, the *"Measure to mitigate any negative impacts arising from internal conflicts, within communities"* applies, as described in Section 4.2.2.

4.3.3 Net Impacts on Other Stakeholders (CM3.3)

As demonstrated in the table in Section "4.3.1 Impacts on Other Stakeholders", which describes the positive impacts of the Project Activities on the well-being of other stakeholders, and where no negative impacts were identified, then the net impact is always positive.

4.4 Community Impact Monitoring

4.4.1 Community Monitoring Plan (CM4.1, CM4.2, GL1.4, GL2.2, GL2.3, GL2.5)

Community Monitoring Plan for measures related to community wellbeing in the development of the REDD+ Project RIU-SM

The Monitoring Plan of the measures related to the well-being of the communities in the development of the REDD+ Project RIU-SM is based on the indicators of the General and Specific Objectives and the Expected Outputs/Results defined in the Project design (validated PDD-VCS, Section "1.8 Description of the Project activity / Matrix of Logic Structure (MLS)", page 45). The following Table 59 describes this plan and identifies its variables.

Table 59. Variables to be monitored according the Matrix of Logic Structure (short term 5 to 7 years, medium term 8 to 20 years, and long term 21 to 35 years)

Variables	Related to the General Objective:

(MLS)	✓ Percentage of communities that will have participated in agri-food production (in the five Zones of the RIU-SM: 10% of communities in short term, 50% in medium term, and 100% in long term. ✓ At least 20 young persons of the RIU-SM community people (between 15 and 26 years old) who will have been certified in technical and technological programs related to sustainable management. Related to the Specific Objective: ✓ The 100% of Captains, including women and young people, will have participated in the establishment in the Sustainable Management Plan for Land and Forest of the RIU-SM. ✓ The 100% of members of the Coordinator Committee, the <i>Cabildos</i> Board, and Zonal Coordinators will have been trained in management and organizational governance to conserve the RIU-SM forests and lands. ✓ 10% of communities in short term, 50% in medium term, and 100% in long term, per Sector, will have improved their communication means. ✓ At least the 50% of intimidating events on RIU-SM peoples and number of events will have been resolved. ✓ At least the 50% of interviewed people expressing satisfaction about participation in the Project. Related to the Expected Product / Result 1: ✓ At least the 80% of Indigenous Guardians, Captains, Zonal Coordinators and community members will have been trained in surveillance, control and monitoring of the RIU-SM. ✓ At least the 80% of members of the Coordinator Committee, the <i>Cabildos</i> Board, and Captains will have been trained and apply knowledge in the Statutes and organizational aspects of the RIU-SM and ACATISEMA. ✓ At least 10 young persons with a basic education graduates will have been trained in integrated forest and land management. ✓ Number of communities and people who have been trained and apply knowledge about the nature and characteristics of the Project. ✓ 10% of communities in short term, 50% in medium term, and 100% in long term, and the 100% people will have been trained and will apply knowledge about the nature and characteristics of the Project. ✓ At least 3 materials will have been disseminated, with featuring about the understanding and better participation in the project. Related to Expected Product / Result 2:

	✓ At least 10 hectares per communities with of production for food guarantee. ✓ At least 1 project per sector and with their characteristics of agrifood production system. ✓ At least 10 agri-food production units (FAPUS) established per sector, and areas of these units. ✓ Increased cultivation at least in 10% respect to the production in the FAPUS: in types, quality and quantity of product. ✓ At least 10% of families in short term, 50% in medium term, and 100% in long term will have been linked to the sustainable management technologies offered to the project in the FAPUS. ✓ At least 6 training workshops for the indigenous population and at least the 80% of Captains and Indigenous Guardians trained on the following topics: climate change, REDD+ projects, compensation for environmental services, governance, monitoring and control, and agrosilvicultural practices. ✓ At least 2 agreements or contracts per year with partner organizations will have been kept in the development of productive projects. ✓ Economic income of indigenous communities from the development of productive projects. ✓ At least in the 10% of indigenous communities will have economic income from the development of productive projects. ✓ At least 80 students in short term, 150 students in medium term, and 500 students in long term will have been taken higher education programs in areas related to the development of the indigenous reservation and the Association (bachelor's degrees, environmental, administration, law, among others). Related to expected Product / Result 3: ✓ Design and validation of a mechanism for compensation for environmental services in accordance with international standards. ✓ Design and validation of the REDD+ Project RIU-SM Project with the estimation of VCU's throughout the thirty-year life of the Project. ✓ Periodic verification (annual or biennial) of Project results with the corresponding VCUs certified for each verification.
Type of measurement	Rating scale of the variables identified to measure their evolution since the beginning of the implementation of the Project.
Sampling Method	Sampling methods are not required, since the data regarding the variables are obtained as the Project Activities are carried out, which is stored and recorded in an Information System, based on minutes, workshops, meetings, tours, etc.
Frequency of monitoring	It starts with the implementation of the Project and with monitoring each time verification is required, annually or biennially.

To evaluate the social impact of the REDD+ Project RIU-SM, the suggestions of the Social and Biodiversity Impact Assessment Manual (SBIA) and the guidelines of the Conservation Steward Program (CSP) methodology of Conservation International are used. The monitoring plan presented for communities has three objectives that seek to evaluate the adaptive capacity of each community, in relation to the socioeconomic, socioecological and institutional indices, detailed in the following tables.

The variables indicated in the Social and Biodiversity Impact Assessment Manual (SBIA) and in the CSP methodology guidelines are monitored:

These variables refer to developments on:

1. Human opportunities since the REDD+ Project RIU-SM.
2. Perception of wellbeing of indigenous households since the REDD+ Project RIU-SM.
3. Occupational diversity since the REDD+ Project RIU-SM.
4. Material lifestyle from the REDD+ Project RIU-SM.
5. Occupational mobility from the REDD+ Project RIU-SM.
6. Community infrastructure from the REDD+ Project RIU-SM.
7. Understanding of the natural environment from the REDD+ Project RIU-SM.
8. Dependence on natural resources in RIU-SM.
9. Social capital in the RIU-SM.
10. Capacity to adapt to change.
11. Organization around natural resources.
12. Perception of governmental and non-governmental institutions.

The following Tables describe the variables to be monitored.

Table 60. Variable 1 to be monitored related to community wellbeing

Variable 1 to be monitored	Human Opportunity Indicator from REDD+ Project RIU-SM	Target:	Obtaining baseline socioeconomic indicators related to human livelihood opportunities.
		Output:	The Human Opportunity Index (HOI), developed by the World Bank. It measures access to basic goods and services for children, youth and adults, such as education, drinking water, electricity and sanitation.
		Outcome:	The results of the first survey, which constitutes the initial condition of these prioritized and agreed socioeconomic parameters, will be evaluated periodically during the implementation of the Project.
		Impact:	This indicator allows to periodically measure the evolution of the conditions regarding the basic goods and services of the population of the indigenous reservation in the development of the REDD+ Project RIU-SM and to evaluate its progressive

			impact.

Table 61. Variable 2 to be monitored related to community wellbeing

Variable 2 to be monitored	Perception of well-being of indigenous households from REDD+ Project RIU-SM	Target:	Obtaining socioeconomic indicators related to the perception of well-being of indigenous households.
		Output:	Well-being values defined and evaluated based on the basic needs of the indigenous communities.
		Outcome:	The results of the first survey, which constitutes the initial condition of these prioritized and agreed socioeconomic parameters, will be evaluated periodically during the implementation of the Project.
		Impact:	This indicator periodically measures the changes in the prioritized and agreed socioeconomic parameters and makes it possible to evaluate their progressive impact during the implementation of the project.

Table 62. Variable 3 to be monitored related to community wellbeing

Variable 3 to be monitored	Occupational diversity from REDD+ Project RIU-SM	Target:	Obtaining socioeconomic indicators related to occupational diversity.
		Output:	Number of people, in each community, in which the occupation is characterized (in agricultural production, in participation in productive projects, in general support for the implementation of the Project Activities).
		Outcome:	The results of the first survey, which constitutes the initial condition of these prioritized and agreed socioeconomic parameters, will be evaluated periodically during the implementation of the Project.
		Impact:	This indicator periodically measures the changes in the prioritized and agreed socioeconomic parameters and makes it possible to evaluate their progressive impact during the implementation of the project.

Table 63. Variable 4 to be monitored related to community wellbeing

Variable 4 to be monitored	Lifestyle from REDD+ Project RIU-SM	Target:	Obtaining socioeconomic indicators related to lifestyle.
		Output:	Documentation on the characterization of lifestyles from an integral, social, economic, political and cultural perspective, and in accordance with the objectives of developing better living conditions and well-being.
		Outcome:	Lifestyles related mainly to health, housing, education,

			economy, family organization and occupation are identified, all of which are indicators of quality of life. The results of the first survey, which constitutes the initial condition of these prioritized and agreed socioeconomic parameters, will be evaluated periodically during the implementation of the Project.
		Impact:	This indicator allows to periodically measure the changes in the socioeconomic parameters indicated above, prioritized and agreed upon, and to evaluate their progressive impact during the implementation of the Project.

Table 64. Variable 5 to be monitored related to community wellbeing

Variable 5 to be monitored	Occupational mobility from REDD+ Project RIU-SM	Target:	Obtaining relative socioeconomic indicators with a perspective of occupational mobility.
		Output:	Number of persons, in each community, in which occupational mobility is characterized, taking into account change of place of work or employer, change of occupation or occupational mobility and change of economic activity.
		Outcome:	The results of the first survey, which constitutes the initial condition of these prioritized and agreed socioeconomic parameters, will be evaluated periodically during the implementation of the Project.
		Impact:	This indicator makes it possible to periodically measure changes in the prioritized and agreed socioeconomic parameters related to occupational changes, making it possible to evaluate their progressive impact during project implementation.

Table 65. Variable 6 to be monitored related to community wellbeing

Variable 6 to be monitored	Community infrastructure from REDD+ Project RIU-SM	Target:	Obtaining socioeconomic indicators related to community infrastructure.
		Output:	Inventory of existing community infrastructure by Zone and Sector, related to health, education, housing, transportation, communication and governance.
		Outcome:	The results of the first survey, which constitutes the initial condition of these prioritized and agreed socioeconomic parameters, will be evaluated periodically during the implementation of the Project.
		Impact:	This indicator makes it possible to periodically measure changes in the prioritized and agreed socioeconomic parameters related to occupational changes, making it

			possible to evaluate their progressive impact during project implementation.

Table 66. Variable 7 to be monitored related to community wellbeing

Variable 7 to be monitored	Understanding the natural environment from the REDD+ Project RIU-SM: To achieve this understanding of the natural environment from the REDD+ Project, information related to the following questions should be obtained: 1. Do you know the Selva Matavén? 2. Do you know the other indigenous ethnic groups that are part of this reserve? 3. Do you know the importance of forests and trees in general? 4. What are natural resources? 5. What do you consider to be the most important for the survival of the indigenous populations? 6. How do you consider the state of the rivers and forests of the <i>Selva de Matavén</i> ? 7. How important do you think are the animals that live in the forest? 8. Do you think that conserving the vegetation and animals of the forest is important for the well-being of your family? 9. Do you think that they live badly, regularly, well or excellently in the Selva Matavén? 10. Do you have any idea what the environmental services of provisioning, regulation and cultural services may be?	Target:	Obtaining socio-ecological indicators constructed from the information obtained in response to the above questions, related to the perception of the indigenous communities on the state of conservation of the natural resources of the Selva Matavén.
		Output:	Socioecological indicators related to the perception of the indigenous communities on the state of conservation of the natural resources of the Selva Matavén
		Outcome:	Once the results of the first survey are known, which constitutes the initial condition of these socioecological characteristics, they will be periodically evaluated during the implementation of the Project.
		Impact:	These socio-ecological indicators make it possible to periodically measure changes in these indicators, allowing for the evaluation of their progressive impact during the implementation of the project.

Table 67. Variable 8 to be monitored related to community wellbeing

Variable 8 to be monitored	Dependence on natural resources in the RIU-SM: In order to achieve characterization of natural resource dependence in the RIU-SM, information related to the following	Target:	Obtaining socio-ecological indicators constructed from the information obtained in response to the above-mentioned questions, related to the dependence of local communities on natural resources.

	questions should be obtained: 1. What is your occupation? 2. Where does your income and quality of life come from? 3. Does your income depend on the forests of the Selva Matavén? 4. Does your income depend on the rivers? 5. Who brings food to your family? 6. Where do you get your family's food?	Output:	Socioecological indicators related to the dependence of indigenous communities on the natural resources of the RIU-SM for their livelihoods and subsistence.
		Outcome:	Once the results of the first survey are known, which constitutes the initial condition of these socioecological characteristics, they will be periodically evaluated during the implementation of the Project.
		Impact:	These socio-ecological indicators make it possible to periodically measure changes in these indicators, allowing for the evaluation of their progressive impact during the implementation of the project.

Table 68. Variable 9 to be monitored related to community wellbeing

Variable 9 to be monitored	To obtain the characterization of social capital in the RIU-SM, information related to the following questions should be obtained: 1. Does the community have the capacity to sustain its family economy (YES / NO). Explain. 2. Does the community have the capacity to maintain its culture? 3. Have they formed any community organization? 4. What possibility do they have to know what is happening with respect to what is impacting the communities of the RIU-SM? 5. Do you consider whether the community is vulnerable and what type of vulnerability do you think they may suffer? 6. Do you believe that the community's decisions can be taken into account in decision-making spaces? 7. Do you know of any mechanism to debate or discuss any situation that may	Target:	Obtaining indicators of the institutional index constructed from the information obtained in response to the above questions, related to the capacity to organize and associate from the social capital of the RIU-SM communities.
		Output:	Indicators of this institutional index that reflect the importance of social capital in the RIU-SM for indigenous communities.
		Outcome:	The results of the first survey, which constitutes the initial condition of the characteristics of this institutional index, will be evaluated periodically during the implementation of the Project.
		Impact:	The indicators of this institutional index make it possible to periodically measure changes in these indicators, making it possible to evaluate the progressive impact during the implementation of the

	affect the collective? 8. Do you know of other indigenous organizational structures? Do you know what the institutional purpose of these organizations is? 9. Do you believe that these organizations affect your organization's decision making?		Project.

Table 69. Variable 10 to be monitored related to community wellbeing

Variable 10 to be monitored	Capacity to adapt to change. In order to characterize the capacity to adapt to change, information related to the following questions should be obtained: 1. What has changed in your territory in the last decade? 2. Why have these changes occurred? 3. Do you like all the changes you have experienced? 4. Are there changes that can be promoted for the greater well-being of the people? 5. Who should participate in these changes?	Target:	Obtaining institutional index indicators constructed from the information obtained in response to the above questions, related to the capacity of the RIU-SM communities to adapt to change, taking into account social, institutional and ecological factors.
		Output:	Indicators of this institutional index that reflect the capacity of RIU-SM communities to adapt to change, taking into account social, institutional and ecological factors.
		Outcome:	The results of the first survey, which constitutes the initial condition of the characteristics of this institutional index, will be evaluated periodically during the implementation of the Project.
		Impact:	The indicators of this institutional index make it possible to periodically measure changes in these indicators, making it possible to evaluate the progressive impact during the implementation of the Project.

Table 70. Variable 11 to be monitored related to community wellbeing

Variable 11 to be monitored	Organization around natural resources: In order to achieve characterization of the organization around natural resources, information related to the following questions should be obtained:	Target:	Obtaining indicators of the institutional index constructed from the information obtained in response to the above questions, related to the organization around natural resources, participatory

	1. Have you ever been an indigenous guard, captain or cabildo?		equity and the level of community involvement.
	2. Have you ever participated in any natural resource protection activities (forests or animals)?	Output:	Indicators of this institutional index that reflect the state of social organization around natural resources.
	3. Have you ever participated in the REDD+ Project RIU-SM?	Outcome:	The results of the first survey, which constitutes the initial condition of the characteristics of this institutional index, will be evaluated periodically during the implementation of the Project.
	4. Is anyone in your family part of the REDD+ Project RIU-SM? 5. Have you ever been part of an organization that is dedicated to the protection of nature?	Impact:	The results of the first survey, which constitutes the initial condition of the characteristics of this institutional index, will be evaluated periodically during the implementation of the Project.

Table 71. Variable 12 to be monitored related to community wellbeing

Variable 12 to be monitored	Perception of governmental and non-governmental institutions. In order to characterize the perception of governmental and non-governmental institutions, information related to the following questions should be obtained: 1. Do you know and trust the Ministries of Environment and Sustainable Development - MADS and of the Interior? Please rate your level of trust. 2. Do you know and trust the Regional Autonomous Corporation - <i>Corporinoquia</i> ? Rate your level of trust. 3. Do you know and trust the National Parks institution? Qualify your level of Confidence. Do you know and trust the association ACATISEMA? Please qualify your level of confidence. (low, medium, high). 5. Do you know and trust the reserves (private or public)? Please rank your level of confidence.	Target:	Obtaining indicators of the institutional index constructed from the information obtained in response to the above questions, related to the perception of indigenous communities on the role of governmental and non-governmental institutions (authorities, environmental organizations, ACATISEMA), within the framework of the REDD+ Project RIU-SM.
		Output:	Indicators of this institutional index that reflect the indigenous community's perception of governmental and non-governmental institutions.
		Outcome:	The results of the first survey, which constitutes the initial condition of the characteristics of this institutional index, will be evaluated periodically during the implementation of the Project.
		Impact:	The indicators of this institutional index make it possible to periodically

			measure changes in these indicators, making it possible to evaluate the progressive impact during the implementation of the Project.

For all the variables to be monitored described above, the type of measurement, sampling method and estimated monitoring frequency are presented in the following Table 72.

Table 72. Type of measurement, sampling method, and frequency monitoring for variables to be monitored related to community wellbeing

Type of measurement	Assessment scale of the variables considered, through standardized surveys, to measure the evolution of this variable, since the validation certification with the CCB standard.
Sampling Method	Stratified random sampling, which allows obtaining and processing the information collected through periodic surveys, taking into account age and gender groups. Periodic surveys related to these variables are organized to be carried out in a single fieldwork.
Frequency monitoring	It will start with a first survey in 2022 and the survey will be repeated every three years.

Community Groups Monitoring Plan

To evaluate the sustainability of the community groups (described in Section 4.1.1 of this document), the suggestions of the SBIA Manual and the guidelines of the CSP methodology are used.

Table 73. Variables for community Groups Monitoring Plan

Community groups	Women / Men Youth Traditional authorities: shamans, traditional doctors, healers and shepherds Ethnic groups: <i>Cubeo, Curripaco, Piapoco, Piaroa, Puinave and Sikuani</i>

Variable 1 to be monitored	Social sustainability index. Level of participation of each community group in relation to: - The activities supported by the REDD+ Project RIU-SM. - Decision making. - Understanding of the REDD+	Target:	Evaluation of the link of each community group with the Project and its degree of social bonding.
		Output:	Social impact assessment, taking into account the social sustainability index.
		Outcome:	The results of the first survey on the economic sustainability index, which constitutes the initial condition of this index, will be evaluated periodically during the implementation of the

	Project RIU-SM.		Project.
	- Level of satisfaction with the REDD+ Project RIU-SM. - Perception of ACATISEMA's performance in implementing the REDD+ Project RIU-SM. - Perception of the performance of the indigenous guards, captains and <i>Cabildos</i>.	Impact:	This indicator makes it possible to periodically measure the evolution of the conditions related to the economic sustainability index and to evaluate its progressive impact on the development of the REDD+ Project RIU-SM.

Variable 2 to be monitored	Technical sustainability index. General knowledge of the REDD+ Project RIU-SM of each community group regarding: - Planning. - Joint management. - Joint monitoring. - Joint evaluation. - Joint follow-up.	Target:	Technical evaluation of the performance of the REDD+ Project RIU-SM and lessons learned.
		Output:	Technical impact assessment, considering the technical sustainability index.
		Outcome:	The results of the first survey on the economic sustainability index, which constitutes the initial condition of this index, will be evaluated periodically during the implementation of the Project.
		Impact:	This indicator makes it possible to periodically measure the evolution of the conditions related to the economic sustainability index and to evaluate its progressive impact on the development of the REDD+ Project RIU-SM.

Variable 3 to be monitored	Index of socioeconomic sustainability of each community group related to: - Social changes. - Economic changes. - Perception of socioeconomic progress.	Target:	Evaluation of the socio-economic perception of each community group.
		Output:	Economic impact assessment, taking into account the economic sustainability index.
		Outcome:	The results of the first survey on the economic sustainability index, which constitutes the initial condition of this index, will be evaluated periodically during the implementation of the Project.
		Impact:	This indicator makes it possible to periodically measure the evolution of the conditions related to the economic sustainability index and to evaluate its progressive impact on the development of the REDD+ Project RIU-SM.

Variable 4 to be monitored	Ecological Sustainability Index Perception of conservation of each community group regarding. - Perception of the REDD+ Project RIU-SM. - Ecosystem trend. - Reduction of the negative impact of forestry activities (hunting and logging).	Target:	Objective: Evaluation of the socio-ecological perception of community groups.
		Output:	Ecological impact assessment, considering the ecological sustainability index.
		Outcome:	The results of the first survey on the economic sustainability index, which constitutes the initial condition of this index, will be evaluated periodically during the implementation of the Project.
		Impact:	This indicator makes it possible to periodically measure the evolution of the conditions related to the economic sustainability index and to evaluate its progressive impact on the development of the REDD+ Project RIU-SM.

Variable 5 to be monitored	Financial sustainability index. Perception of the financial sustainability of each community group.	Target:	Financial impact assessment, considering the financial sustainability index.
		Output:	The results of the first survey on the financial sustainability index, which is the initial condition of this index, will be evaluated periodically during the implementation of the Project.
		Outcome:	The results of the first survey on the economic sustainability index, which constitutes the initial condition of this index, will be evaluated periodically during the implementation of the Project.
		Impact:	This indicator makes it possible to periodically measure the evolution of the conditions related to the economic sustainability index and to evaluate its progressive impact on the development of the REDD+ Project RIU-SM.

Type of measurement	Assessment scale through standardized surveys to measure the evolution of this variable since the validation certification with the CCB standard.
Sampling Method	Stratified random sampling, which allows obtaining and processing the information collected through periodic surveys, taking into account age and gender groups. The periodic surveys related to these variables are organized to be carried out in a single fieldwork. It is taken into account that it should be an integrated work with the 12 variables described above.
Frequency monitoring	It will start with a first survey in 2022 and the survey will be repeated every three years.

Monitoring plan for other stakeholders

Table 74. Variables for Monitoring plan for other stakeholders

Stakeholders	Primary and secondary school teachers of the <i>Resguardo Indígena Unificado – Selva de Matavén</i> Colonists Governmental institutions Non-governmental institutions Other indigenous reservations

Variable 1 to be monitored	Level of participation of other stakeholders related to: - Activities supported by the REDD+ Project RIU-SM. - Decision-making (only in the case of teachers). - Understanding of the REDD+ Project RIU-SM. - Level of satisfaction with the REDD+ Project RIU-SM (only in the case of teachers). - Perception of ACATISEMA's performance of the implementation of the REDD+ Project RIU-SM. - Perception of the performance of the indigenous guards, captains and <i>Cabildos</i> .	Target:	Evaluation of the level of participation of other stakeholders in the Project and their degree of involvement.
		Output:	A first study to assess the level of participation of other stakeholders.
		Outcome:	The results of the first study on the general knowledge of the REDD+ Project RIU-SM by the other stakeholders regarding the planning, management, monitoring, evaluation and follow-up of the project, which constitutes the initial condition of these indicators, will be evaluated periodically during the implementation of the project.
		Impact:	This indicator allows to periodically measure the evolution of the conditions regarding the general knowledge of the REDD+ Project RIU-SM by the other stakeholders, regarding the planning, management, monitoring, evaluation and follow-up of the Project and to evaluate its progressive impact on the development of the REDD+ Project RIU-SM.

Variable 2 to be monitored	General knowledge of the REDD+ Project RIU-SM by other stakeholders regarding project planning,	Target:	Assessment of the general knowledge of the REDD+ Project RIU-SM by other stakeholders regarding the planning, management, monitoring, evaluation and follow-up of the project.
		Output:	A first study to assess the general knowledge of the REDD+ Project RIU-SM by the other stakeholders related to the planning, management, monitoring, evaluation and follow-up

	management, monitoring, evaluation and follow-up.		of the project.
		Outcome:	The results of the first study on the general knowledge of the REDD+ Project RIU-SM by the other stakeholders regarding the planning, management, monitoring, evaluation and follow-up of the project, which constitutes the initial condition of these indicators, will be evaluated periodically during the implementation of the project.
		Impact:	This indicator allows to periodically measure the evolution of the conditions regarding the general knowledge of the REDD+ Project RIU-SM by the other stakeholders, regarding the planning, management, monitoring, evaluation and follow-up of the Project and to evaluate its progressive impact on the development of the REDD+ Project RIU-SM.

Variable 3 to be monitored	Indicators from other stakeholders regarding social and economic changes.	Target:	Evaluation of social and economic changes of other stakeholders.
		Output:	A first study to assess the perception of the financial sustainability of the Project by the other stakeholders.
		Outcome:	The results of the first study on the general knowledge of the REDD+ Project RIU-SM by the other stakeholders regarding the planning, management, monitoring, evaluation and follow-up of the project, which constitutes the initial condition of these indicators, will be evaluated periodically during the implementation of the project.
		Impact:	This indicator allows to periodically measure the evolution of the conditions regarding the general knowledge of the REDD+ Project RIU-SM by the other stakeholders, regarding the planning, management, monitoring, evaluation and follow-up of the Project and to evaluate its progressive impact on the development of the REDD+ Project RIU-SM.

Variable 4 to be monitored	Perception of retaining other stakeholders regarding: - Perception about the REDD+ Project RIU-SM. - Reduction of the negative impact of forestry activities (hunting	Target:	Evaluation of the perception of conservation of other stakeholders regarding the REDD+ Project RIU-SM and the reduction of the negative impact of forestry activities (hunting and logging).
		Output:	A first study to assess the perception of the financial sustainability of the Project by the other stakeholders.
		Outcome:	The results of the first study on the general knowledge of the REDD+ Project RIU-SM by the other stakeholders regarding the planning, management, monitoring, evaluation and follow-up of the project, which constitutes the initial condition of these indicators, will be evaluated periodically during the

	and logging).		implementation of the project.
		Impact:	This indicator allows to periodically measure the evolution of the conditions regarding the general knowledge of the REDD+ Project RIU-SM by the other stakeholders, regarding the planning, management, monitoring, evaluation and follow-up of the Project and to evaluate its progressive impact on the development of the REDD+ Project RIU-SM.

Variable 5 to be monitored	Perception of the financial sustainability of the Project by other stakeholders.	Target:	Evaluation of the perception of the financial sustainability of the Project by other stakeholders.
		Output:	A first study to assess the perception of the financial sustainability of the Project by the other stakeholders.
		Outcome:	The results of the first study on the general knowledge of the REDD+ Project RIU-SM by the other stakeholders regarding the planning, management, monitoring, evaluation and follow-up of the project, which constitutes the initial condition of these indicators, will be evaluated periodically during the implementation of the project.
		Impact:	This indicator allows to periodically measure the evolution of the conditions regarding the general knowledge of the REDD+ Project RIU-SM by the other stakeholders, regarding the planning, management, monitoring, evaluation and follow-up of the Project and to evaluate its progressive impact on the development of the REDD+ Project RIU-SM.

Type of measurement	Scale of values and results referring to the 5 variables described above and the preparation of periodic reports. The evolution of all these variables will be evaluated.
Sampling Method	Sampling will be carried out in each interested party on the specified variables. Strictly statistical sampling is not necessary; the selection of the study units is defined according to their opportunity. The processing of collected information is mainly qualitative.
Frequency monitoring	It will start with a first study, duly designed, according to the variables, for all other stakeholders in 2022 and will be repeated every three years, in such a way as to study its evolution.

Differentiated impact assessment for each of the community groups and other stakeholders, including an evaluation of impacts.

In the Monitoring Plan, based on the variables described in the tables presented above and on the results of surveys and studies, a differentiation of impacts will be made for each of the community groups and for each of the other stakeholders, including the corresponding evaluation.

Monitoring the effectiveness of measures for the maintenance or enhancement of HCV attributes related to community wellbeing

In Section 4.2.2 of this document, the measures for the maintenance or improvement of HCV attributes related to community well-being were established. The effectiveness of these measures will be monitored in the Monitoring Plan, which will be included in the survey plans already referenced on the variables described in Tables 60 - 71.

The measures for the maintenance or improvement of the HCV attributes related to the well-being of the RIU-SM communities are focused on the protection, conservation and recovery of the forests and lands of the Indigenous Reservation, based on the implementation of the Sustainable Management Plan for Land and Forest (Annex 4 of the PDD-VCS), through its Strategic Elements and Project Activities.

Table 75. Monitoring of the effectiveness of measures for the maintenance or improvement of HCV attributes related to community wellbeing

HCVs	Measures to maintain or improve HCVs attributes related to the well-being of the communities	Monitoring to evaluate the effectiveness of measures to maintain or improve HCVs
HCV 4.1: Regulating and supporting areas: forest areas at the edge of large rivers and around communities.	The following specific measures are complementary to the general measures described above:	The Sustainable Management Plan for Land and Forest is monitored through the following variables: - Sustainable system established and implemented of forest and land management of RIU-SM. - Number of hectares of forest and land sustainably managed with a plan that complies with national and international standards that guarantee the conservation of forest biomass and soil carbon. These areas are located and referenced in maps by Sectors. - Deforestation areas at the RIU-SM. These areas are located and referenced in maps by Sectors. - Number and identification of communities involved in the Project, based on its sectorial and zonal organization. - System of communication and information established and implemented for the 5 areas of the RIU-SM. - Mechanism for valuation and compensation for environmental services designed and validated according to international standards. - Verifications of Project has been made. - Number of VCUs by verification registered. - Number of young people (15 to 26 years old) who have been certified in technical and technological programs related to the sustainable management of the Indigenous Reservation.

HCVs	Measures to maintain or improve HCVs attributes related to the well-being of the communities	Monitoring to evaluate the effectiveness of measures to maintain or improve HCVs
		- Number of Captains, women and youth who have participated in the establishment of the Sustainable Management Plan for Land and Forest of the RIU-SM. - Number of trained members of the Coordinator Committee, the Board of <i>Cabildos</i> and Zonal Coordinators, in the management and organizational governance to conserve the RIU-SM forests and lands. - Number of communities per Sector that have improved their communication. - Number of intimidating events on the peoples of the RIU-SM and number of events that have been resolved. - Number of people from the communities expressing satisfaction about participation in the Project. - Number of members of the Coordinator Committee, <i>Cabildos</i> Board and Captains trained by applying knowledge in the Statutes and organizational aspects of RIU-SM and ACATISEMA. - Number of basic education graduates who have been trained in integrated forest and land management. - Number of communities and people who have been trained and apply knowledge about the nature and characteristics of the Project. - Number and characteristics of the material disseminated for understanding and better participation in the project. - Number of training workshops for the indigenous population and number of people trained on the following topics: climate change, REDD+ projects, compensation for environmental services, governance, monitoring and control, and agroforestry and cultural practices.
	• Protection of the riverbanks of the four main rivers to prevent erosion and landslides along their banks. Regulation, monitoring and prevention of landslides on these banks.	- Number of hectares of protected forest on the riverbanks of the four main rivers (Vichada, Orinoco, Guaviare and <i>Brazo Amanavén</i>) around the communities by Sector. These areas are located and referenced through maps. - Number and area of landslides detected in these areas. - Number of communities and people benefiting from the protection of these areas.

HCVs	Measures to maintain or improve HCVs attributes related to the well-being of the communities	Monitoring to evaluate the effectiveness of measures to maintain or improve HCVs
	• Vigilance and control by the indigenous guard and the river communities in each Sector, through the implementation of river surveillance routes.	- Number of indigenous guards, Captains, Zonal Coordinators and members of the communities that have been trained and participate in the surveillance, control and monitoring of the areas surrounding the main rivers (Vichada, Orinoco, Guaviare and <i>Brazo Amanavén</i>) around the communities per Sector. - Number of river surveillance and control routes carried out in these protected forest areas by Sector. - Number of workshops, meetings and other training activities on forest protection on the banks of the four main rivers.
	• Surveillance and prevention of fires and impacts of strong winds, taking into account early warnings from IDEAM or other sources.	- Number of fires occurring in the areas surrounding the riverbanks of the four main rivers around the communities. - Number of strong winds detected and magnitude of their impact.
	• Training of indigenous guards, authorities and communities in the implementation of these specific measures.	- Number of indigenous guards, authorities and people from indigenous communities trained in the implementation of these specific surveillance and control measures. - Number of workshops and training meetings on the implementation of these specific measures.
HCV 4.2: Regulating and supporting areas: upland and floodplain forest areas	The following specific measures are complementary to the general measures described above:	The Sustainable Management Plan for Land and Forest is monitored through the variables described for HCV 4.2.
	• Protection of forest areas in high and flood zones.	- Number of hectares of protected forest in upland and flood zones near the communities. - Number of communities and people benefiting from the protection of these areas.
	• Surveillance and control by the indigenous guard and the communities surrounding the forest areas in the highlands and flood zones, through the implementation of land surveillance routes.	- Number of indigenous guards, Captains, Zonal Coordinators and members of the communities that have been trained and participate in the surveillance, control and monitoring of the protected forest areas in high and floodable zones, close to the communities. - Number of surveillance and control routes carried out in these protected forest areas by Sector. - Number of workshops, meetings and other training activities

HCVs	Measures to maintain or improve HCVs attributes related to the well-being of the communities	Monitoring to evaluate the effectiveness of measures to maintain or improve HCVs
		on the protection of forests in high and flood zones near the communities. - Number of fires occurring in forest areas in high and floodable zones near the communities. - Number of strong winds detected and magnitude of their impact in these areas.
	• Monitoring and prevention of fires and impacts of strong winds, taking into account early warnings from IDEAM or other sources.	- Number of fires that have occurred in high forest and flood zones near the communities. - Number of strong winds detected and magnitude of their impact in these areas.
	• Training of indigenous guards, authorities and communities in the implementation of these specific measures.	- Number of indigenous guards, authorities and people from indigenous communities trained in the implementation of these specific surveillance and control measures. - Number of workshops and training meetings on the implementation of these specific measures.
HCV 5.1: Food resource supply areas	The following specific measures are complementary to the general measures described:	The Sustainable Management Plan for Land and Forest is monitored through the variables described for HCV 5.1.
	• Protection of Heterogeneous Agricultural Areas (HAA), pastures and floodable forests near the communities.	- An established Family Agrifood Production Units System (FAPUS) per Sector. - Number of hectares of Heterogeneous Agricultural Areas (HAA), pastures and floodable forests near the communities per Sector. - Number of tons of food produced, by type of product, in Heterogeneous Agricultural Areas (HAA) near the communities by Sector. - Number of units of the Family Agrifood Production Units System (FAPUS) by Sector. - Number of communities, families and individuals in the Family Agrifood Production Units System (FAPUS). - Number of projects and their characteristics implemented for agri-food production. - Number of agreements or contracts with partner

HCVs	Measures to maintain or improve HCVs attributes related to the well-being of the communities	Monitoring to evaluate the effectiveness of measures to maintain or improve HCVs
		organizations in the development of productive projects. - Economic income of indigenous communities for their participation in the Family Agrifood Production Units System (FAPUS).
	• Surveillance and control by the communities surrounding the Heterogeneous Agricultural Areas (HAA), pastures and floodable forests near the communities, through the implementation of river and land watch routes.	- Number of Captains and people from the communities who have been trained and who participate in the surveillance, control and monitoring of the areas of the Family Agrifood Production Units System (FAPUS). - Number of workshops, meetings and other training activities on the protection of the areas of the Family Agrifood Production Units System s (FAPUS).
	• Monitoring and prevention of fires and impacts of strong winds, taking into account early warnings from IDEAM or other sources.	- Number of fires in the areas of the Family Agrifood Production Units System (FAPUS). - Number of strong winds detected and magnitude of their impact in these areas.
	• Training of authorities and communities in the implementation of these specific measures.	- Number of authorities and people from indigenous communities trained in the implementation of these specific measures for monitoring and control of the areas of the System of Family Agrifood Production Units (FAPUS). - Number of workshops and training meetings on the implementation of these specific measures.
	• Training in the implementation of collection plans and sustainable use of products generated in Heterogeneous Agricultural Areas -HAA-, pastures and floodable forests.	- Number of Captains and community members participating in the implementation of plans for the collection and use of products generated in the Heterogeneous Agricultural Areas (HAA), pastures and floodable forests. - Number of workshops and training meetings on the implementation of these specific measures.
	• Training in the implementation of productive projects (nurseries for the maintenance of seeds	- Number of captains and community members participating in the implementation of productive projects (nurseries for the maintenance of seeds and germplasm bank of native species of traditional use for nutrition; technical assistance) in the Heterogeneous Agricultural Areas (HAA) and

HCVs	Measures to maintain or improve HCVs attributes related to the well-being of the communities	Monitoring to evaluate the effectiveness of measures to maintain or improve HCVs
	and germplasm bank of native species of traditional use for nutrition; technical assistance) in the Heterogeneous Agricultural Areas (HAA) and floodable forests.	floodable forests. - Number of workshops and training meetings on the implementation of these specific measures.
	• Training for the implementation of productive projects and zoo-breeding of minor species, with the purpose of occupying the population dedicated to the hunting of wild species; and to encourage the sustainable management of hunting.	- Number of captains and community members participating in the implementation of productive and zoo-breeding projects for minor species, with the purpose of occupying the population dedicated to hunting wildlife species and encouraging sustainable hunting management. - Number of workshops and training meetings on the implementation of these specific measures.
	• Training in the preparation and application of compost and friendly organic supplements as good agricultural practices within the framework of productive projects.	- Number of captains and community members participating in the development and application of compost and friendly organic supplements as good agricultural and livestock practices within the framework of productive projects. - Number of workshops and training meetings on the implementation of these specific measures.
	• Training for water management in the communities, a necessary element for the Heterogeneous Agricultural Areas -HAA-, pastures and floodable forests.	- Number of Captains and community members involved in water management in the communities, a necessary element for the Heterogeneous Agricultural Areas -HAA-, pastures and floodable forests. - Number of workshops and training meetings on the implementation of these specific measures.
HCV 5.2: Material supply areas	The following specific measures are complementary to the general measures described above:	The Sustainable Management Plan for Land and Forest is monitored through the variables described for HCV 5.2.

HCVs	Measures to maintain or improve HCVs attributes related to the well-being of the communities	Monitoring to evaluate the effectiveness of measures to maintain or improve HCVs
	Protection of material supply areas.	- Number of hectares of material supply areas protected. - Number of communities, families and individuals in material supply areas. - Number of projects and their characteristics implemented in material supply areas. - Number of agreements or contracts with partner organizations in the development of projects in material supply areas. - Economic income of indigenous communities for their participation in the areas of materials supply.
	Surveillance and control by the communities neighboring the material supply areas near the communities, through the implementation of river and land surveillance routes.	- Number of Captains and community members trained and participating in the surveillance, control and monitoring of material supply areas. - Number of workshops, meetings and other training activities on the protection of material supply areas.
	Monitoring and prevention of fires and impacts of strong winds, taking into account early warnings from IDEAM or other sources.	- Number of fires in material supply areas. - Number of strong winds detected and magnitude of their impact in these areas.
	Training of authorities and communities in the implementation of these specific measures.	- Number of authorities and people from indigenous communities trained in the implementation of these specific measures for monitoring and control of material supply areas. - Number of workshops and training meetings on the implementation of these specific measures.
	Training in the design and development of sustainable forest harvesting and utilization plans for the construction of houses and canoes, as well as for the manufacture of utensils for traditional use,	- Number of Captains and community members participating in the implementation of plans for the collection and use of products generated in the material supply areas. - Number of workshops and training meetings on the implementation of these specific measures.

HCVs	Measures to maintain or improve HCVs attributes related to the well-being of the communities	Monitoring to evaluate the effectiveness of measures to maintain or improve HCVs
	handicrafts and other materials and tools for agroforestry systems in the conucos.	
HCV 6.1: Sacred sites	The following specific measures are complementary to the general measures described above:	The Sustainable Management Plan for Land and Forest is monitored through the variables described for HCV 6.1.
	• Protection of areas where there are sacred sites.	- Number of sacred sites and characterization. - Location through maps. - Number of hectares of protection of sacred sites around approximately 2 km.
	• Surveillance and control by the indigenous guard and the communities surrounding the sacred sites.	- Number of indigenous guards, Captains and community members trained and involved in the surveillance, control and monitoring of sacred sites. - Number of workshops, meetings and other training activities on the protection of sacred sites.
	• Training of indigenous guards, authorities and communities in the implementation of these specific measures.	- Number of indigenous guards, authorities and people from indigenous communities trained in the implementation of these specific measures for monitoring and control of sacred sites. - Number of workshops and training meetings on the implementation of these specific measures.
	• Training in the monitoring of places of spiritual and cultural value.	- Number of indigenous guards, authorities, and people from indigenous communities trained in the monitoring of sites of spiritual and cultural value. - Number of workshops and training meetings on the implementation of these specific measures.
	• Guidelines for a pilot project for responsible and sustainable nature tourism in areas of cultural importance for recreation and relaxation.	- Guidelines plan for a responsible and sustainable nature tourism pilot project in areas of cultural importance for recreation and relaxation. - Number of communities and individuals participating in the nature tourism pilot project.
	• Training communities in the cultural and environmental	- Number of people from indigenous communities trained in the cultural and environmental management of the tourism

HCVs	Measures to maintain or improve HCVs attributes related to the well-being of the communities	Monitoring to evaluate the effectiveness of measures to maintain or improve HCVs
	management of the tourism projects they develop.	projects they develop. - Number of workshops and training meetings on the implementation of these specific measures.
Type of measurement	Scale of values of the variables obtained in the monitoring through satellite images and their processing and scale of values referring to the other discrete and continuous variables, considered in the previous table, with their collection methods through specific formats and their due statistical processing. Some of these variables are complemented through specifically designed surveys. The evolution of all these variables will be evaluated.	
Sampling Method	Variables based on satellite images do not require sampling, since the entire corresponding universe is studied. Among the discrete and continuous variables referred to above, there are some that are also studied in the entire corresponding universe defined according to statistical criteria. Those that require surveys will have a simple random sampling method that corresponds to the Zones and Sectors.	
Frequency monitoring	Each time verification is required, which may be annual or biennial.	

Community Monitoring Plan to achieve the Gold Level

Table 76. Climate Change Adaptation Benefits (GL1) for communities

Description of the benefit of adaptation to climate change for communities	Indicators of the benefits of adaptation to climate change for communities
1) Protection in communities along riverbanks, mainly in large rivers, from possible landslides and erosion in gullies. Communities adapt to these critical situations through measures related to HCV 4.1. Decrease in the possibility of deforestation of riverbanks, rivers and lagoons due to deforestation and land use change.	- Number of communities at risk from gully erosion and landslides on the banks of the four main rivers (Vichada, Orinoco, <i>Brazo Amanavén</i> and Orinoco). - Number of communities protected by the forest that prevents erosion and gully slides on the banks of the four main rivers. - Number of people by gender and age group protected from gully erosions and landslides on the banks of the four main rivers. - Number of people by gender and age group at risk.
2) The regulation and control of soils or biogeophysical conditions, such as soil and aquifer	- Number of communities at risk from fires, floods and droughts in upland and flood-prone forest

Description of the benefit of adaptation to climate change for communities	Indicators of the benefits of adaptation to climate change for communities
formation, fire control, flood regulation and drought control, benefits communities in their protection and food provision (agroforestry, silvopastoral and fish farming systems), including areas outside the Project Area (in the Leakage Belt), and in relation to HCV 4.2.	areas related to HCV 4. - Number of communities protected from fires, floods and droughts in upland and flood-prone forest areas. - Number of people by gender and age group protected from fires, floods and droughts in upland and flood-prone forest areas. - Number of people by gender and age group at risk from fires, floods and droughts in upland and flood-prone forest areas. - Number of people benefited by the provision of food (agroforestry, silvopastoral and fish farming systems), including areas outside the Project Area.
3) Ensuring and maintaining food guarantee in communities through their adaptation to climate change resulting from the protection of forests that provide fruits, medicinal plants and game animals, fish supply, food products from agroforestry systems, food products derived from pasture planting (in forest conversion). And supply of energy sources (firewood).	- Number of communities per Sector benefited by the provision of fruits, medicinal plants and game animals, food products from agroforestry systems and those derived from the planting of pastures, in forests near the communities, lagoons, canals and HAA. - Number of communities per Sector benefited by the supply of energy sources (firewood), in forests near the communities, lagoons, streams and HAA. - Number of people by gender and age group benefited by the provision of fruits, medicinal plants and animals for hunting, food products from agroforestry systems and those derived from the planting of pastures, in forests near the communities, lagoons, streams and HAA. - Number of people by gender and age group benefited by the supply of energy sources (firewood), in forests near the communities, lagoons, streams and HAA. - Number of people benefited by the provision of food (agroforestry, silvopastoral and fish farming systems), including areas outside the Project Area.
4) Contribution to the food guarantee and sustainability of the communities by reducing the migration of fauna and flora species caused by the impacts of climate change, and preserving the niches of species that are important for their	- Number of communities per Sector benefited by the decrease in the migration of fauna and flora species in forests, lagoons and streams near the communities. - Number of people by gender and age group

Description of the benefit of adaptation to climate change for communities	Indicators of the benefits of adaptation to climate change for communities
own food and that of the communities.	benefited by the decrease in the migration of fauna and flora species in forests, lagoons and streams near the communities.

Exceptional community benefits (GL2)

The indigenous people living in the RIU-SM communities are small farmers, as they work on their crops, subsist on the products harvested and manage their own resources. These farmers are a vulnerable population with poverty rates and unsatisfied basic services (see Section "2.1.4 Social Parameters" of this document). In this purport it refers to all the communities of the Indigenous Reservation and the role of women, as described in Section 4.1.1.

Women are one of the most representative community groups, since they are the ones who carry out the main production tasks in the conucos (areas where they grow their food products, mainly bitter cassava). Throughout the year, they plant the *conuco*, take care of it, harvest the products, transport them and transform them into food, such as *mañoco (fariña)*, *casave*, starch and others. They are also in charge of handcrafting the utensils needed to load, grate and dehydrate the cassava, as well as other utensils for domestic use, such as baskets made of vines. The men are engaged in hunting, fishing, gathering forest fruits and vegetable products, preparing the conucos for planting (cutting, burning and cleaning), building houses, canoes and tools for hunting and fishing, and trading and exchanging with other communities, settlers and white traders.

The following are different indicators of the impacts on the aspects indicated above as exceptional benefits on the well-being of indigenous small farmers and women:

- Number of indigenous people (smallholder) women / men, number of indigenous people by age group and ethnicity, who have benefited from ACATISEMA governance decisions, in particular by full and effective participation in decisions.
- Number of indigenous (smallholder) women / men, by age groups (youth, adults) and ethnicity, by Sector, engaged in their crops, products and management of their resources.
- Poverty index and unsatisfied basic services.
- Number of women / men, by age groups and ethnicity, by Sector, involved in production (areas of cultivation of their food products, mainly bitter cassava).
- Number of women / men, by age group and ethnicity, by Sector, who participate in the harvest, transportation and transformation of food.
- Number of women / men, by age group and ethnicity, by Sector, who participate in the handicraft elaboration of utensils for the loading, grating and dehydration of cassava.
- Number of tons of products obtained in their conucos, by Sector.
- Characteristics of trade and exchange with other communities, settlers and white traders.
- Number of health posts that have been established with the Project and expected number of indigenous women / men benefiting from these health posts.

- IPS obtained with Project resources.
- Number of indigenous women / men, youth, adults and older adults, by ethnicity, benefiting from oral health care (dental prostheses).
- Number of deep wells installed and equipped to supply drinking water.
- Number of indigenous communities, women / men, youth, adults and seniors, by ethnicity, benefited with the supply of drinking water.
- Number of indigenous communities, women / men, youth, adults and seniors, by ethnicity, benefited with support for home improvement.
- Number of indigenous communities, women / men, youth, adults and seniors, by ethnicity, benefited with support for domestic markets, particularly in critical situations (floods and others).
- Number of meetings, with number of participants, for the elaboration of Ethnic and Territorial Life Plans.
- Number of ACATISEMA headquarters built and improved with project resources.
- Number of agreements with other institutions that are made in partnership with ACATISEMA for the development of productive projects.
- Number of indigenous people, women / men, youth, adults and seniors, by ethnicity, associated with the Cooperative.
- Quantity of marketed products produced by indigenous people (small farmers).

The main risk foreseen is the non-participation of the communities in the REDD+ Project RIU-SM and failures in the communication system, for which participation measures have been designed, such as Activities A1.2 and A1.3, which provide means and support in communication channels and strengthening of governance. No other significant risks are foreseen for the different aspects mentioned above. The net benefit is always positive. In Annex 23 of the validated PDD-VCS and in Section "4.3.3 Mitigation Measures and Monitoring actions", page 280 of this same PDD-VCS, internal, external and natural risks have been identified, characterized and evaluated for the whole Project, and the corresponding mitigation measures have been proposed.

4.4.2 Monitoring Plan Dissemination (CM4.3)

In Sections "2.3.1 Stakeholder Access to Project Documents", "2.3.2 Dissemination of Summary Project Documents", "2.3.3 Informational Meetings with Stakeholders", and "2.3.5 Information to Stakeholders on Validation and Verification Process" of this document, all the measures implemented by the Project to disseminate all the commitments and results of the REDD+ Project RIU-SM have been presented, including monitoring plans, their results and their verification by the auditors that develop the validation / verification processes.

A web page was created for the project www.selvamatavenredd.org where information on the results of the monitoring plan will be presented. Newsletters, brochures and booklets are also distributed.

Project documents (PDD, reports) are available on Verra Registry website: <https://registry.terra.org/app/projectDetail/VCS/1566>.

Meetings are planned with official and private institutions where written material is presented to disseminate and socialize the results obtained.

These media are distributed directly in the territory, in the different communities, and are accessible to indigenous communities, community groups and other interested parties.

4.5 Optional Criterion: Exceptional Community Benefits

4.5.1 Exceptional Community Criteria (GL2.1)

It is important to note that the so-called "small owners/producers" are part of the same RIU-SM communities, where all the family members participate in the establishment and use of crops in their conucos. Thus, when the community, in general, participates in decision making and benefit-sharing, implicitly so do the "small landowners/producers".

Thus, small landowner/producer members of the communities have land management rights in the Project Area and rights to claim benefits because their activities will generate benefits on climate, and in the context of benefits for the community, and biodiversity in the frame of the project.

As mentioned in Sections "2.1.6 Stakeholder Identification / Rights of the main stakeholders", "2.5.1 Statutory and Customary Property Rights" and "2.5.2 Recognition of Property Rights" of this document, the indigenous peoples belonging to the 6 ethnic groups of the RIU-SM have the right of ownership of the territory and natural resources present there, for their customary use, supported by the following documents:

- Resolution 037 of July 22nd, 2003 issued by the INCORA, "by which is unified under the name of *Resguardo Indígena Selva de Matavén*, 16 indigenous communities joined on the right side of the *Vichada* river, left side of the *Orinoco* river, *Brazo Amanavén* and also expands the Unified Reservation, located in the jurisdiction of the municipalities of *Cumaribo* and *Inírida*, *Guainía* and *Vichada* departments" (Annex 2.2.1 of validated PDD-VCS).
- Folio of Real Estate Registration No. 540-0005491 of August 4, 2008, issued by the Office of Public Records of *Puerto Carreño*, *Vichada*, by which the territory of RIU-SM is registered as property of 6 ethnic groups (Annex 2.2.4 of validated PDD-VCS), according to Resolution 037/2003.
- Deed No. 3798 of September 15, 2008, Notary 19 of Bogotá D.C. Circle, by which the Resolution 037/2003 was protocolized (Annex 2.2.3 of validated PDD-VCS)

In addition, as proponents of the Project, the RIU-SM communities represented in their association ACATISEMA, together with MEDIAMOS F&M S.A.S. they have the rights over the quantifiable benefits in GHG emission reductions generated by the Project (according to Section "3.2.2 Net Impact" of this document), and over the benefits generated in the Community (according to Section "4.2.1 Expected Community Impacts" of this document) and to the Biodiversity (according to Section "5.2.1 Expected Biodiversity Changes" of this document), through control and surveillance of forests and natural resources, implementation of information, communication and transportation systems, strengthening governance, ensuring food sustainability, education programs, implementation of productive projects, valuation and quantification of GHG emission reductions and implementation of programs for the improvement of health aspects, treated water, housing improvement, attention to special population, headquarters and attention to calamities.

On the other hand, through the ACATISEMA Statutes (Annex 2.1.2 of validated PDD-VCS) it is guaranteed

that the rights of all associated peoples are respected, especially land ownership for the population of the 6 ethnic groups of the RIU-SM, and through the Strategic Alliance Agreement between ACATISEMA and MEDIAMOS F&M .S.A.S. (Annex 2.1.11 of validated PDD-VCS) it is guaranteed that the distribution of resources derived from compensation for environmental services rendered (previously verified by VVBs) will be equitable in favor of the indigenous communities of RIU-SM.

The community, in a participatory manner, through ACATISEMA's organizational structure, intervenes in the decisions and periodically validates the state of conservation of the forests and the results and benefits achieved, seeking verification and certification for having conserved the biomass of these forests. In this way, emissions from avoided deforestation reduced, and the amount of carbon retained in the biomass is calculated.

4.5.2 Short-term and Long-term Community Benefits (GL2.2)

The short-term and long-term net welfare benefits to members of the RIU-SM indigenous communities, which include, of course, smallholders/producers (corresponding to people of the 6 ethnic groups), have been presented extensively in Sections "2.1.8 Project Activities and Theory of Change" and "4.2.3 Net Positive Community Well-Being" of this document, and are shown to be consistently positive.

4.5.3 Community Participation Risks (GL2.3)

As mentioned above, it has been identified that the main risk that could arise is related to the participation of indigenous community members, which include, of course, small landowners/producers, and to failures in the means of communication, in the land-use, in the scenario with the Project.

According to Adaptive Management Plan -AMP (validated PDD-VCS, Section "4.3.3 Mitigation Measures and Monitoring actions", page 280), some risks to community participation (among other), related to assumptions, have been identified, which have the respective mitigation measures to manage them and achieve the expected positive impacts (Impacts 3 and 4 of Section "4.2.3 Net Positive Community Well-Being" of this document). The mentioned mitigation measures are:

- ✓ Strictly comply with legal and institutional framework concerning indigenous communities, observing the legislation that exists about it in the country and respecting the provisions of the Statutes of ACATISEMA.
- ✓ 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.
- ✓ Consolidate these rights and duties by applying ACATISEMA Statutes in the constitutional and legal framework.
- ✓ Keep ACATISEMA unit to preserve their rights, through consultations and dialogues.
- ✓ Keep training workshops on governance at the level of all communities, allowing awareness of organizational importance and its operating mechanisms.
- ✓ 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.
- ✓ Permanently maintain 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.

- ✓ 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.
- ✓ Strengthen education in ethical values and their application in project management, through zonal workshops.
- ✓ 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 continuous and permanent manner, the training of indigenous zonal coordinators and Co-director, considering that this group of Indigenous people will take increasing responsibility in the management of Project.
- ✓ Strengthen technical and administrative training for Project Co-Director, Zonal Coordinators and the Board of ACATISEMA.
- ✓ Train captains, *Cabildos* Board, Board of ACATISEMA, Coordinator Committee and Zonal Coordinators on good governance practices and relationships, through regional workshops.
- ✓ Maintain the administrative and technical offices of the REDD+ Project RIU-SM in the RIU-SM territory.
- ✓ Monitor improving social and economic conditions of indigenous peoples of the Indigenous Reservation.
- ✓ Widely spread among communities about the benefits of the project, publishing a booklet and posters in which these benefits are illustrated.
- ✓ Intensify the dissemination of the Agreement, so that all communities clearly aware of the points agreed between ACATISEMA and MEDIAMOS.

On the other hand, and according to analysis to Non-Permanence Risk (Annex 23 of validated PDD-VCS), in the “with Project scenario”, more than 50 percent of households living inside the Project Area, and traditionally their sustain are dependent on this area, have been consulted and, as consequence, the Project generates net positive impacts on the social and economic well- these families and communities.

Also, participatory processes have been implemented in the different phases of the project, as explained below:

Preparation and planning phase of the REDD+ Project RIU-SM and social and biodiversity monitoring programs.

- Socialization and training workshops to develop a participatory and consensual process to design the Project, and to transfer and make available information regarding climate change, REDD+ scheme and forest protection processes, with members of the ACATISEMA Coordinator Committee and the Board of *Cabildos* of RIU-SM, the Captains, the indigenous guard and other leaders of the indigenous communities.
- Selection of indigenous guards by captains and *Cabildos* of the indigenous communities and presentation sheet of guards approved by community captains and *Cabildos* of Sector.
- Establishment of commitments and agreements of participants and beneficiaries in the REDD+ Project RIU-SM.

(Annexes 1.1, 1.4, and 1.5 of validated PDD-VCS)

Development and implementation phase.

- Management to implement the information, communication and transportation systems for its adequate development and provision of services and benefits.
- Participation of the indigenous communities in the socialization and training meetings and workshops that continue to be held and through their authorities and their ACATISEMA Association (Annexes 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, and 1.8 of validated PDD-VCS and Annex 1 of Monitoring Reports - VCS).
- Establishment and appropriation of control and surveillance routes for the development of control and surveillance tours; verification of the conservation status of plots and presentation of reports and indigenous guard tour reports.
- Continuity and improvement of production processes for food production.
- Accompaniment and training to install agricultural production systems for families involved in productive and food guarantee projects.

Results and benefits presentation phase

- Participation in events by the coordinators and representatives of the indigenous guard, presenting results and findings.
- Implementation of means of dissemination and socialization of results, with the participation of beneficiaries, to validate community evidence and benefits received in the participatory experience of the REDD+ Project.
- Participation in validation and verification processes with auditors.

Additionally, in Section "2.1.12 Risks to the Project" of this document, risks have been identified, some associated with the participation of the communities (such as 2, 4, 5 and 6), for which actions have been designed to mitigate them.

4.5.4 Marginalized and/or Vulnerable Community Groups (GL2.4)

As described in Sections "2.1.4 Social Parameters" and "4.1.4 Without Project Scenario: Community" of this document, all RIU-SM community groups can be considered vulnerable and the Project precisely designs actions to generate commitments with the communities to gain net positive benefits, as explained in Sections "4.2.1 Expected Community Impacts" and "4.2.3 Net Positive Community Well-Being" of this document, and detailed in the following Table 77.

Table 77. Vulnerable community groups that will gain positive net benefits

Vulnerable community groups	Women / Men
	Youth
	Traditional authorities: Shamans, traditional doctors, healers and shepherds.
	Ethnic groups: <i>Cubeo, Curripaco, Piapoco, Piaroa, Puinave</i> and <i>Sikuani</i> .
Net Positive	Correspond to expected community impacts that are net positive:

Impacts	Impact 1: Improved capacity to develop monitoring of the quality of ecosystem services and participatory surveillance, in particular, of specific measures in the recovery and improvement of community HCVs. Impact 2: Recovery and improvement of the conditions of community HCVs, as described in Section 4.1.3 of this document. Impact 3: Improvement and strengthening of ACATISEMA's governance in the <i>Resguardo Indígena Unificado - Selva de Matavén – RIU-SM</i>, for decision making. Impact 4: Increasing and strengthening of the level of participation of people from community groups in activities related to the REDD+ Project RIU-SM. Impact 5: Improved food supply at the household level (due to the implementation of FAPUS) through the implementation of food guarantee projects and support to the Captains and other people who participate in this system (women, men and youth). Impact 6: Improved environmental knowledge of the communities about the state of the forests, soils and fauna that inhabit them, for timely decision making. Impact 7: Improvement of the economic income conditions of the families of each community group, through the commercialization of surpluses and the strengthening of productive chains. Impact 8: Availability of financial resources that will contribute to the sustainability and improvement of the living conditions of the indigenous communities of the RIU-SM.	
Benefit access	Barriers / Risks that could prevent benefits from going to smallholders/producers, community members, the marginalized and/or the vulnerable	Evidence that Barriers / Risks have been addressed
	Barrier 1: Entry of outsiders for unplanned land use. Risk: Loss of forest areas in deforestation processes due to unplanned burning and illegal extractive activities.	Reports on surveillance and control of the territory through the routes established in the RIU-SM.
	Barrier 2: Scarce information and socialization of good agricultural practices. Risk: Families that have doubts about the Project and do not adopt sufficient sustainable practices to improve the conditions of their conucos.	Dissemination material, training minutes, technical advisory reports and agricultural productivity data.
	Barrier 3: Low participation of community members to contribute to the monitoring and control of the RIU-SM territory. Risk: Failure to sufficiently protect and conserve the natural resources of the territory (including the forest) of the RIU-SM.	Minutes of training and awareness- raising sessions on the commitments acquired in the protection of the natural resources of the RIU-SM.

	Barrier 4: Producers do not have sufficient capacity to develop sustainable productive projects, continuing with habits that deteriorate the resources for their subsistence. Risk: Doubts about the application of friendly and sustainable practices to implement projects in production chains.	Minutes of training sessions for families participating in the productive projects, as part of the advisory services provided by expert entities (e.g., Fedecacao).
	Barrier 5: Low participation in training, accompaniment and socialization workshops. Risk: The beneficiary families do not see improvements in their economic conditions since the implementation of the productive projects.	Technical reports on productive projects, lessons learned and benefits achieved. Workshops to socialize the development of productive projects.
	Barrier 6: Low confidence in the success of productive projects. Risk: Doubts about participation in production chains and food guarantee.	Management reports on productive projects under agreements with expert institutions.
	Barrier 7: High dependence on the natural resources of the RIU-SM and low knowledge of the natural history of the species and their ecological importance. Risk: Doubts about the adaptive change generates by reducing the use of direct consumption of some species of flora and fauna, important for the functionality and sustainability of the ecological units of the RIU-SM, and if these species disappear, how its related to the decrease in quality and quantity of the environmental services of the territory.	Design of measures taken to mitigate pressures on HCVs and training sessions on the importance of protecting the source of environmental services in the territory.
Negative Impacts	No small landowner/producer or community member has been identified as being marginalized or discriminated (as discussed in Section "2.3.11 Anti-Discrimination Assurance" of this document) and whose welfare would not be affected by Project activities, on the contrary, as described in Sections "4.2.1 Expected Community Impacts", "4.2.2 Negative Community Impact Mitigation", "4.2.3 Net Positive Community Well-being", and "4.4.1 Community Monitoring Plan / Exceptional Community Benefits" of this document, the impact is always positive in the Project land use scenario, generating benefits to the well-being of the indigenous communities. On the other hand, as indicated in Section "4.2.2 Negative Community Impact Mitigation / Measures to mitigate any negative impact arising from internal conflicts within the communities" of this document, the authorities of the Indigenous Reservation and the ACATISEMA Association, as the entity that represents the RIU-SM communities and organizes the operation of the territory and the actions that occur in it, have the authority and resources to resolve any conflict that may arise from the implementation of the Project. Finally, through the ACATISEMA - MEDIAMOS Joint Commission, guidelines are established to ensure that the benefits are distributed equitably and favor all the inhabitants	

	of the RIU-SM.

4.5.5 Net Impacts on Women (GL2.5)

Women, being a significant community group in the RIU-SM, appear as potential beneficiaries in the net positive impacts achieved by the implementation of the project, as described in Section "4.2.1 Expected Community Impacts" of this document.

In this sense, the REDD+ Project RIU-SM has proposed, as one of its most sensitive purposes, to promote actions so that women understand their rights, recognize their role within their communities, understand the possibilities for their personal development, become part of the administrative bodies of the indigenous reservation and ACATISEMA, within decision-making scenarios, and implement projects that benefit them.

The success of this purpose has had some advantages, but it has also encountered situations that represent certain obstacles inherent to the traditional condition of indigenous women in Colombia and in the RIU-SM.

According to (Rodriguez, 2017) and (Vergel B. & Martínez M., 2021) indigenous women have been characterized for having the responsibility of generating offspring and guaranteeing it. In addition, they are in charge of transmitting their customs, traditions, ideologies, beliefs, language and other aspects that identify the communities and, specifically, their reservations. They tell the story of their ancestors' lives, their history, their community dynamics and how they have lived and survived over time in their territory. All this cultural influence is transmitted to their children and grandchildren orally, when they carry out certain types of activities such as farming, preparing their food, making pottery and weaving their blankets and backpacks, activities that are essential as a contribution to the food and economic sustainability of their communities (when they manage to market their handicrafts), since, as is well known, most indigenous women are very talented with crafts and creative when performing any type of weaving or pottery work. They are fundamental to preserve the traditions and culture of their reserves.

However, they have also been the most vulnerated.

They are the ones who suffer most from the losses or injuries to their families caused by armed conflict, and they are also the ones whose rights are most violated, given that sexual violence, torture, massacres, forced disappearances and domestic violence end up having consequences mainly on them. For this reason, they are constantly anxious and worried about their future, their family, their territory and their traditions. But despite all these situations, they always keep in mind that life is the most important thing, so they try, in any threatening situation, to protect their lives and those of their children. Although there are some programs and projects aimed at protecting indigenous communities and eradicating violence, they have not yet achieved sufficient results for the benefit of women in their territories.

These women tend to be ignored because this situation is often not taken with the necessary importance. There are no public policies or concrete actions to address this type of problem, which is why inequality in education, health, social security, among other aspects, has persisted for so long, and they have been invisible. They usually seek approaches with the Colombian government to obtain, among other critical services, those related to health according to their needs and education with the same consistency and equality as the rest of the national community, with the corresponding respect for their culture, traditions, language and ideologies (intercultural and bilingual education), with which they can learn other languages, without leaving aside their native language. Their interest is to contribute to their social development with guarantees and autonomy. However, no significant achievements have been made in this direction.

Associated with this, indigenous women, throughout their history, have been invisible to political

development in most indigenous reservations and to the rest of society. Now they are looking for spaces to demand their right to participation, so that they can contribute to decision making and in matters that are of interest to their lives and their community. In the indigenous communities, women are clamoring for fair and dignified treatment so that their rights are no longer violated and situations of inequality are avoided.

It should be noted that women leaders from various communities have tried, by all possible means, to inform themselves and acquire sufficient knowledge about their rights and duties in their communities and in their society, in order to train themselves professionally and acquire the necessary elements and skills to raise the situations that afflict them and present the solutions they require in relation to the dignity of their gender, which is traditionally affected, mainly, by the policies that exist in their own territories..

It is important to highlight that nowadays the visibility and active participation of indigenous women has been promoted through the work with some organizations. Consequently, the interest of some public and private institutions has been identified and they have included them in various activities so that they can participate in the decisions that affect them. But many indigenous women, on many occasions, do not participate because they are not aware of the problems or violations of their rights, as a result of the fact that their traditions have naturalized this marginalization.

It is worth mentioning that when indigenous women find the opportunity to leave their communities, they engage in activities that also violate their rights or are very exhausting for most of them, which they must undertake in order to support themselves or their children, such as excessive housework, fixing and cleaning houses, commercial premises or other types of spaces or, in the worst cases, being forced to sell their bodies in order to receive some type of economic remuneration.

In the other hand, Regional Project Fund for the conservation of the Guiana Shield (GSF, 2015) specifically in the *Resguardo Indígena Unificado – Selva de Matavén*, there have traditionally been conflicts related to the way women are leading their lives, their participation and their development in their communities.

In addition, contact with the " *White man*" society has generated different aspirations for obtaining other types of resources.

- The interest in obtaining monetary income has caused men to be absent from their homes and communities, which places a greater burden on women who must fill this void. Women must invest more time in their homes and leave aside their social life and individual promotion spaces, so that the tasks of "women leaders" are displaced by the need to attend to daily tasks.
- In their interest to interact with the "western" culture, parents are choosing to prefer that only boys and young men have access to education, relegating women to household management tasks.
- The interference that the indigenous culture has suffered from religious collectives and the external lifestyle has resulted in macho behavior and devaluation of women, which has limited their opportunities and spaces for participation. The idea that equality hinders the rules of the game for commerce, consumption and socio-political representation is generalized at some levels.

Thus, as part of the purpose that the REDD+ Project RIU-SM has with the female population of the indigenous reserve, it is sought that, gradually, a considerable number of women participate in the "Project Activities". In addition, they will benefit from the other actions being implemented in the territory and their leadership will be promoted among the indigenous authorities of RIU-SM and ACATISEMA, without neglecting their role as family administrators and, on some occasions, as heads of household (as described in Section "2.3.10 Stakeholder Participation in Decision-Making and Implementation" of this document,

which explains the gender approach that the Project has adopted and that is also defined in the Strategic Alliance Agreement between ACATISEMA and MEDIAMOS).



"Sebucanes" made by artisan women of the Cubeo ethnic group (San Luis de la Rompida community, Zone 4)

The following indicators are related to the achievement of the Project's purpose with the women of the RIU-SM. These are based on those presented in Sections "4.2.1 Expected Community Impacts" and "4.4.1 Community Monitoring Plan / Exceptional community benefits" of this document (where they are generally oriented), which are here specifically focused on this population group, in order to determine the impact generated for them:

In relation to participation in or influence in decision making:

- Number of women that are members of the Coordinator Committee, *Cabildos* Board, Captains, and Indigenous Guard, who improve and apply knowledge in the statutory, organizational, and governance aspects to have the space to contribute at the administrative and decision-making level.
- Number of women that participate in reunions Zonal, of General Assembly, Coordinator Committee, *Cabildos* Board, and Captains.

In relation to participation in REDD+ Project RIU-SM Activities and to benefit in well-being:

- Number of women trained in climate change, in the nature and characteristics of the REDD+ Project RIU-SM, and in the monitoring of the quality of ecosystem services and surveillance and control of territory, who reach a good level in the application of environmental knowledge.
- Number of women who improve the communication processes.
- Number of women who improve the performance of agricultural practices for food production and their daily household chores.
- Number of graduated high school women who have started their superior educational programs to become the future professionals who manage their territory.

- Number of women participating in the productive projects to ensure food guarantee, self-sustainability and improve the economic income.
- Number of women associated in the multipurpose cooperative, that includes the production, processing and marketing of the products of the chain projects.
- Number of women benefited by implementation of other actions, according to their needs and proposals.

4.5.6 Benefit Sharing Mechanisms (GL2.6)

The so-called "small landowners/producers", as explained above, are part of the communities of the RIU-SM, so they have formed part of the same decision-making mechanisms and participation in the distribution of the benefits of the Project for the communities and community groups. Taking into account the organizational structure of the Indigenous Reserve and the ACATISEMA Association (see Section "2.1.2 Project Objectives" of this document), where indigenous authorities representing the communities, as Captains, *Cabildos*, members of the Coordinator Committee, indigenous guards and community leaders, converge in the decision-making bodies (meetings and assemblies), as described in Section "2.3.10 Stakeholder Participation in Decision-Making and Implementation" of this document). In the following Table 78, the role of indigenous authorities in decision making and benefit sharing is detailed.

Table 78. Roles of indigenous authorities in decision making and benefit sharing

Benefit-sharing mechanisms	Description of the participation mechanism	Role of indigenous community representatives
Cabildos Board and Coordinator Committee Meeting	It is held every year as one space where the members of the <i>Cabildos</i> Board and the Coordinator Committee are informed of the expired budget execution, evaluated the performance of the other indigenous authorities, and analyze and approve the budget for the following year.	The budget executions are decided by the <i>Cabildos</i> Board according to the proposal presented by the Coordinator Committee and are decided based on the needs, projects, and proposals brought by the indigenous authorities from the communities they represent. On the other hand, in another sectorial meeting they socialize the last determinations, meanwhile, make a call for the massive participation of the indigenous population.
Zonal Assemblies	In these Assemblies, the Captains and <i>Cabildos</i> of each Sector participate and decide, with the accompaniment of the indigenous guard and different people of communities. The community groups, made a bank of projects that will then be taken and evaluated on the General Assembly to be discussed and approved.	The Captains and <i>Cabildos</i> are in charge of socializing with the ACATISEMA's directors' needs of the communities, including the "small landowners/producers", requesting the required attention.

Benefit-sharing mechanisms	Description of the participation mechanism	Role of indigenous community representatives
General Assembly	It is made up of the Captains of each community, the <i>Cabildos</i> of each Sector, the coordinators of the work areas and the board of directors of the Association (Coordinator Committee) and other guests (indigenous guard, Zonal Coordinators, community leaders), who's made meetings every 3 years to: - Receive reports from the Cabildos Board and the Coordinator Committee on the actions carried out. - Make general decisions on the distribution of resources and on which projects will be carried out. - Elect a new Coordinator Committee.	Representatives of the General Assembly participate, eventually, in the execution of the Project Activities and in the delivery, distribution, and provisioning of the benefits achieved. They are also overseers and must be informed of the progress and results of performance, for which in minutes and attendance lists are evidence of his participation.
Community meetings	They are directed by the Captains and/or the <i>Cabildos</i> of Sector, in order to consult with the members of the communities on the needs of the population, their proposals and projects.	The Captains and/or the <i>Cabildos</i> of Sector gather the needs of the communities, their proposals, and projects, to be taken to other decision-making bodies, where they are presented for approval. As a form of feedback, new meetings are held to concrete the specific actions to be carried out, which result in community benefits.
RIU-SM REDD+ Project Activities Execution Event	The distribution mechanisms for the execution of resources are as follows: - The determination of the weight of each Activity and other actions to generate welfare for the communities, carried out each year of the project execution, to implement the Sustainable Management Plan for Land and Forest, then the ACATISEMA's decision-makers, will decide and elaborate an annual budget general including these requirements. - The definition of an equitable allocation among the RIU-SM Sectors of resources to be used at the discretion of the indigenous communities (called "Sectorial Social Welfare Fund"),	The distribution and delivery of benefits is carried out in constant accompaniment of the indigenous authorities, to verify and guide the use of such benefits. The actions carried out by the RIU-SM communities and their representatives are aimed at fulfilling the Project's activities and providing other benefits in health, water, housing and attention to special populations and in case of calamities.

Benefit-sharing mechanisms	Description of the participation mechanism	Role of indigenous community representatives
	according to population distribution, and which generate additional benefits.	

In the development of these participation mechanisms, minutes of the meetings are prepared, where the decisions taken are recorded, as well as attendance lists, audiovisual record, and documents (such as vouchers, contract execution reports, and supervision reports) with which verify these actions corresponding to the implementation of the Project Activities and to the provision of goods and services to provide wellbeing to the communities. The specific beneficiaries are listed for each action and the intervened communities are each time. All this documentation generates transparency in the specific implementation of each Project Activity and in the distribution of benefits, which is also evaluated later in these instances of community participation (meetings and assemblies).

In relation to the general transparency of the Project, in Section "2.5.1 Step 2 Investment analysis (VT0001)" of validated PDD-VCS, page 167, the applied stages in relation to the source of resources and their expenditure were explained, highlighting, here, that in the first phase of the Project the financing was achieved through the efforts of the proponents, especially MEDIAMOS F&M S.A.S., which contributed with its own resources, loans, and investor resources, to guarantee the execution of the Activities in the design and the first years of implementation. In the same time, both proponents contributed with working capital to achieve the Project's Objective. Once the break-even point is reached, financial support is guaranteed for the coming years, with the economic resources derived from the commercialization of certified VCUs and the human resources for the correct and complete execution of the Project's Activities, thus achieving its sustainability.

The Verified Carbon Units -VCUs- certified in the years 2013, 2014, 2015, 2016 and 2017 were the basis for the budget execution of the Project Activities and the generation of benefits in the years 2017, 2018, 2019 and 2020, which was evaluated in the aforementioned participation instances, which has been corroborated by the auditors in the different verification events that have been carried out. It is expected that going forward, these participation mechanisms and the verification of the OVBs will continue to provide transparency in financial management, budget execution and the generation of benefits for the communities.

For the entire life of the project, financial support is considered in the compensation for environmental services provided until the year 2042, based on future verification periods, VCUs to be certified and their commercialization.

In this same purport, Section "2.4.6 Avoidance of Corruption and Other Unethical Behavior" of this document describes the measures taken to ensure transparency in the processes developed in the REDD+ Project RIU-SM.

4.5.7 Benefits, Costs, and Risks Communication (GL2.7)

As explained above, in Sections "2.3.1 Stakeholder Access to Project Documents", "2.3.2 Dissemination of Summary Project Documents", "2.3.3 Informational Meetings with Stakeholders" and "2.3.5 Information to Stakeholders on Validation and Verification Process" of this document, the Project includes actions focused

on communication and socialization of all information related to its execution, including dissemination of benefits, costs and risks to the RIU-SM communities, such as:

Creation of Project website www.selvamatavenredd.org, where information on the results of the monitoring plan will be presented. Newsletters, brochures, and booklets are also distributed.

On Verra website: <https://registry.verra.org/app/projectDetail/VCS/1566>, where Project documents (PDD, reports) are available.

Written and visual material to disseminate and socialize the results obtained.

These media are distributed directly in the territory and are accessible to indigenous communities and community groups.

Additionally, there are communication mechanisms that consist of workshops and meetings between the communities and the indigenous authorities of the RIU-SM, as explained in the following Table 79.

Table 79. Mechanisms for communicating relevant and adequate information on expected and actual benefits, costs and risks to the communities and evidence that the information has been understood

Mechanisms for communicating relevant and adequate information on expected and actual benefits, costs and risks to the communities	Evidence that the information has been understood
The development of benefit-sharing mechanisms takes into account: - The presentation and socialization of reports on the progress made in the implementation of the project and the execution of the investment plan, where costs and expenses are accounted for and benefits are evaluated. - The presentation of reports, socialization presentations and presentation of results to the community, with the support of materials such as brochures and newsletters. - Conducting socialization workshops on the results of the implementation of the REDD+ Project RIU-SM, including training to understand the aspects that are managed and applied in the generation of benefits. These benefit-sharing mechanisms also include projections of the results expected to be achieved with the implementation of the REDD+ Project RIU-SM, using the lessons learned as a baseline, for evaluation and feedback, which provide a framework for understanding and managing adverse events that have occurred (and acting accordingly, with appropriate decisions) and for foreseeing probable future risks.	Financial and cost reports are presented with balance sheets and fiscal audits, which allow for transparency and ease of understanding, in accordance with legal requirements. The adaptive capacity index is evaluated periodically, where members of the indigenous communities will be asked, in the form of semi-structured surveys, about the level of understanding and acceptance of aspects of the REDD+ scheme, the implementation of the RIU-SM REDD+ Project and the distribution of benefits. Although this evaluation is done in order to verify and know how to act to improve the interventions, it is clear evidence of the degree of understanding of the information provided. The benefit-sharing mechanisms are also spaces to address the concerns of the attendees, so the most important aspects that need to be clarified are reiterated and the minutes are read to ensure that the information is recapitulated in these spaces, understood and disseminated among the communities of the RIU-SM.

4.5.8 Governance and Implementation Structures (GL2.8)

The REDD+ Project RIU-SM has an organizational structure based on the role of ACATISEMA and MEDIAMOS F&M S.A.S. as signatories of the Strategic Alliance Agreement for the Protection, Conservation and Recovery of Natural Forest of the *Resguardo Indígena Unificado - Selva de Matavén*. This structure is presented and explained in the validated PDD-VCS, Section "1.3 Project proponent", page 23, and serves as the basis for determining the roles of the main stakeholders in the implementation of the Sustainable Management Plan for Land and Forest and Project Activities.

The *Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén* -ACATISEMA- also has an organizational structure derived from the guidelines of its Statutes, which represents the structure through which governance is implemented in the RIU-SM territory. This structure is presented and explained in the validated PDD-VCS, Section "1.3 Project proponent", page 27.

It can be seen that the base of the structure of the entire Association is the indigenous communities, from where the authorities and other administrative and supervisory bodies start. The communities are followed by the Captains (elected by them and who represent them), Zonal Delegates, 17 Sector *Cabildos* (elected by the Captains), a Coordinator Committee and, as the highest authority, the General Assembly.

In this way, ACATISEMA's governance structure provides the conditions for autonomy, self-government, self-determination and participation in the organizational structure of the Project, where, therefore, the communities are the basis of the entire Project, which includes, therefore, the small landowners/producers of the RIU-SM.

As explained in Section "2.3.10 Stakeholder Participation in Decision-Making and Implementation" of this document, the communities have every possibility to participate in the decisions and implementation of the Project through the authorities that represent them, but also directly, as main stakeholders at the base in the execution of the Project Activities.

4.5.9 Smallholders/Community Members Capacity Development (GL2.9)

The REDD+ Project RIU-SM contributes to the development of the capacities of the members of the indigenous communities and, therefore, of the small landowners/producers, to effectively and actively participate in the design, implementation and management of the project, through the implementation of the Activities and the other benefits (in health, water, housing and care), which generate positive impacts for the indigenous peoples of the RIU-SM, as described in Sections "2.1.8 Project Activities and Theory of Change", "4.2.1 Expected Community Impacts" and "4.2.3 Net Positive Community Well-Being" of this document.

With the implementation stage already advanced, the Project Activities are being executed by the members of the indigenous communities themselves, under the direction of their Association ACATISEMA, which is managing the resources derived from the compensation of ecosystem services achieved by the Project to continue developing the routes of surveillance and control of the territory by fluvial and land for the protection and conservation of forests, soils and biodiversity in general; implementing the information, communication and transportation system; providing support for meetings and training and socialization workshops, in addition to Assemblies, where more members of the indigenous communities are involved; implementing the Family Agri-food Production Units System (FAPUS) to improve agricultural practices and ensure food sustainability; managing training programs with entities such as SENA and technical, technological institutions, and universities to higher education; and implementing pilot project initiatives in production chains.

In addition, the indigenous communities participate in the validation and verification processes, preparing logistics, maintaining forest inventory plots and accompanying the audit team in the field work in the RIU-SM territory.

As for other local organizations or institutions, the leaders of the indigenous communities have improved their management capacities and are approaching the authorities of the municipality of Cumaribo, the department of Vichada and some at the national level, in order to obtain the support that must be provided as an obligation of the State, in areas such as education, health, housing, basic services, among others.

On the other hand, the indigenous communities are turning to institutions with expertise in, for example, the implementation of productive projects, supported by their Association ACATISEMA, to sign agreements that will provide them with the tools to execute these economic initiatives, which will bring development to the RIU-SM and provide a better quality of life for its inhabitants.

5 BIODIVERSITY

5.1 Without-Project Biodiversity Scenario

5.1.1 Existing Conditions (B1.1)

The *Resguardo Indígena Unificado - Selva de Matavén*, henceforth named RIU-SM by its acronym in Spanish is composed by a forest area with a total of 1'477,115 hectares, which corresponds to the 79.6% of the total area of RIU-SM; out from which 1'233,250 hectares are primary forests, 232,536 hectares are flooded forest (primary forests as well), and 11,329 hectares are secondary forests (PDD-VCS RIU-SM 2009).

The region known as the Matavén jungle is considered a transition zone between the great jungles of the Amazon and the extensive savannas of the Orinoquia regions. It is of special biological interest, not only because of its biogeographic position, but for its state of conservation, with less than 5% of the total area transformed into crops and stubble " (Villarreal Leal , et al., 2009, p. 11).

The Project's area contains two different zones respectively named as the Project Area (PA), and the Leak Area (LA), and all the Project activities are developed along these ones, including the monitoring of forests and lands of the RIU-SM. Given the size of the Project and its geographical location, this one is considered a strategic area in terms of biodiversity conservation due to the conjunction of two large ecosystems overlapping there: the Orinoquia's savannas, and the Amazonian transitional forest, both forming an edge ecosystem.

"... acting as a membrane that modulates the exchange of matter and organisms between two habitats. The permeability determined by different types of edges (smooth or abrupt) has important implications in terms of forest conservation and regeneration, as well as wildlife management..." (Ecosistemas 13 (1): 67-77. january 2004³⁰).

The *Selva de Matavén* is a natural corridor for wild species exposed to external threats that put their integrity and ecological stability at risk. This is how the REDD+ Project RIU-SM through a Sustainable Management Plan for Land and Forest, the control and surveillance activities, the investment in food guarantee projects for the communities, and the strengthening of productive chains, in addition to the strengthening of governance and communication, intends to reduce deforestation to preserve a reproductive success of species and the exchange and genetic diversity of flora and fauna. The information provided in this document is intended to describe and demonstrate that the REDD+ Project RIU-SM meet the guidelines for the conservation and protection of the *Selva de Matavén* forest through the development of a monitoring plan as it is following described. The biodiversity of the RIU-SM has been considered in two large groups, namely the flora and the fauna compositions, having the flora as the basis of the biodiversity.

Knowledge of biodiversity can be approached from the hierarchical organization model of biodiversity proposed by (Noss, 1990) This is based on the combination of four levels of biodiversity: regional landscape, ecosystems-populations, communities-species and individuals-genes, and of three attributes: composition, structure and function. This approach highlights the complexity of biological diversity and its implications for knowing and conserving it. (Villarreal Leal , et al., 2009) pp. 13.

To better understand biodiversity in *Selva de Matavén*, it is necessary to monitor it periodically and the only available field information prior the REDD+ Project was a baseline information obtained from other studies

³⁰ <http://www.revistaecosistemas.net/articulo.asp?Id=166>

carried out in RIU-SM such as (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006) and (Villarreal Leal, et al., 2009).

Once the REDD+ Project started in the area, the plant cover (biomass and deforestation of biomes) and other areas have been monitored every year since 2013, and the monitoring of wild fauna has been based on inventories made to different groups of fauna presented by (Villarreal Leal, et al., 2009) and (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006). These inventories of fauna are planned to be verified in 2022 and consecutively every 5 years to determine the status of its development and biological stability of the ecological units.

I. Floristic composition

Based on the concept of landscape ecology which takes the plant cover and its state of conservation as an indicator of anthropic impact on nature, we are presenting the floristic composition as the first component of biodiversity together with its use by the local indigenous communities, to also measure their level of intervention on the lands and forests of the reserve.

In accordance with the review of existing information regarding biodiversity in the RIU-SM, it is relevant to start by mentioning the publication “Matavén: Territory, Culture and Landscapes, (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006)”, in which 27 landscape units are described with their characteristics and uses according to the indigenous communities, the classification of the territory and its actual and potential use (See Table 80); it is also presented the classification of the different biomes and their landscape characteristics are also presented (See Table 81). In addition, it is included information of the characterization of biodiversity of Selva de Matavén made by the Environmental Exploration and Monitoring Group (Gema) of the Alexander von Humboldt Institute (IAvH), who carried out a research on several groups of fauna and flora that are part of the baseline of the present document. Many of the characteristics registered for each landscape unit can be used to elaborate a battery of indicators and measure the state of conservation and / or recovery of a specific landscape unit verified through the floristic composition.

Knowing the landscape units, their floristic composition and their conservation status, it can be considered that the status of the fauna is alike to the status of the forests (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006).

Table 80. Landscapes units on RIU-SM

Plant cover (vegetal structure and anthropic dynamics)		Actual use	Potential Use
A1	Shrubs and small twisted trees that grow in meandering medium valleys and contiguous areas of temporary flooding (4 months) and subsequently suffer a period of equal or greater drought. Located in the Matavén creek; creek Fruit and creek Zama.	Gathering hunting	Conservation Gathering
Ara	Dense shrubs 5 to 8 meters high, occupy higher floodplains of the Vichada River due to the accumulation of a greater amount of sediment. Associations of the COCONONAE species in Sikuni are very repetitive in the vicinity of the river, also “ <i>reventillos</i> ”, “ <i>guamos</i> ” (<i>Inga</i> sp, <i>Xylopia</i> sp, <i>Muntingia calabura</i>), <i>platanillos</i>	Gathering hunting	Conservation Gathering

Plant cover (vegetal structure and anthropic dynamics)		Actual use	Potential Use
	(<i>Heliconia</i> sp).		
Arb	Low shrubs ranging from 1 to 14 meters high and / or together with herbaceous or fruit trees, which are almost woody plants and similar in appearance to guayabitos shrubs, beach alder <i>Tessaria integrifolia</i> , <i>Calliandra</i> sp, <i>Inga riparia</i> .	Gathering hunting	Conservation Gathering
BO	Sparse forest of low height and small crowns. It develops in the concave part of the flood basin, where the water remains puddled for the longest time. Abundant presence of palms and small trees in the understory.	Collection of plant materials, mañaca fruits, turtle, and fish. Lightweight wood for crafts.	Conservation Gathering hunting
B1	Forests of medium height and density, which present a very irregular upper canopy with the presence of groups of some trees that stand out in response to small sectors with better drainage conditions, in a plain that floods every year. Abundant presence of palms and malformed trees.	Hunting, fruit gathering, extraction of palm leaves and vines.	Conservation Gathering hunting
B2	Squat alluvial forests in small u-shaped valleys, in creeks that cut the high plan. In these valleys it grows in forests of underdeveloped trees and malformed small shrubs. In general, the species that grow here do not defoliate because the soil contains moisture in many sectors. There is an abundance of <i>seje</i> palm, moriche palm (where large litter material accumulates on the surface of the soil, intermingles with an intricate system of roots that reaches more than a meter in depth). Locally these formations are called " <i>sejales</i> " or <i>morichales</i> , according to the dominance of a given species.	Gathering hunting, fishing.	Conservation Gathering
B4	Alluvial forests that develop in a medium floodplain of the Orinoco and Guaviare rivers. It is made up of trees of better shape, which begin to stand out in height, and deciduous trees.	Hunting, extraction of materials for construction of bongos and houses. Use of forest products in general.	Potentially agricultural.
B5	Highland forests on soils developed in S1 and S2, made up of emerging trees with an average height of 18 to 25 m. and irregular canopy. Large number of deciduous trees per hectare, many of which stand out in the landscape due to their height (45 m and more) and flowering characteristics: <i>mure</i> (<i>Cedrelinga catenaeformis</i>), purple-flower, palo Brasil (<i>Aspidosperma</i> sp.), Coco de mono (<i>Chytrome</i> sp.), Sarrapia (<i>Dipterix polyphylla</i>), cuyubi (<i>Minquartia</i>	Hunting, gathering, logging.	Potentially agricultural.

Plant cover (vegetal structure and anthropic dynamics)		Actual use	Potential Use
	<i>guianensis</i>).		
B8	Low height open forest, with shafts of thin diameters and very small crowns, with the appearance of degraded forest or stubble. They are areas in a state of transition to savanna and between the mapped areas there are patches of sheets and shrubs: Chunujuay palm, cumare, seje, trees of the <i>Micranda</i> , <i>Eupera</i> , <i>Erismia</i> "oreja de chimbe", <i>Aldina</i> , <i>Gustavia</i> sp., <i>Sclerelobium</i> genre.	Hunting, gathering, logging.	Conservation Gathering
Bb	Low, dense forests, with trees with an average height of the upper canopy of 8 to 12 meters, with emerging trees that exceed the upper stratum by four more meters. The trunks of the trees are very thin. Species in common with medium forests: <i>Xylopia emarginata</i> (gomo), <i>Calophyllum brasiliense</i> , <i>Vochyseia ferruginia</i> , <i>Euterpe precatoria</i> (manaca), <i>Inga</i> sp., <i>Parkia</i> sp.	Hunting, gathering, logging	Conservation Gathering hunting
Bdi	Natural highland forest areas disturbed, with anthropic intervention.	Agricultural, Hunting, gathering, logging	Potentially agricultural.
bgs	Secondary gallery forest or medium-sized mountain bushes. Below is the presence of palms. Dense undergrowth, species false blood bull <i>Virola elongata</i> , <i>Ryania espicosa</i> , anime <i>Protium arancouchinii</i> , alcornoque, CAWISIPINAE, manaca, cuyubi, <i>Minquartia guianensis</i> , cumare, cucurito, moriche.	Hunting, gathering, logging	Conservation Gathering hunting
Bm	Dense forests of medium heights up to 17 m on average of the upper canopy and with emergent trees of 25 meters. They grow on the sidewalks or middle and upper terraces, abundant undergrowth, presence of thick vines and palms of representative species. sasafras (<i>Aniba</i> sp), cachicamo (<i>Calophyllum</i> sp.), Freightier (<i>Xylopia emarginata</i>), gomo (<i>Vochysia ferruginia</i>), manaca (<i>Eutorpe precatoria</i>), platanillo (<i>Heliconia</i> sp.), Tarriago (<i>Phenakospermum guyanensis</i>), yellow flower (<i>Tabebuia</i> sp.)	Limited Hunting, agricultural, gathering, logging	Potentially agricultural.
bs	Forest that is the result of natural regeneration in the areas previously used as "conucos". Includes ages over 10 years.	Hunting, collection of medicinal plants, logging.	Conservation Gathering hunting
BS4	Intervened forest that corresponds to the delimitation of areas with patches of agriculture and forests that, for practical reasons of cartographic representation, are grouped under this name.	Corn crops, extraction of plant material, hunting and fishing.	Agricultural use.
BS5	Large areas that include scattered patches of sites of agricultural production called "conucos"	Agriculture, harvesting, forest use.	Agricultural use

Plant cover (vegetal structure and anthropic dynamics)		Actual use	Potential Use
BT	Alluvial forests that develop in a high floodplain of the Guaviare River, periodically, in years of high rainfall. It is made up of well-developed trees, which begin to stand out in height, and deciduous trees.	Hunting, fruit gathering, extraction of palm leaves and vines, use of wood for house construction.	Potentially agricultural.
C1	Conucos: cultivation plots in natural forest because it is the soil with the highest fertility. In the initial stages, plantain is planted, in addition to cassava, sweet potato, mapuey pineapple, lulo, chili pepper, capi, royal barbasco, corn, rice, chontaduro, green ripening, Sikuni beans, caimarona grapes.	Agricultural	Intensive Agricultural use
H4	Wetlands in sheet depressions that remain with a sheet of water, or with saturated soil for more than 8 months, where hygrophilous ³¹ vegetation develops.	Fishing, hunting	Conservation Gathering.
H	Grassland with species of grasses, herbs, woody and semi-woody shrubs. It occupies flat and concave land near the river and remains flooded for periods of 5 months and, likewise, suffers a period of drought.	Gathering, hunting.	Conservation Gathering
H1	Herbazal or sabaneta: with a tendency similar to Sabana of reduced extension. Vegetation with a predominance of grasses, but palms and shrubs also grow. In some places the Guayacana dominates.	Fiber gathering, hunting.	Conservation Gathering
Mo	Medium and low forests that grow in depressions or in valleys of creeks, with saturation of water. The so-called <i>Mauritia flexuosa</i> morichales or, in association, species of the genera <i>Protium</i> , <i>Ficus</i> , <i>Guateria</i> , <i>Vismia</i> grow there.	Gathering, hunting.	Conservation Gathering
R	Stubble or secondary forest corresponds to areas previously used in conucos and that have been intentionally resting for a time (minimum five years) or that were abandoned indefinitely.	Abundant hunting, fishing, gathering.	Recovering Agricultural.
S1	Shroud with a predominance of herbaceous and grasses, with a medium density of gallery forests, low growth, open and dense undergrowth. Aromatic <i>Xylopia</i> species (manga larga), <i>Curatella americana</i> (chaparro), <i>Myrcia subselis</i> , <i>Syagrus orinocense</i> , (mapora palm), <i>Guateria</i> sp. (cuero negro).	Abundant hunting, fishing, gathering.	Conservation Gathering hunting
S2	Shrubby savanna where grass and herbaceous cover prevails, but accompanied by a bushy sinus, or cover of shrubs or small trees regularly scattered over the entire surface. Chaparro <i>Curatella americana</i> , dormilón	Hunting, gathering, fishing, livestock, gathering medicinal plants, materials for	Conservation Gathering hunting

³¹ It is applied to the organism, especially plant, which performs all its activities in humid environments.

Plant cover (vegetal structure and anthropic dynamics)		Actual use	Potential Use
	<i>Xylopia sps</i> , palo pilón.	handicrafts.	
S4	Complex of areas of herbaceous sheets with shrub sheets.		
S7	Sandy savanna covered with grasses, scattered with sectors of laminar erosion due to heavy precipitation and accumulations of sand transported by rainwater.		

Source: Matavén: Territory, Culture and Landscapes (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006)

To relate the landscape coverage with the landscapes and ecosystems of the *Selva de Matavén*, (Villarreal Leal , et al., 2009) exposed the definition of a biome as a set of ecosystems characterized by species and a variety of plants with a climate condition and a characteristic land cover. They are usually defined by the structure of the vegetation and the climate. The biome is also defined by geographical components (latitude and altitude) and local names are used for designation.

The biomes considered in all areas of spatial limits are based on official information provided by the Agustín Codazzi Geographic Institute (IGAC - by its acronym in Spanish), the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM - by its acronym in Spanish) dependent on the Ministry of Environment and Sustainable Development (MADS - by its acronym in Spanish), and other governmental institutions authorized to provide official information on this subject.

Table 81 identifies the four biomes described by Villareal-Leal et al (2009), as present in the RIU-SM Indigenous Reserve (Helobiome, Lithobiome, Peinobiome and Zonobiome), and taken for the coverage validation and verification approach in the REDD+ Project RIU-SM

Table 81. Biomes of the RIU-SM, according to Villareal-Leal et al (2009), and PDD-VCS

Biome		Description	Characterized landscapes
1	Helobiome	Floodplain forest without underwood	Lowland forest on flood site of Matavén creek
2	Litobiome	Floodplain forest with underwood	Highland forest on flood site of Matavén creek
3	Peinobiome	Forest rocky hill	Residual granite forest rocky hills in Guiana shield
4	Zonobiome	Forest land	Forest moderately segmented ancient sedimentary plains

Source: Annex 15 – VMD0016 X-STR Methods for Stratification of the project area.

On the other hand, according to the study of (Villarreal Leal , et al., 2009) a classification of 6 large landscape units is observed within 688 species, 183 genera and 72 families were recorded (Table 82).

Table 82. Floristic composition in number of families, genera and species of species registered by landscape

Location	Families	Genre	Species
Forest rocky hill (BR)	39	64	102
Forest under the flood plain of the creek Matavén (BI-a)	26	41	67
Lowland forest high up the spout Matavén (BI-b)	30	47	77
Forest sedimentary plains (BT-A)	32	64	102
Forest on sandy plains (BA)	20	27	37
Savanna on sandy plains (SA)	31	51	107
Total	72	183	688

Source: (Villarreal Leal , et al., 2009) *Caracterización de la biodiversidad de la RIU-SM*, table 3.2, page 108

Biological connectivity between biomes will be generated by the Plant cover, however, in (Villarreal-Leal, et al., 2009) it is mentioned that the low neotropical forests present different patterns of beta diversity and few species in common compared to flooded forests, which are forests with fewer species and high productivity.

The author mentions that the most diverse place in terms of number of species, genera and families is the savannah (SA), related to the variety of environments and types of physiognomic vegetation that this landscape brings. These included the forest edge of the canal, shrub zone, shrub savanna, herbaceous savannah, and graminoids. The next two sites, in terms of species diversity, are rocky forested hills (BR) and forests on sedimentary plains (BT-A), which have greater vertical complexity, providing a greater number of available niches. Flooded forests (BI and BI-a-b) have fewer floristic species.

The group of 10 families with the most genders in the landscape is presented in the following Table 83.

Table 83. Floristic composition of families with the highest number of genera per landscape. BR, BI-a, BI-b, BA, SA

Family	BR	BI-a	BI-b	BT-a	BA	SA	Total
<i>Rubiaceae</i>	6	5	3	6	3	4	19
<i>Areaceae</i>	3	2	2	5		2	6
<i>Caesalpiniaceae</i>	4	2	3	3	1		7
<i>Melastomataceae</i>	3				1	6	11
<i>Apocynaceae</i>	3	1	1		1	4	8
<i>Fabaceae</i>	4	3		3			7
<i>Euphorbiaceae</i>			3	3	3		8
<i>Mimosaceae</i>		2	3	2		2	
<i>Annonaceae</i>	4		2			2	6
<i>Clusiaceae</i>				3		3	6
<i>Chrysobalanaceae</i>			1	3	2		
<i>Moraceae</i>	4				1		5
<i>Bombacaceae</i>	3	1	1				

Family	BR	BI-a	BI-b	BT-a	BA	SA	Total
<i>Flacourtiaceae</i>	3				1		
<i>Ochnaceae</i>		2				2	
<i>Sapindaceae</i>				3			
<i>Burseraceae</i>				2	1		
<i>Bignoniaceae</i>		1	1				
<i>Eriocaulaceae</i>						2	
<i>Vochysiaceae</i>						2	
<i>Boraginaceae</i>		1					
<i>Lecythidaceae</i>					1		
Total	31	14	17	27	11	25	64
Genus sampling Total	73	41	47	64	27	51	183

Source: (Villarreal Leal , et al., 2009) *Biodiversity characterization of RIU-SM, table 3.3, page 108*

There are 22 families in total. This table shows groups of 10 families with more species, presenting a total of 29 families for the six landscapes. The RUBIACEAE, MELASTOMATACEAE, ARECACEAE and Legumes families have many genera and species, a result also found in a study by Prieto-C. (2001), mentioned in (Villarreal Leal , et al., 2009)

Next, Table 84 shows the number of species for each landscape.

Table 84. Floristic composition per families with the highest number of species in each landscape.
BR, BI-a, MI-b, BA, SA.

Family	BR	BI-a	BI-b	BT-a	BA	SA	Total
<i>Rubiaceae</i>	7	5	4	7		7	101
<i>Arecaceae</i>	3	2	2	5		2	
<i>Caesalpiniaceae</i>	4	3	4	4			18
<i>Fabaceae</i>	4	3	2	3			22
<i>Melastomataceae</i>	8		2	3		6	68
<i>Mimosaceae</i>	6		3			2	20
<i>Annonaceae</i>	4		2				14
<i>Apocynaceae</i>						5	20
<i>Clusiaceae</i>				3		3	21
<i>Euphorbiaceae</i>			3	5			19
<i>Bombacaceae</i>	5	2					
<i>Chrysobalanaceae</i>		3		6			
<i>Flacourtiaceae</i>			2				
<i>Lecythidaceae</i>				3			

Family	BR	BI-a	BI-b	BT-a	BA	SA	Total
<i>Moraceae</i>	10						14
<i>Aquifoliaceae</i>						3	
<i>Burseraceae</i>	5						
<i>Combretaceae</i>		2					
<i>Elaeocarpaceae</i>				3			
<i>Eriocaulaceae</i>						4	
<i>Malpighiaceae</i>		2					
<i>Myristicaceae</i>		2					
<i>Ochnaceae</i>		3					
<i>Vochysiaceae</i>						3	
<i>Xyridaceae</i>						3	
Total number of species / stages	39	13	22	30	0	25	303
Total number in the sample / landscape	102	67	77	102	37	107	688

Source: (Villarreal Leal , et al., 2009), *Biodiversity characterization of RIU-SM*, table 3.4, page 109.

Alpha diversity

BT-a forest presented the highest alpha index and high dominance, which indicates that the distribution of individuals in the species is unfair: a few species have the greatest number of individuals. The high forest flood plan (BI-b) was the most equitable and the second alpha diversity. In the sheets themselves (SA-h) the dominance of a few species were observed, contrasting forest edge of the channel (BBC) and clumps of forest (MM) (Table 85).

Table 85. Diversity alpha landscapes counted for the sheets on sandy plains (SA)

Index	BI-a	BI-b	BT-a	BR	BA	SA		
						BBC	MM	SA-h
Alpha Fisher	10.40	21.58	47.38	9.55	12.35	4.93	12.81	12.41
Equitatividad	0.79	0.66	0.90	0.644	0.81	0.67	0.75	0.91
Berger-Parker Dominance (d)	0.17	0.43	0.06	0.44	0.34	0.53	0.21	0.12

Source: (Villarreal Leal , et al., 2009) *Biodiversity characterization of RIU-SM*, table 3.6, page 112

It differed according to the types of vegetation: forest to themselves (SA-h) spout edge (BBC), kills bush (MM) and savannas.

Beta Diversity

The index values of complementarity [complementarity index (IC) assesses how different are two landscapes in terms of species composition of biological interest group. This index ranges from 1 to 0. The values close to 1 indicate that the two landscapes are different in species composition and thus complement each other in a regional scale. The IC is calculated as 1- Jaccard index (similarity index)]. Among the landscapes sampled were higher than 0.95. This indicates that the landscapes have a high turnover of species of woody plants (Table 86).

Table 86. Complementarity index values (IC) of woody plants between the sampled sites

Landscape	BA	BI-a	BI-b	BR	BT	SA
BA	37	5	2	0	4	0
BI-a	9.95	67	2	0	0	0
BI-b	0.98	0.99	77	1	3	0
BR	1	1	0.99	102	1	0
BT	1	1	0.98	1	102	0
SA	1	1	1	1	1	107

Diagonal (gray): Number of recorded species; Superior diagonal: IC

Source: (Villarreal Leal , et al., 2009) *Biodiversity characterization of RIU-SM*, table 3.7, page 112

The vegetation of the area is highly diverse, and sites are complementary; in a relatively small area like the wide range of environments and the differences between them, then leaving without support the idea of forest as a green, homogeneous and continuous spot (Villarreal Leal , et al., 2009) it is evident.

II. Faunistic composition

The REDD+ Project RIU-SM aims to mitigate threats and protect the flora that supports the associated fauna, considering that the productivity and functionality of the forest support the conditions to bring food, reproductive niches, routes, and resources for biodiversity.

In other way, the information obtained on fauna composition comes from secondary sources and was verified during the captains' workshop using social mapping methodology, in this exercise the natives locate the sites used to hunt and fish their preys and their food. (Ariza-Vera, Polanco-Ochoa, Yopez-Guzmán, & Suarez, 2006) y (Villarreal Leal , et al., 2009)

Next, in Table 87 we observe a baseline information, compiled from (Ariza-Vera, Polanco-Ochoa, Yopez-Guzmán, & Suarez, 2006) that shows a hunting and fishing calendar of the Sikuni ethnic group based on the rainy and summer seasons, and mentions the sites used by the species at those times of the year elaborated in the community of Sejalito, Zone 4 – Sector 9, Sejalito San Benito.

Table 87. Ecological hunting and fishing calendar according to information provided by inhabitants of the Sejalito community (Sikuni ethnic group), Vichada river

Season	January	February	Mach	April	May	June	July	August	September	October	November	December	Observations
Dry season													Summer. Rivers meet low waters; between April and May the rains increase little by little.
Rainy season													Winter. The waters begin to rise and "the rivers fill up." In July it

Season	January	February	March	April	May	June	July	August	September	October	November	December	Observations
													stagnates due to the flood and the rains begin to diminish little by little until October, when it hardly rains.
Decrease													In mid-August the decline begins, and the rivers drop in level.
Burnings													The main burns and the grave of the mainland or virgin mountain take place between January and March. Stubble can be burned on a little summer in August.
Fish shortage													
Upload													Great fish such as dorado, valentón, chillón and bocachico.
Upload													"Palometas, bocones, chillones, bocachico" and "saltones" come from the Orinoco and go up the Guaviare.
Hunting abundance													Cajuche, lapa, cachicamo and tiger, they abound because they are being trapped on the "banqueta" ³² .

Source: Matavén: Territory, Culture and Landscapes (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006).

In the study it is observed that during winter the river rise sand fishing is low as the resource is dispersed in the flooded forest; when the summer begin, fishing increases as the fish return to the creeks and rivers.

Next, an inventory of wildlife identified by the different Sikuni, Piapoco, Piara and Puinave ethnic groups of the RIU-SM is presented, with the names given by them (Ariza-Vera et al, 2006). The information in Annex 6 of this document was revised and some genus and species names that have changed since 2006 were updated, adding the classification of the threat category according to the International Union Conservation Nature IUCN Red List.

About fauna component, Table 88 shows relevant information that corresponds to the use and the property concept (in relation to non-human beings) within the criteria of customary values and the cultural importance of some species for the Sikuni ethnic group (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006).

³² Banqueta it's a term used by the natives for name the floodplain forest and for the "Rebalse" (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006).

Table 88. “Owners³³” of some species of Sikuani cultural importance, information told by the participants of the workshop held in the community of Boponé, Vichada river

Species	Owner	Observations
Danta - <i>Tapirus sp.</i>	Ematupi	They are the big father and the big mother, that's why the tapir never ends, because they take care of it.
	Yamejewa	
Deer - <i>Odocoileus virginianus</i>	Docovia	This spirit is ominous, it is father and mother at the same time, it is said that it lives in water.
Picure – <i>Agouti sp</i>	Kallawarinae	It is an Aguti, medium rodent.
Chaqueto – <i>Dasyprocta sp</i>	Kallawarinae	The peccary is also called this way.
Lapa – <i>Cuniculus paca</i>	Wako	He is father and mother at the same time.
All the fishes	Tsawaliwali	Tsawaliwali It is a seven-headed anaconda that was found at the site of origin. Manuanü is the steward, he is the one who takes care of the fish.
	Manuanü	
Cajucho. <i>Tayassu pecari</i>	Tanai	White-bearded peccary, artiodactyl mammal.
Tigers – <i>Panthera onca</i>	Enianali	It is a small cat-like tiger.
Snakes – SERPENTES	Atami	Reptiles. snakes and venomous snakes
Birds with claws – AVES RAPACES	Cotzala	What is a condor
palm bear <i>Myrmecophaga tridactyla</i>	-Yalu	Actually, he is the big father of all bears.
Terecay – <i>Podocnemis unifilis</i>	Little turtle	turtle reptile
Ray - <i>Potamotrygon sp</i>	Wuepa	it's a big ray, it's the big mother.
Zancudo	Anapa	it's a bird.

³³ All wild animals, plants, and all nature have owners. The owners are spirits, pimps or madrotas (for the Sikuani), some can become owners, and some are considered evil spirits, they take care of, defend, and protect the animals, they are “a shamanistic concept that links the space with its use and it governs the use of resources since everything in the jungle has its owners and things are not used like that just without asking for permission”. (Van der Hammen & Rangel-Ch, 1997) These owners allow the species not to become extinct, as they are in permanent communication with traditional doctors or shamans to ensure that people do not hunt or fish too much. (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006)

Species	Owner	Observations
Turkey hin – <i>Pipile cumanensis</i>	Dowatji	You can say that this owner is the devil.

Source: Taken and adapted from Matavén: Territory, Culture and Landscapes. (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006)

In addition, (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006) present complementary information on the use of habitats, by the communities of the Sikuni ethnic group (Table 89), where they mention the presence of the most important representative fauna species for each habitat. This information was particularly useful to complement the location of the focal areas for the High Conservation Values - HCV, information verified during the 2020 captains' workshops and which are presented in section 5.1.2. of this document.

Table 89. Habitat relationships with fauna on the Vichada river

Habitat types	Captured species	Other activities carried out
Savannas	Cachicamo sabanero (<i>Dasypus sabanicola</i>)	Collection of some fruits such as guava sabanera, livestock, places of housing, recreation, and sports.
	Deer sabanero. (<i>Odocoileus virginianus</i>)	
	Perdiz (<i>Tinamus sp</i>), torcaza (<i>Zenaida sp.</i>) morrocoy (<i>Chelonoidis carbonaria</i>)	
Riparian Savannas	The species mentioned in the previous point are observed, but they are much more abundant.	Hunting, worms for fishing and gathering.
Estuaries	Hunting is only practiced in summer as these are floodplains. You get small mammals and birds like the turkey hen (<i>Pipile cumanensis</i>) and the macaws (<i>Ara sp</i>).	They are floodplains
Mount firm high, solid ground.	It is a suitable site for hunting large animals such as the deer, the danta (<i>Tapirus sp</i>), cajuches (<i>Tayassu pecari</i>) and sainos (<i>Dicotyles tajacu</i>), also of birds (<i>Crax albertis</i>), the gallineta (<i>Tinamus sp</i>), the turkey hen (<i>Pipile cumanensis</i>) and the tenta (<i>Sophia crepitans</i>)	They are sites suitable for crops, there are timber species and palms such as cumare.
Stubble	Birds and small mammals such as the picture (Agouti sp). It is not an appropriate site to hunting.	It can be cultivated, but it is not very fertile land.
Low virgin mount	Cajuche hunting (<i>Tayassu pecari</i>), cachicamo (<i>Dasypus sp</i>), deer (<i>Odocoileus virginianus</i>), saino (<i>Dicotyles tajacu</i>). In winter hunting for monkeys and birds and fishing in floodplains.	You get a lot of cumare and moriche, with which crafts are made.
Churrugway Palms	Mojojoy is found there and other species like birds including parakeets, toucans (<i>Ramphastus sp</i>) and macaws (<i>Ara sp</i>). They are not very suitable places for hunting.	Suitable wood is obtained to make bows and arrows, roofs and walls for houses.

Habitat types	Captured species	Other activities carried out
Galery forest	Animals like the lapa (<i>Cuniculus paca</i>), the cachicamo (<i>Dasypus sp</i>), picture (<i>Agouti sp</i>), gallineta (<i>Tinamus sp</i>), paujil (<i>Crax sp</i>), macaws (<i>Ara sp</i>) and some monkeys.	You get seje and pendara that it is a wood.
Mount plants	Good hunting is achieved especially of picture, cachicamo (<i>Dasypus sp</i>), monkeys (<i>Cebus sp</i>) and tigers (<i>Panthera sp</i>), also birds like paujils, turkey and a species of hens .	Fruit trees.
Morichal	Hunting mainly for birds, foraging sites for dantas (<i>Tapirus sp</i>), lapas (<i>Cuniculus paca</i>), pictures (<i>Agouti sp</i>), iguanas (<i>Iguana iguana</i>) and chaquetos (<i>Dasyprocta sp</i>).	The leaves are used to make the roofs of houses. Construction of bongos and canoes.
Island	Hunting of birds, chigüiros (<i>Hydrochaeris hydrochaeris</i>), pictures (<i>Agouti sp</i>), and lapas (<i>Cuniculus paca</i>).	There are temporary and permanent islands, the temporary ones are formed in times of summer.
Banqueta	Sites conducive to hunting especially in times of high waters is achieved for danta (<i>Tapirus sp</i>), deer (<i>Odocoileus virginianus</i>), cachicamos (<i>Dasypus sabanicola</i> , lapa (<i>Cuniculus paca</i>), micos (<i>Cebus sp.</i>) and birds like paujil (<i>Crax sp</i>), gallineta (<i>Tinamus sp</i>) y turkey hins (<i>Pipile cumanensis</i>).	Timber species
Rebalse	They are floodplains suitable for hunting tree species such as monkeys and iguanas. (<i>Iguana iguana</i>). You can get birds like the paujill (<i>Crax sp</i>), turkey hins (<i>Pipile cumanensis</i>) and tucans (<i>Ramphastus sp</i>). Site conducive to fishing.	Woods for the construction of bongos.
Cands	Sand shallow mainly on the beaches.	They are only used for construction
Chores	Egg collection sites of terecay (<i>Podocnemis unifilis</i>), fishing sites when the water level starts to drop.	They are only used in summer times
Hills	Most are sacred sites; hunting is not very abundant.	Traditional medicinal practices connect with them.
Rock hills	They are not suitable for hunting of any species.	They are also sacred and have a lot of power.
Creeks	Fishing for all species of fish, hunting on the shores of lapa (<i>Cuniculus paca</i>), and cachirre (<i>Caiman crocodilus</i>).	
Rivers	Fishing is mostly done in summer, as the fish are concentrated.	

Habitat types	Captured species	Other activities carried out
Little savanna with mount	There are deers, rabbits and small cachicamo (<i>Dasypus novemcinctus</i>)	
Clean Little savanna	There is almost no animal.	
Lagoons	Matamata and cachirre (<i>Caiman crocodilus</i>) are found. Fishing is less.	
Surales like Banquetas	In the surales that remain with water there are mice, snakes and spiders.	It is very capped and is not grown.

Source: Taken and adapted from Matavén: Territory, Culture and Landscapes. (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006)

(Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006) mentions in the document using the methodology of social cartography, where he identifies through participatory workshops each aspect to be pointed out in his thesis and verifies it through mappings of the Plant cover indicated by those attending the exercise. In addition, he refers to the validation of the methodologies described in (Andrade., 1994); (Etter, 1990); (Polanco-Ochoa, Castiblanco-Alarcón, & Yépez, 2003)

On the other hand, in (Villarreal Leal , et al., 2009), the richness of the RIU-SM is presented, with a considerable number of rare and endemic species with high potential for Colombia, which give great importance to conservation. For example, 33% of the bird species present in the RIU-SM are restricted to areas of endemism. The Matavén channel has the second highest diversity of fish in the region. Next, Table 90 presents the summary wildlife characterization (vertebrates and invertebrates).

Table 90. Characterization of different groups of vertebrates and invertebrates and threats in the RIU-SM

Biodiversity resource	Description	Threats
BIRDS	Most species of birds caught THAMNOPHILIDAE belong to families (17%) and Tyrannidae (12%). There have been 8 species of migratory birds in North America, in upland forests (BT-A) and rocky hills (BR) and Savannah (S). The composition of bird communities is different from landscapes, showing high levels of replacement or beta diversity (complementarity index > 0.7). No captured species is endemic or is under some threat to extinction. The total of registered species, 62 (25%) are	The Selva de Matavén is an area of great importance for the conservation of birds, at a national and global level, since it meets many of the requirements to be designated as such, due to the distribution of species is limited to biogeographic regions (6%), areas of endemism (1%), habitat use of specialized species (25%) and species extremely sensitive to human disturbances (26%). Many species congregated in this area, and large numbers of migratory species are also concentrated over there. In addition, the Selva de Matavén is located within

Biodiversity resource	Description	Threats
	habitat specialists, that is only found in a habitat. Forest land (BT-A) has the community of more specialist bird habitat use, with more than half (51%) of the species using only this habitat. Most birds recorded have an average sensitivity and low to disturbances (35% and 40% respectively), while the minority has high sensitivity (26%).	an area of endemic bird species and at the confluence of two zoogeographic regions. (Villarreal Leal , et al., 2009)
FISHES	1. The pattern of diversity is recorded in lower areas of the Neotropics, where the dominant orders were Characiformes, Siluriformes and Perciformes. 2. 77% of the total abundance recorded displayed only 15 of the 137 recorded species, excelling the species <i>Hemigrammus analis</i> with the equivalent of 23% of the individuals captured. Using the fishing of the 137 species recorded 64 are used by the bocachico local communities for subsistence, for example, peacocks, head mantecos, piranhas, mataguaros. 33 species are marketed as fish consumption, 57 are used as ornamentals commercial species such as tetras, cardinal, kennels, old juna and scalar. However, the highest number of registered areas are ornamental species.	• The capture of ornamental species for commercialization is focused on the Vichada, Orinoco and Matavén rivers. The Matavén creek constitutes the first fish collection center in the area, then continues the commercialization chain towards Puerto Inírida, within the country and finally abroad. • Fishing for commercial use is restricted mainly in the communities at the bottom of the Guaviare River. • Fishing for consumption in the Matavén creek is basically to satisfy the needs of animal protein for the communities that live there.
ANTS	There are 196 species recorded, represented in 11 subfamilies of neotropical ants, the most common subfamily is MYRMICINAE 43% of the species recorded. The most common genre is <i>Pheidole</i> (Formicidae: MYRMICINAE) with 25 species (12.7%). Of the species identified to species level, about 75% are taxa. The greatest wealth of ants found in the woods of sedimentary plains (BT-A) with 63 species, less wealth is high forest flood plain (BI-b) with 24 species.	The rapid change of land use and the low or little planning of intervention of forests, affect the composition of the ant populations.

Biodiversity resource	Description	Threats
	There is a high turnover of ant species among all landscape units. Landscapes higher value of complementarity are the savannah on sandy plains (SA) and the forest of sedimentary plains (BT-A).	
BUTTERFLIES	They have recorded 198 species. The families with the highest number of species are NYMPHALIDAE and LYCAENIDAE, each representing 37.8%, the most abundant family LYCAENIDAE, followed by NYMPHALIDAE. 15% of the species found in Amazon's distribution. 6% are exclusive species of the Guiana Shield. 18% of the Guiana Shield is distributed to the base of the Amazon. 2% are endemic to Colombia. 59% are widely distributed species. For greater diversity of landscape species richness and abundance of individuals to the forest of sedimentary plains (BT-A) with 94 species and 294 records are recorded. The highest lowland forest plan (BI-b) with 28 species and 68 individuals, and Savannah (SA) with 26 species and 108 individuals, had the lowest richness and abundance. In high parts beta present diversity of butterfly species between landscapes with rates above 0.7 complementarity.	The loss of plant cover causes the populations of butterflies to decline.
BUGS	They have collected 33 dung beetle species, genera with more species were <i>Canthon</i> 6 and <i>Dichotomius</i> and <i>Eurysternus</i> 5. Communities dung manure have a high dominance by 2 species in 2 units under forest landscape in the flood plain (BI-a) the species <i>Canthon sp.</i> and <i>Uroxys sp.</i> At the highest lowland forest plan (BI-b) it is the dominant species <i>Uroxys sp.</i>	The rapid change in land use and the loss of plant cover affects the composition of beetle populations.

Biodiversity resource	Description	Threats
	The complementarity index values were above 0.56, indicating a high turnover between all landscape units.	

Source: Taken of (Villarreal Leal , et al., 2009)



Daptrius ater (Caracara), Uva river (Cumara community, Zona 5)

In the following Table 91, taken from (Villarreal Leal , et al., 2009), present a summary of the different animal groups, taking some information published from research carried out by the entities that have made a presence in the territory.

Table 91. Main characteristics of recorded wildlife (vertebrates and invertebrates)

Group	Number of species	Representative percentage	Diversity beta	Sensibility	Diversity of landscape
Birds	249	17 %	≥ 0.7	Average (35 %) Low (40%)	51% (BT-a)
Insects	33		0.56		Bl-a, Bl-b
Ants	196	43%	0.63		BT-a, SA
Sub-families	11				

Group	Number of species	Representative percentage	Diversity beta	Sensibility	Diversity of landscape
Butterflies	198	48%	≥ 0.7		BT-a
Families		44.7%			
endemic Sps		2%			
Fishes	137	77%			
Registered Sps					

Source: (Villarreal Leal , et al., 2009). *Biodiversity characterization of RIU-SM*. Pages 27 – 30.

In (Villarreal Leal , et al., 2009), a systematic characterization methodology was implemented, involving people from the community, who were trained to carry out a verification monitoring of the five mentioned landscapes. Here the standardized methodology and the indicators published in the "Manual of methods for the development of biodiversity inventories" were validated (Villarreal, et al., 2004).

On the other hand, in terms of wildlife, the RIU-SM is recognized as a megadiverse territory, and it is classified within the 14 areas that host the highest rate of biodiversity on earth. This is overlapped on an equally complex and diverse political, economic, and social history in this territory (MADS, PNUD, 2014)³⁴.

Subsequently, the thesis "Subsistence Hunting of Mammals in the Eastern Sector of the El Tuparro Biosphere Reserve, Vichada (Colombia)" is documented, where the trends and species most consumed by the Piaroa ethnic groups, located in the Piaroa Reservation of Cachicamo, and Curripacos, located around influence of the Tuparro Biosphere Reserve (Martinez-Salas, López-Arévalo, & Sánchez-Palomino, 2016) In this work, the authors are verifying the information from (Rodríguez, 2006) and from (Vanegas, 2006), to validate the information on the most consumed species, sizes, volume of consumption and preferred hunting dates.

The RIU-SM is an area of great importance for the conservation of birds nationally and worldwide, because it meets with most of the requirements to be designated as such type of areas. Species' distribution is limited to biogeographic regions (6%), areas of endemism (1%), habitat use of specialized species (25%), and species extremely sensitive to human disturbances (26%). Many congregational species are also concentrated there, and large numbers of migratory species. In addition, the RIU-SM is located within an area of endemic birds and at the confluence of two zoogeographic regions. (Villarreal Leal , et al., 2009).

Threats of deforestation on biodiversity, and assumptions for the methodological selection

The following Table 92 shows the threats that affect the survival of biodiversity in the RIU-SM, and the key assumptions to select the methodological approach of the REDD+ Project:

Table 92. Threats of deforestation on biodiversity, and assumptions for the methodological selection

³⁴ (MADS, PNUD, 2014). Ministerio de Ambiente y Desarrollo Sostenible, Programa de las Naciones Unidas para el Desarrollo. 2014. Fifth National Biodiversity report of Colombia to present to: Convenio de Diversidad Biológica. Bogotá, Colombia. Page 9

Threats	Assumptions
1. Unplanned felling and deforestation of the RIU-SM forests by communities outside the Reservation, for commercial purposes that generates loss of habitat and resources for biodiversity.	Implementing a participatory control and surveillance system with the indigenous guard, allows stopping deforestation and verifying the reduction of greenhouse gas emissions; which allows obtaining resources in terms of carbon, as a compensation; as well as designing a Sustainable Management Plan for Land and Forest to maintain control and surveillance and mitigate threats on biodiversity.
2. Due to the great wealth of fauna and flora of the RIU-SM and its great size, it is a liked place for hunting and fishing, by wildlife meat and fish merchants from the populated centers of Puerto Inírida and Cumaribo.	Enforcement the governance of ACATISEMA and the local communication ways, let generate early warnings in the control and surveillance patrols about impacts on the biodiversity of the RIU-SM; and allows action to attend these findings.
3. The region has had a high impact from illegal mining practices and there are applications for permits to carry out hydrocarbon exploration of some private enterprises	Strengthening the governance of ACATISEMA, allows having the ability to address issues related to early warnings and property conflicts; as conflicts of unplanned or authorized use of the lands and forests of the RIU-SM.
4. Indigenous communities make traditional use of the fauna and flora of the RIU-SM, however the growth of human settlements. The eventual maintenance of unsustainable extractive practices and deforestation; they negatively affect the productivity and functionality of the biodiversity of the forests and lands of the RIU-SM.	Involve communities in control and surveillance activities; In training on natural resource management and food guarantee projects, in addition to strengthening production chains, it allows indigenous communities to reduce the pressure on the biodiversity of the forests and lands of the RIU-SM.
5. Since 2012 there have been atypical floods and prolonged periods of drought that have a strong impact on the biodiversity of the forests and lands of the RIU-SM.	Participatory investment in agroforestry projects allows communities to be directly involved in the generation of food and forest species, which allows indigenous communities to directly receive the benefits generated by the conservation of biodiversity.

5.1.2 High Conservation Values (B1.2)

For the identification of the High Conservation Values – HCV -, the methodology suggested in the CCB format "Guidance for the Use of the CCB Standards" was taken into account. Likewise, the documents Social and Biodiversity Impacts Assessment –SBIA- , Reference Manual: Biodiversity Monitoring for REDD+ (Latham, Trivedi, Amin, & D'Arcy, 2014) the Forest Stewardship Council's "Good practice guide for meeting the FSC certification requirements on biodiversity and High Conservation Value Forests in small-scale and low-intensity managed forests" (FSC - Forest Stewardship Council, 2009), and the Guide to identify High Conservation Values in forest ecosystems of Mexico (Cortés-Montaña, Vargas-Jaramillo, & Jardel-Peláez, Primera edición 2014).

The biodiversity HCVs are classified into three categories: 1) Diversity of species; 2) Ecosystems and

mosaics at the landscape level, and 3) Ecosystems and habitats of rare or threatened species. For the monitoring of biodiversity to the REDD+ Project RIU-SM we have selected the following ones:

HCV 1.1: “*Rebalses*” or flooded forest, as areas that support species of flora and fauna in critical danger, danger and vulnerable according to criteria of IUCN Red List

HCV 1.2: Gallery forests that support the endemic species. (Birds).

HCV 2.1: Helobiome; HCV 2.2: Lithobiome; HCV 2.3: Peinobiome; HCV 2.4: Zonobiome; and

HCV 3.1: Morichales Ecosystem, Present specie (*Mauritia flexuosa*) VU, “*palma de moriche*”.

Tables 93 and 94 describe the HCV 1 areas.

HCV 1. Diversity of species. Concentrations of biological diversity including endemic, rare, threatened, and endangered species, which are important at the global, regional, and national level.

Table 93. HCV 1.1 - “*Rebalses*” or flooded forest

HCV 1.1	“<i>Rebalses</i>” or flooded forest, as areas that support species of flora and fauna in critical danger, danger and vulnerable according to criteria of IUCN Red List (terrestrial vertebrates): FLORA: <i>Brosimum alicastrum</i> (EN); <i>Mauritia flexuosa</i> (VU); <i>Bombacopsis quinatum</i> (VU); <i>Ocotea cymbarum</i> (VU); <i>Micropholis guyanensis</i> (NT). FAUNA: <i>Cebus aequatorialis</i> (CR); <i>Chiropotes satanas</i> (CR); <i>Ateles belzebuth</i> (EN); <i>Cebus versicolor</i> (EN); <i>Inia geoffrensis</i> (EN); <i>Patagioenas subvinacea</i> (VU); <i>Crax alector</i> (VU); <i>Ramphastos culminatus</i> (VU); <i>Tinamus guttatus</i> y <i>T. major</i> (VU); <i>Aotus brumbacki</i>. (VU); <i>Leopardus tigrinus</i> (VU); <i>Agamia agamí</i> (VU); <i>Mitu tomentosum</i> (NT); <i>Harpia harpyja</i> (NT); <i>Psophia crepitans</i> (NT); <i>Atelocynus microtis</i> (NT); <i>Dasypus sabanicola</i> (NT); <i>Leopardus wiedii amazonicus</i> (NT) y <i>Cabassous centrales</i> (DD). CR: Critical Endangered of Extinction; EN: Endangered; VU: Vulnerable; NT: Near threatment; DD: Insufficient data. Source: Own actualized and modified nomenclature from: (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006).
Qualified attribute	The qualified attribute of these forest areas identified as floodwaters are zones indicated by the inhabitants as having high productivity; these areas are home to species in categories of danger and vulnerability according to CITES; and corresponds to the ecosystems of estuaries, reservoirs, low floodplain forest, stubble, and palms of Churrugway; all these habitats belong to the 4 biomes described by the RIU-SM. (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006). The qualified attribute of these forest areas identified as floodwaters are zones indicated by the inhabitants as having high productivity; these areas are home to species in categories of danger and vulnerability according to CITES; and corresponds to the ecosystems of estuaries, reservoirs, low floodplain forest, stubble, and palms of Churrugway; all these habitats belong to the 4 biomes described by the RIU-SM. (Ariza-Vera, Polanco-Ochoa, Yepez-Guzmán, & Suarez, 2006).

Focal area	RIU-SM canopy, estuaries, reservoirs, low floodplain forest, stubble, churruguay palms, gallery forest of the leakage belt close to communities. The identification of the focal areas was verified with the social mapping methodology during the captains' workshop in November 2020. (Consult referenced areas in Map 11 in the Section "2.1.5 Project Zone Map" of this document).



Cairina moschata (Pato real) in Uva river (Morichal community, Zone 5)

Table 94. HCV 1.2 - Gallery forests that support species of fauna with some degree of endemism

HCV 1.2	Gallery forests that support the following species of fauna with some degree of endemism (Birds): Hormiguero yapacana (<i>Aprositoris disjuncta</i>); Hormiguerito Barbiamarillo (<i>Myrmotherula ambigua</i>); Colibrí ermitaño (<i>Phaethornis malaris</i>); Jacamará piquigualdo (<i>Galbula albirostris</i>); Cenicienta de cuello gris-negruzco (<i>Thamnophilus nigrocinereus</i>); Paujil culicolorado (<i>Mitu tomentosum</i>); el collarín (<i>Heterocercus flavivertex</i>); Verdillo de cabeza marrón, (<i>Hylophilus brunneiceps</i>); Loro pechiblanco cabeza negra (<i>Pionites melanocephalus</i>); Tangurú de hombros blancos o Monja negra (<i>Monasa atra</i>); La eufonia plumiza (<i>Euphonia plumbea</i>); hormiguero barbiamarillo (<i>Myrmotherula ambigua</i>); Carpinterito del Orinoco (<i>Picumnus pumilus</i>); el atrapamoscas venezolano (<i>Myiarchus venezuelensis</i>) y Cuculillo de cola corta (<i>Coccyua pumila</i>).
Qualified attribute	Although endemic species have not yet been identified in the project as an indicator of the conservation status of an ecosystem, it is important to note that gallery forests were selected as HCV; since there are bibliographic records showing this transition region between the Orinoquia and Amazon and this class of ecosystems, as the home of many endemic species. (Villarreal Leal , et al., 2009). The qualified attribute is related in the first instance to the maintenance of its critical habitats, the Plant cover, the productivity of the forests and the connectivity between ecosystems. In the second instance, and for future validity (long term), a monitoring plan of variables related to the population, trends and functionality of the identified species is

	presented.
Focal area	Canopy of the RIU-SM, reservoirs, savannas, and forests of the leakage belt close to communities. The identification of the focal areas was verified with the social mapping methodology during the captains' workshop in November 2020. (Consult referenced areas in Map 11 in the Section "2.1.5 Project Zone Map" of this document).

HCV 2. Ecosystems and mosaics at the landscape level (Biomes)

A biome is defined as a set of ecosystems characterized by species and a variety of plants with a characteristic climate and land cover condition. They are usually defined by the structure of the vegetation and the climate. The biome is also defined by geographic components (latitude and altitude) and local names are used for designation.

The biome map in Colombia was elaborated from synthesis units established by superposition of three key thematic layers: land cover, climate and geopedology.

The territory in which the RIU-SM is located is characterized by being naturally subdivided into the following biomes that were identified by forest strata analyses.

These intact landscapes, with forests and large ecosystems that include mosaics of ecosystems, are significant at the global, regional and, national levels. These contain viable populations of the vast majority of trigger species that occur naturally in natural patterns of distribution and abundance. Tables 95 – 99 describe the HCV 2 areas.

Table 95. HCV 2.1 - Helobiome

HCV 2.1	<i>Helobiome</i>
Qualified attribute	Floodplain forest (BI-a): Is commonly known as overflow forest. It is characterized by low with a sparse underwood with thin trees and thickened bark for protection for long periods of flooding; has a low area that remains flooded for long periods per year, reason for which there is no undergrowth developed. The upper area is better developed with underwood, presents trees reaching 15 to 17 meters high, families <i>Chrysobalanaceae</i> (cf. <i>Licania wurdacki</i>) and <i>Tiliaceae</i> (<i>Mollia speciosa</i>), and legumes as <i>Heterostemon mimosoides</i> , <i>Tachigali sp.</i> and <i>Swartzia argentea</i> . The underwood reaches 5-7 meters high. The state of the understory, with information on the distribution and abundance of these forest species, is considered as the attribute or comparative parameter to measure the conservation status of this biome.
Focal area	Cumaribo (Vichada), 04° 36' 33" N, 67° 51' 52" W. Left border of Orinoco river, to 6 km of the confluence of Orinoco and Matavén. (Consult referenced areas in Map 12 in the Section "2.1.5 Project Zone Map" of this document).

Table 96. HCV 2.2 - Lithobiome

HCV 2.2	<i>Lithobiome</i>
Qualified attribute	Floodplain forest (BI-b): Commonly called “varillal”, has intermittent creeks of sizes that depend on rainy and level of <i>Matavén creek</i>. The terrain is hilly with areas that accumulate water in the forest. It presents emerging individuals 17 to 19 meters high of LEGUMINOSAE, CHRYSOBALANACEAE, MYRTACEAE, SAPOTACEAE, STERCULIACEAE and VOCHYSIACEAE families. The canopy reaches 12 to 14 meters, is open and is composed mainly <i>Parinari sp.</i> (CHRYSOBALANACEAE), a leguminous <i>Swartzia schomburgkii</i>, <i>Heterostemum mimosoides</i>, <i>Macrosamanea pubiramea</i> and <i>Tachigali sp.</i>, also <i>Pachira sp.</i> (BOMBACACEAE) and the <i>Hevea sp.</i> (EUPHORBIACEAE). The state of the rods, distribution and abundance of these families and forest species is considered as the attribute or comparative parameter to measure the conservation status of this biome.
Focal area	Cumaribo (Vichada), 04° 32' 11" N, 67° 54' 32" W, 220 m. Matavén creek, Left border. Cumaribo (Vichada), 04° 30' 28" N, 68° 03' 32" W; in front of the mouth of the Cajaro creek, in the Matavén creek. (Consult referenced areas in Map 12 in the Section "2.1.5 Project Zone Map" of this document).

Table 97. HCV 2.3 - Peinobiome

HCV 2.3	<i>Peinobiome</i>
Qualified attribute	Forest rocky hills (BR): is located on rocky outcrops, crossed by small creeks that increase with each downpour level and generally is little eroded. Plants are usually evergreen with subcoriaceous. Its canopy is open and reaches 15 meters high; it presents emerging arboreal individuals of 20-25 meters tall, belonging to the family <i>Leguminosae</i> (<i>Senna sp.</i>, <i>Abarema sp.</i>, <i>Macrosamanea sp.</i>), MYRISTICACEAE (<i>Virola sp.</i>) and MORACEAE (<i>cf. Maquira calophylla</i>). Are frequent palms as <i>Manicaria saccifera (seje)</i> and trees like <i>Pouteria sp.</i> SAPOTACEAE, <i>Protium sp.</i> BURSERACEAE, <i>Brosimum cf. alicastrum</i> MORACEAE. The understory is dense in places and reaches 6-8 meters high. Both understory and canopy are open. There are ways that the site is used for hunting <i>cusumbos</i>, <i>borugas</i>, monkeys, fish, and frogs. The state of the understory and canopy, such as the presence or absence of <i>cusumbos</i>, <i>borugas</i>, monkeys, fish and frogs, it is considered as the attribute or comparative parameter to measure the conservation status of this biome.
Focal area	Cumaribo (Vichada), 04° 31' 56" N, 68° 05' 28" W; 240 m. Right border of Cajaro creek 04° 29' 13" N, 68° 00' 22" W, 260 m. Right border of Matavén creek

	(Consult referenced areas in Map 12 in the Section "2.1.5 Project Zone Map" of this document).

Table 98. HCV 2.4 - Zonobiome

HCV 2.4	<i>Zonobiome</i>
Qualified attribute	Forest on sedimentary plains (BT-A): This landscape presents two sectors: one low and one on a higher deck. The differences are in the thick of trees since the lower part floods and upper part do not receive input from the water. Emerging trees reach 18 to 20 meters high with species like <i>Xylopia sp.</i> ANNONACEAE, <i>Sloanea sp.</i> ELAEOCARPACEAE <i>conceveiba sp.</i> EUPHORBIACEAE and <i>Micropholis sp.</i> SAPOTACEAE. The canopy is between 10 and 13 meters and is open in the presence of a human settlement for 20 years. The underwood has species like <i>Tapirira guianensis</i> ANACARDIACEAE, <i>Iryartella setigera (palm)</i> Leopoldinia and <i>neat (palm)</i>; <i>Protium sp.</i> BURSERACEAE, <i>Hirtella Guainíae</i>, <i>Licania sp.</i> and <i>Parinari sp.</i> CHRYSOBALANACEAE. Forest on sandy plains (BA): This landscape has emergent trees of 17 to 20 meters from the family APOCYNACEAE. The canopy is discontinuous and presents tree species as <i>Parinari sp.</i> CHRYSOBALANACEAE, <i>Protium sp.</i> BURSERACEAE, <i>Ferdinandusia sp.</i> RUBIACEAE and <i>Qualeaparaensis Vochysiaceae</i>. The state of conservation of forests in sedimentary plains, such as sandy ones, can be evaluated from the evaluation of the presence and absence of these families and forest species mentioned.
Focal area	Cumaribo (Vichada), 04° 33' 32" N, 68° 11' 51" W; Right border of Cajaro creek; community of Sarrapia, 04° 29' 25" N, 67° 52' 19" W, Right border of Fruta creek, Community of Sarrapia. (Consult referenced areas in Map 12 in the Section "2.1.5 Project Zone Map" of this document).

HCV 3. Ecosystems and habitats: Rare, threatened, or endangered species, ecosystems, habitats, or refuges.

The tropical forests of the Orinoco and Amazon regions, according to TNC (2014) host 50% of the world's plants and animals. These areas correspond to 2% of the global surface and are considered rare and threatened worldwide, due to high pressure from human deforestation.

These landscapes are in the biological corridor of four terrestrial eco-regions, (northern Amazonian tropical forests, white sand savannas of the Orinoquia, rocky hills and flooded forests); and the productivity of the entire transition region among ecosystems is interconnected. Table 99 describes the HCV 3 areas.

Table 99. HCV 3.1 - Threat / rare ecosystem

HCV 3.1	Threat / rare ecosystem: "Morichales". Specie(s): Moriche. (<i>Mauritia flexuosa</i>) VU.
Qualified attribute	The "morichales" are representative ecosystems of the Orinoquia and correspond to communities of the moriche palm <i>Mauritia flexuosa</i> , an element of the representative flora

	of these ecosystems (Caro, 2008). The moriche is found between Colombia and Venezuela, it is common between the Orinoco and Amazon river basins and the foothills of the Andes mountain range, up to 900 meters above sea level. It is found on low terraces, growing frequently along water courses and on flooded land, temporarily or permanently, with poor drainage. A characteristic factor of these ecosystems called “<i>cananguachales</i>”, “<i>agujales</i>” or “<i>morichales</i>”, where the moriche palm is the most predominant plant, is that these plants do not exceed 15 m in height and the vast majority do not exceed 20 cm of DBH. It can be taken as a qualifying attribute to determine the state of conservation of this ecological unit. Likewise, these formations are important as a vital source of food and refuge for fauna during the fruiting seasons (FAO 1994, Galeano 1992 cited by (Castaño, Cárdenas, Octavo, & Editores, 2007), and as mammals are known as the main consumers and dispersers of their fruits, such as the pecari collarejo (<i>Tayassu tajacu</i>), the tapir (<i>Tapirus terrestris</i>) and, particularly, several species of rodents such as the guatin (<i>Myoprocta acouchy</i>), the guagua (<i>Agouti paca</i>) and the guatusa (<i>Dasyprocta fuliginosa</i>). They are also consumed by some parrots of the genera <i>Amazona spp.</i> and <i>Ara spp.</i> (Borgtoft-Pedersen & Balslev 1993 cited by (Castaño, Cárdenas, Octavo, & Editores, 2007). These species become biological indicators of the state of these ecological units. <i>“In addition to the ecological value, as a source of food and refuge for fauna, the morichales are also important for the protection of water sources. The waters of the morichales are clean waters, as they are the product of the infiltration of the water from the sandy savannas that border the morichales, since they are usually soils with poor drainage, so if these ecosystems were eliminated, natural drainage would be prevented and probably these creeks would become swamps and lose their value as sources of water”.</i> (Borda & Largo, 2009) cited by (Castaño, Cárdenas, Octavo, & Editores, 2007). The practices of burning without planning of <i>morichales</i> in water sources make that the capacities to offer supply services and quality water regulation to plants, animals and humans are depleted; and could affect the vulnerability the conditions of these biomes.
Focal area	<i>Morichales</i> located in gallery forests and “<i>banquetas</i>” vegetation. These correspond to coordinates identified in the social mapping workshop during the captains’ workshop in November 2020. (Consult referenced areas in Map 13 in the Section “2.1.5 Project Zone Map” of this document).

5.1.3 Without-project Scenario: Biodiversity (B1.3)

- I. In the condition of biodiversity related with the availability of habitat, the scenario of land use without a project is presented:

The progressive increase of selected areas for unplanned deforestation to implement migratory crops and pastures for livestock in the absence of an adequate custody system, become a threat to the habitats and niches made of the flora and fauna species of the RIU-SM. The unplanned logging activities of the forests generate a loss of the plant cover, alterations in the natural regeneration, increase in herbaceous species and/or alien invasive species, forest patches such as islands, and sectors of low

productivity that turn them into nonviable habitats for flora and fauna of the RIU-SM.

- II. In the condition of biodiversity related to landscape connectivity, the scenario of land use without a project is observed:

Loss of Plant cover caused by cutting down primary forests for the implementation of production units for illicit crops, mining, and oil exploitation, generates degradation of landscapes and critical areas for wildlife. They reduce the available niche areas, affecting the distribution of seeds and the deployment of triggering species of flora and fauna.

Forest fires caused by anthropic activities cause the loss of soil productivity, bacteria that are important for the uptake and distribution of Nitrogen in the soils which are killed by fire.

- The introduction of dominant species (considered pests) dismantles and unbalances the productivity of soils and forests, affecting the dynamics of the natural landscape (taken from: PDD- Section 1.10.10), which facilitates the invasion of exotic and aggressive species that displace and impair the development of native species.
- Deforestation caused by mining and oil exploration and extraction processes already registered for permits under the "regional and national economic development" projects would eventually affect the contamination of the surface water bodies with fuels, lubricants, and garbage.

- III. In the condition of biodiversity related to threatened species the scenario of land use without project.

- The alteration or destruction of the forests and lands of the RIU-SM, especially the flooded forest, the reservoirs, the morichales, and where the indigenous people traditionally source animal protein (wildlife meat) and fruits of the forest, as well as materials for artisanal utensils, local and boat repairs; cause the loss and degradation of genetic variability and the local extinction of the following flora species: *Brosimum alicastrum* (EN); *Mauritia flexuosa* (VU); *Bombacopsis quinatum* (VU); *Ocotea cymbarum* (VU); and the next fauna species: *Cebus aequatorialis* (CR); *Chiropotes satanas* (CR); *Ateles belzebuth* (EN); *Cebus versicolor* (EN); *Patagioenas subvinacea* (VU); *Agamia agamí* (VU) *Crax alector* (VU); *Ramphastos culminatus* (VU); *Tinamus guttatus* T; *major* (VU); *Aotus brumbacki*. (VU) and *Leopardus tigrinus* (VU).
- The inability of the communities to establish crops and sustainable production systems for the supply and generation of food guarantee among the families of the RIU-SM is a condition that maintain traditional wildlife hunting activities, which generates a decrease in populations of these ones and cause the extinction of some vulnerable and endangered species of fauna mentioned above.
- The introduction of non-native species, and the lack of stewardship plans for natural resources and ecosystems generates the displacement of wildlife populations to nearby ecosystems, or outside the project area.

5.2 Net Positive Biodiversity Impacts

5.2.1 Expected Biodiversity Changes (B2.1)

It is expected to achieve changes in biodiversity caused by the implementation of Sustainable Management Plan of Land and Forest of RIU-SM and Project Activities under the 'with project' scenario in the project

area and during the project life cycle. The expected impacts in flora and fauna are presented in Tables 100 and 101, and they are **derived of specific actions** presented in the Section “2.1.8 Project Activities and Theory of Change” of this document.

Table 100. Changes in Floristic composition

Biodiversity element	1. Floristic composition
Estimated change	Expected impact: Stability of primary forests and gene banks. The maintenance and expansion of vegetable coverage through actions aimed at reducing pressure on forests and strengthening environmental governance, what makes possible to ensure the natural patrimony, like the germplasm bank of associated native vegetal species. It is expected to protect 1,150,212 ha. of forest in Project Area - PA, 486,211 ha. of forest in the Leakage Belt - LB and 321,350 ha. of forest outside PA and LB. Project actions causing the change are presented in the Section “2.1.8 Project Activities and Theory of Change” of this document. Positive impact: Strategic element 3 of the Sustainable Management Plan of Land and Forest is oriented at maintaining secondary forests (11,329 ha.) in such a way that they can be transformed into primary forests, which will increase the biomass stocks and the productivity of the RIU-SM biomes (primary forest productivity) (PDD VCS 2009). Negative impact: No negative impact is expected. Direct impact: Through participatory actions, such as forest inventories, studies of plant population dynamics, and richness / abundance, the baseline records referring to the RIU-SM floristic composition and biodiversity indicators (Alpha and Beta) are validated. PDD VCS, (2017); (Villarreal Leal , et al., 2009). These indices will be subsequently verified from 2022 and every five years thereafter. Indirect impact: Maintain the functionality of the forest and its resources, to validate the ecological integrity in the intervened ecological systems. Monitoring of functional flora (traits of the leaves, wood, root, regenerative capacity, and morphological characteristics). The baseline of these parameters is evaluated since 2023 and will continue to be monitored every five years (Salgado-Negret, 2015).
Justification of change	The conservation of the Selva de Matavén contributes to climate change policies since it avoids the emission of more than three million tons of carbon per year into the atmosphere. The occupation that is facilitated to the communities in the implementation of productive projects and food guarantee, allows the rapid rotation and reuse of the Family agricultural food Productive Units Systems (FAPUS) avoiding the creation of new agricultural sites. Methods used to estimate or document change 1. RIU-SM forest and land surveillance and control patrols 2. Evaluation and monitoring of the Plant cover maintained to determine the reduction of GHG emissions. (REDD+ Project RIU-SM Methods).

Table 101. Changes in: 2. Faunistic Composition

Biodiversity element	2. Faunistic Composition
Estimated change	<u>Expected/planned impact:</u> Maintenance of the forests with the function of habitat and biological corridors of the fauna of the RIU-SM. All actions oriented to reducing pressure on forests in a participatory manner; and the environmental education actions aimed at the entire community allow the maintenance of the forest cover and the diversity of fauna is increased since the RIU-SM provides food, shelter, reproduction areas and wildlife corridors. Project actions causing the change are presented in the Section “2.1.8 Project Activities and Theory of Change” of this document. <u>Positive impact:</u> Strategic element 7 of the Sustainable Management Plan of Land and Forest of RIU-SM is aimed at evaluating from different secondary indicators such as productivity and connectivity to determine the maintenance of the habitat and niche function performed for the fauna of the RIU-SM (Gurrutxaga & Saura, 2013). <u>Negative impact:</u> No negative impact is expected. <u>Direct impact:</u> Through participatory actions such as faunistic inventories and studies of animal population dynamics, richness and abundance, the baseline records referring to the RIU-SM faunistic composition and biodiversity indicators (Alpha and Beta) are validated. PDD-VCS, (2017). (Villarreal Leal , et al., 2009). These indices are subsequently verified from 2022 and every five years thereafter. <u>indirect impact:</u> The increase and the dynamics of the forests is closely linked to the functionality of the fauna that inhabits them. The monitoring of functional fauna (functional characteristics of the fauna species) complements the adaptive and ecological integrity studies of the RIU-SM forests in the face of the effects of climate change. The survey of the baseline of these parameters will be carried out from 2023 year and will continue to be monitored every five years (Salgado-Negret, 2015).
Justification of change	By keeping the forests intact, critical habitats for feeding, reproduction, routes, and corridors are maintained, such as roosting and resting areas for the RIU-SM wildlife. The productivity analysis is carried out from the analysis of the biomass of the forest maintained (Annex 6 of PDD-VCS); Connectivity is evaluated based on a set of areas where the movement routes for fauna are detected and are delimited from the largest forest masses existing in the project area. By promoting and strengthening agri-food projects with the population of the RIU-SM, the traditional activities of hunting wild fauna of the RIU-SM are diminished. <u>Methods used to estimate or document change</u> 1. RIU-SM forest and land surveillance and control patrols 2. verification and validation of connectivity index (Gurrutxaga & Saura, 2013).

Key Assumptions

1. The Project continues to verify carbon units through halting deforestation within the reserve (RIU-SM) and generates sufficient financial resources to continue with the pertinent participatory control and surveillance actions.
2. Strengthening the governance of the main indigenous association – ACATISEMA – (*Asociación de Cabildos y Autoridades Tradicionales Indígenas de la Selva de Matavén*) allows the design and implementation of participatory actions for the conservation and protection of the Plant cover by keeping trigger species of flora alive. And by maintaining habitats such as refuges, nesting, feeding and reproduction areas of the associated fauna.
3. With the implementation of the Sustainable Management Plan for Land and Forest, training and technical strengthening of the communities in the administration of natural resources, production, and food guarantee projects start running, which allow for participatory protection and conservation actions to be carried out to maintain the productivity of forest lands and the connectivity of the RIU-SM ecosystems.
4. Promoting food guarantee and agroforestry projects allows diversification of productive activities and creates opportunities to provide healthy food to the RIU-SM families. In other words, these agricultural projects for the production of food, that leave capacities installed in the communities to support their needs and reduce the pressure on the biodiversity in the RIU-SM.
5. The maintenance of the plant cover with the REDD+ Project maintains the conditions of the RIU-SM forest that the fauna requires for its survival. This is how the plant cover in good condition favors the functions of biodiversity and the ecological units of the RIU-SM.
6. The implementation and visibility of the REDD+ Project RIU-SM involves other national and regional institutions as allies for participatory research in the conservation of biodiversity of the RIU-SM. These monitoring determine early warnings in a strategic location of rare and threatened species and ecosystems.

5.2.2 Mitigation Measures (B2.3)

There are no known negative impacts generated by the RIU-SM REDD+ Project on biodiversity.

On the other hand, possible leaks due to human migration could occur, which could cause the displacement of species in search of habitats and resources. Faced with this risk, the Sustainable Management Plan for Lands and Forests (see Section “2.1.8 Project Activities and Theory of Change” of this document) presents the strategies that lead to the planning of the management of the areas of production and use of natural resources, in accordance with the actions of conservation and mitigation of threats, and also seeking the maintenance and improvement of the High Conservation Values, but without cause the actions of the inhabitants to move, implementing Activities that constitute alternatives that guarantee local communities the means of subsistence they require to generate their well-being and quality of life, reducing pressure on natural resources, such as:

1. The control and surveillance of the forests of the RIU-SM, the communication, and the strengthening of the governance of the Association, such as the implementation of food guarantee and production chain projects, and the training of people from the indigenous community for the administration of natural resources, are mitigation measurements of negative impacts on biodiversity and the High Conservation Values - HCV.

2. The strengthening of communication in the RIU-SM favors environmental governance scenarios and allows the indigenous community to get involved and participate for the benefits that biodiversity conservation brings.
3. The productive and agricultural and food projects provide occupational and productive opportunities to produce healthy food to the families of the RIU-SM that will reduce the pressure on biodiversity as the frequency of hunting activities for wild fauna (wildlife meat) may drop.

The implementation of the Project Activities is already generating impacts and benefits in the biodiversity component, as follows:

- The economic resources obtained by the commercialization of carbon credits have allowed the Project to be implemented and generate a change in the dynamics of the communities, who see in the protection of the natural resources of the Matavén Forest an opportunity to improve the quality of life.
- The ACATISEMA association is an organization that has been strengthening administratively and politically in the territory and in the region with the support of the Project, today being a recognized organization and an example in the management and environmental administration of its natural resources and its communities.
- With the REDD+ Project RIU-SM, the protection and conservation of the forest is ensured to strengthen the permanence and survival of the faunal communities that inhabit it. Being a reciprocal process, since the fauna participates in the dispersion of seeds and pollination of flowers that ensure the propagation and expansion of the forest in the territory.
- The REDD+ Project RIU-SM is recognized by regional and national institutions and has the possibility of establishing partnerships for participatory research in biodiversity conservation in the RIU-SM and other regions of Colombia.

The general benefits obtained by the implementation of the Project Activities will continue to be achieved despite the effects that would arise from the reduction in resources expected by the adjustment of the baseline (see Section “2.5.7 National and Local Laws”), therefore, as mitigation measures to adapt to the expected decrease in carbon financing and continue providing the positive net impacts on Biodiversity are that the scope of these Activities would be adjusted in the future, as explained in Section “2.1.14 Financial Sustainability” (to concentrate the Project's resources on actions to protect the territory and its natural resources, on issues of Indigenous Governance and education, to continue with the mitigation of threats against the RIU-SM and with the reduction of estimated GHG emissions), save reserves of resources to manage for years to come, and in the signing of Agreements with the indigenous communities on biodiversity issues, with which it is possible to generate knowledge among the inhabitants of the RIU-SM about natural wealth and awaken the importance of the conservation and protection of its resources, in addition the communities have understood the purpose of the productive projects and the training to be able to fulfill the objective of reducing exploitation and increasing the productivity of the areas of the *conucos* that are generating food and surpluses, which reduces the pressure on hunting and deforestation of forests and their associated fauna.

Finally, the Project does not involve the introduction of exotic and / or modified species, nor the extraction of genetic material or collection of wild fauna.

5.2.3 Net Positive Biodiversity Impacts (B2.2, GL1.4)

The Sustainable Management Plan for Land and Forest, in its first 6 strategic elements, proposes to give special management to the different areas of the project, for example: the primary forest areas will be conserved, secondary forest areas will be maintained to increase the carbon sequestration stock, stubble areas are recovered and conserved, the areas destined for crops for family food production will be maintained and sustained over time, improving their productivity by increasing soil fertility and facilitating crop rotation, to avoid deforestation in primary and secondary forest areas and opening new production areas.

Evidence that the Project's net impacts on biodiversity will be positive compared to the Without Project land use scenario.

1. The conservation and protection of biodiversity based on the strengthening of local capacities in the protection and conservation of the native forest, allows the community to receive its benefits first-hand bringing a positive scenario. Facing a scenario of land use without a project, where communities and community groups remain isolated from each other and do not receive training, or support to learn about the benefits of biodiversity conservation, will result in the increasing of pressures on forests and land, therefore on the biodiversity and ecosystems of the RIU-SM.
2. The progressive reduction of deforestation in areas commonly used to grow productive agricultural family units, will continue given that the communities started implementing knowledge about sustainable techniques of agriculture from the starting of the project which allows them to carry out rotations in their production sites in short periods of times. Facing a scenario of land use without a project, where communities expand the agricultural frontier and diminish primary forests to establish new sites for agricultural production, causes habitat fragmentation and loss of germplasm of native flora and fauna species, as well as loss of connectivity, productivity, and functionality of biodiversity and the ecosystems.
3. An increase in the indigenous communities linked to agricultural production and forestry projects, will generate healthy food production for the families, making more visible minor groups such as women, “shamans” and “sabedores”, hunters, fishing men, and others (identified in the previous community section of this document in addition to strengthening the production chains and generating better living conditions from food sovereignty and the trade of surpluses. Facing a scenario of land use without a project, where the opportunities to obtain food and resources come from the primary forest, and the pressures of hunting, fishing, and extraction of forest material without planning will increase and affect the fauna and flora of the RIU -SM.
4. The control of deforestation given by an adequate system of custody and the enforcement of the community governance and the strengthening of communication, allows the establishment of early alerts about the impacts in the unplanned use of land Facing a scenario of land use without a project, where communities act in a disjointed way, without planning for the use of lands and forests, generates an environment of low environmental governance and territory with multiple threats of intervention by foreigners generating negative effects on the biodiversity of the RIU-SM.
5. The maintenance of the plant covers because of the decrease in deforestation, which is a goal of the project through the control and surveillance activities of the indigenous guards. This surveillance will reduce the risk of extinction of species of local fauna and flora currently classified in danger of extinction categories or in a vulnerability state, and others that have not been widely studied by science reported or classified yet. Facing a scenario of land use without a project where unplanned deforestation activities are undertaken for agricultural expansion, and the penetration of mining and oil exploration increase,

added to the implementation of informal human settlements, purely extractive and for individual benefit, negatively affect the natural regeneration of the forests, lands and the biodiversity of the RIU-SM.

Table 102 shows the impacts of Project Activities to achieve the adaptation of biodiversity to the probable impacts of climate change.

Table 102. Contribution of Project activities to achieve the adaptation of biodiversity to the probable impacts of climate change (Gold Level)

Project Activities	Contribution of the Activity to achieve the adaptation of biodiversity to the probable impacts of climate change	Benefits of adaptation to climate change (GL1)
Activity A1.1	Through the participatory and preventive actions of control and surveillance of forests and lands of the RIU-SM, it is possible to reduce emissions from burning and the deforestation unplanned of the forests of the RIU-SM.	Community participation to reduce the vulnerability of forests about the affectation of external agents is increased, which contributes to the conservation of the plant cover. This benefits the biotic communities, as it maintains the productivity of the forest and connectivity between the ecosystems and landscapes. The strengthening of governance and the communications generates early warnings about the real time situation of the forest and lands of the RIU-SM; thus, it is an effective mean to supports and preserves the functions of forests as habitat and refuge for biodiversity in the face of changes in the climate.
Activity A1.2	With the strengthen of communication, the media and dissemination strategies are better, such as the displacement, mobility, and the access to the communities, thus it is possible to generate early warnings of the negative situations about land use that may occur on the forests and lands of the RIU-SM.	
Activity A1.3	By strengthening governance, indigenous authorities improve the mechanisms to enforce collective environmental agreements, with the necessary arguments and elements of judgment to take correct decisions and in time to implement adequate strategies and mitigate the impacts of climate change; as well as to apply protection actions on the biodiversity of the RIU-SM.	
Activity A2.1	Deforestation is reduced by the sustainable management of the Activities in the agricultural production units (FAPUS).	A sustainable production system is established, which provides occupational opportunities to the RIU-SM communities, improves the conditions of healthy food production allowing food guarantee for families through techniques that allow the reuse of productive family units or farms, at the same time reducing the possibility of fragmenting and deforesting new forest areas and reducing the pressure from the activities of hunting wild fauna (wildlife
Activity A2.2	Through the capacities installed in the territory on the administration of natural resources, decisions are made that favor the scenarios around environmental security, in the face of climate change.	
Activity A2.3	The strengthen of production chains seeks to improve the living conditions of indigenous communities, through the application of	

Project Activities	Contribution of the Activity to achieve the adaptation of biodiversity to the probable impacts of climate change	Benefits of adaptation to climate change (GL1)
	sustainable and friendly production schemes that mitigate the impacts of climate change.	meat).
Activity A3.1	The validation and verification show that the previous Activities meet the objectives of mitigating the probable impacts of climate change.	A comprehensive mechanism for management and financing is established, which directly influences the compensation received by the communities for the conservation actions implemented. These resources are used for strengthening the governance and enabling the implementation of land and forest control and surveillance programs. In addition, these compensations for the change in behavior of communities that depend on one hundred percent of natural resources.
Activity A3.2		

The three Expected Results of the Project Activities (presented in the previous table) provides that the forests and lands of the RIU-SM count with an Integrated Management System that ensures their sustainability and mitigates threats to their conservation. This entire Integrated Management System contributes to the adaptation of biodiversity to the probable impacts of climate change and brings three main consequences:

1. Deforestation and degradation of forests and land is prevented and its impact on biodiversity, climate, and other natural resources (water and minerals) is mitigated.
2. The living conditions of the local indigenous population are improved.
3. Mechanisms are implemented to obtain resources for the compensation of ecosystem services.

The entire set of activities, expected results, consequences and the Integrated Management System provide the protection and participatory conservation of the plant cover, maintaining connectivity, productivity and the functions of forests as habitat, refuge of biodiversity. The possibility of fragmenting and deforesting new forest areas is diminished and the pressure from wildlife hunting activities is reduced, as well resources are provided to generate food guarantee, as a measure to compensate for the change in burning techniques and reduction of deforestation, and the dependence on the consumption of natural resources.

After the execution of the previous Project's activities, results have been obtained that demonstrate the mentioned positive impacts. For example, 1) monitoring and conserving forests has halted the threats that generates deforestation (the expected number of hectares with deforestation without the Project -Baseline- is much higher than with the execution of the Project). 2) The development of productive and food projects has improved the well-being of the population and every year the number of people linked to these productive agricultural food and forestry activities increases. For example: materials, tools and equipment have been provided for processing food (cassava grating machines), a beekeeping project was implemented, the means of communication have been strengthened (bridges, boats, etc.), which allows a timely information on threats to biodiversity. 4) Frontier issues resolution has been achieved (conflicts with

farm boundaries), and technical training has been provided to strengthen local control and surveillance activities.

LIKELY IMPACTS OF CLIMATE CHANGE (GENERAL - BIODIVERSITY - COMMUNITY):

- Increase in global temperature generated by the accumulation of GHGs, which are produced by anthropic activities (particularly by deforestation and forest degradation).
- If there is deforestation and forest degradation, there is a loss of plant cover, fragmentation, desertification, floods, loss of soil quality, affectation of water sources, migration of populations (human and animal), and at the same time, generates loss of productivity of forests and soils of the RIU-SM, loss of habitats and ecosystem connectivity, leading to degradation and loss of biodiversity (extinction of trigger species), negative impact on human well-being in native communities.

5.2.4 High Conservation Values Protected (B2.4)

All the actions related to the project, such as the control and surveillance program of the indigenous guards, are complementary to the management and recovery objectives of the High Conservation Values.

With the implementation of the Project, the negative effects diminish, and the very monitoring of the High Conservation Values becomes an indicator of success. Table 103 shows the evidence that the Biodiversity HCVs are not being adversely affected by the project.

Table 103. Evidence that the Biodiversity HCVs are not being adversely affected by the project

HCVs related to biodiversity	Evidence that these HCVs are not being adversely affected by the project
HCV 1.1 – <i>Rebalses</i> or flooded forest supporting species in IUCN categories. CR – 2 mammals EN – 3 mammals + 1 forest specie VU – 11 species: 6 birds + 2 mammals + 3 forest species.	The Sustainable Management Plan for Land and Forest is the RIU-SM tool to conserve biodiversity; This plan is developed through participatory control and surveillance actions with indigenous communities. Plant cover monitoring using satellite tracking tools verifies land use and allows generating important indicators to determine the conservation status of the monitored areas. These are: the productivity indices of land and forests calculated using data related to biomass (PDD-VCS, 2017), the landscape connectivity index obtained through cartographic analysis of landscape polygons from previous periods (Gurrutxaga & Saura, 2013) as they are the basis for the implementation of functional biodiversity monitoring to be implemented in future validity (Salgado-Negret, 2015). All these actions together allow to know the state of the habitats and niches of species in categories of vulnerability, danger of extinction and of endemic and migratory species, in addition to feeding, reproductive areas of the biodiversity present in the RIU-SM.
HCV 1.2. Gallery forests supporting 15 endemic bird species.	
HCV 2.1. Helobiome	The Sustainable Management Plan for Land and Forest allow for the collectively planned and concerted use of forests, achieved by

HCVs related to biodiversity	Evidence that these HCVs are not being adversely affected by the project
HCV 2.2. Lithobiome	strengthening governance, environmental management of the territory, and sustainable management of the biomes and landscapes identified in the RIU-SM. Additionally, the control and surveillance program will make it possible to establish early alerts to observed threats or emergencies, such as unplanned or illegal land use on the four biomes or landscapes (Helobiome, Lithobiome, Peinobiome, and Zonobiome).
HCV 2.3. Peinobiome	
HCV 2.4. Zonobiome	
HCV 3.1. <i>Morichales</i> – Conservation and management	The Sustainable Management Plan for Land and Forest guides the activities of the project towards the control and surveillance of the <i>morichales</i> as rare ecosystems threatened by deforestation and burning; also, the strengthening of communication; and governance allows early warnings and ensures compliance with the conservation commitments acquired with the REDD+ Project. In addition, the indigenous captains receive training about natural resources administration and productive projects are implemented for food guarantee, helping to reduce the pressure on the <i>Morichales</i> and letting the communities know the benefits of conserving these threatened ecosystems. Monitoring based on land use coverage (satellite images) allows the detection of <i>morichales</i> affected by fires and their accessibility. the use of moriche palm for roofing has been reduced by the supply of another type of material, such as zinc tiles (ACATISEMA reserves RA3).

5.2.5 Species Used (B2.5)

The REDD+ Project RIU-SM by its Activities 2.1 "Establish and develop a Family Agri-food Production Units System (FAPUS)", and 2.3 "Manage resources for the design of production chain projects", have used agroforestry productive projects of cocoa, banana, and corn (and 1 specie included as timber forest), where *Theobroma cacao* plants of 3 improved varieties have been used, which are FEC 2, CCN 51 and FEAR 3. These varieties have not been genetically improved but have been selected and cultivated by grafting methods. *Zea mays* -maize plants-, a native Mesoamerican plant have been also used by seed selection for the area and without any kind of genetic intervention. The banana plants used Dominico - Hartón Musa AAB, a tropical species naturalized in this region since the arrival of Spanish Dominican missionaries about 200 years ago. The timber species used was the Abarco -*Cariniana pyriformis*-, a tropical timber species native to the Colombian jungles and under a state of near threatened (NT) according to IUCN. These are the only plants used in the agricultural production crops of the project to improve food guarantee and strengthen production chains. This project is accompanied by the company FEDECACAO who is a leader in this type of crop in the region and the country.

Poultry, specifically domestic chickens *Gallus gallus domesticus*, have also been used as a source of food in the communities, thus reducing the pressure on hunting in times of rain and floods when food is most

scarce (Camacho com pers 2021³⁵).

5.2.6 Invasive Species (B2.5)

The REDD+ Project RIU-SM does not use any type of species identified as invasive in any area (Project Area (PA), Leak Area (LA), nor does it propose to introduce exotic species that could become a pest.

5.2.7 Impacts of Non-native Species (B2.6)

To provide food guarantee to indigenous communities, a pilot project for the raising of Creole chickens has been implemented to produce eggs and meat for self-consumption, seeking to improve the food supply in families and reduce the pressure hunting on the biodiversity of the reserve.

Table 104. Introduced non-native specie

Species	Domestic chicken <i>Gallus gallus domesticus</i>
Justification of Use	The aim is to strengthen the food guarantee of the communities, establishing a breeding ground in some selected communities, where a confinement infrastructure is established to control displacement, ensure the use of eggs, increase the availability of animal protein in families. <i>With guaranteed food, the indigenous people reduce the time spent outside their farm and get time available to dedicate to cultivating, caring for and producing their farm. This leads to a decrease in hunting frequency, creating an opportunity for focal species to regain their populations.</i>
Potential Adverse Effects	The species used were the creole chicken, which does not represent a risk to the environment in the region. These chickens are short-flying, domestic, and fragile birds and their niches are associated with the human niches, in a wild environment, without the care of the human being, these birds would not have many opportunities to survive. These Creole chickens are acquired in the region, are previously inspected to warn of any irregularity and possible observable disease, before entering the communities they are dewormed, and they are adapted to the climatic and temperature conditions.

5.2.8 GMO Exclusion (B2.7)

The REDD+ Project RIU-SM does not involve the use of genetically modified organisms (GMOs) to generate reductions or removal of emissions, since this initiative is based on the protection of natural forests and conserving the stored CO₂ content, but not on capturing GHG for the creation or use of new individuals different from those already identified in the baseline.

³⁵ Personal comments from Alejandro Camacho - co-director of the REDD+ Project RIU-SM.

5.2.9 Inputs Justification (B2.8)

In the implementation of the REDD+ Project RIU-SM, the use of fertilizer, chemical pesticide, biological control agent or other similar, or related input is not considered to a large degree. The Project Activities related to the use of land for agricultural production are designed based on improving traditional practices, without introducing strange elements that are not consistent with the worldview of indigenous peoples.

So, the Project does not intend to import external products to improve the quality of the soil for crops. It is clear that this purpose must be to develop new technologies and achieve the use the products of the communities themselves, such as the preparation of compost to add to crop soils and improve and maintain the fertility of these, taking advantage of their own organic waste, some herbs and grasses that act as green manure without impacting the biodiversity of the forests, and improving the raising of domestic animals such as chickens, which must be housed to take advantage of their manure, with which, once properly prepared, will be used as fertilizers for their own crops. It is a slow process, but the necessary elements must be provided to improve the cultural practices that are developing for the conservation and protection of the biodiversity of forests and soils.

In the implementation of stage 1 of the agroforestry project, some substances have been used to generate fertility to the soil, to a small extent and it is not expected to be used again (Table 105).

Table 105. Some fertilizers used to a limited extent

Name	Dolomite lime
Justification of Use	Dolomite lime is a calcareous mineral composed of a double carbonate of calcium and magnesium. Dolomite raises the pH of the soil, it also favors the microbiological Activity in the same way it supplies calcium and magnesium which increases the availability of phosphorus, nitrogen, and potassium, neutralizes the toxic effect of aluminum, iron, and manganese, improves the structure of the soil accelerating the decomposition of organic matter, optimizes root growth, increasing yield and quality of crops. It was used in the conucos of the agroforestry project (cocoa, corn, plantain, <i>abarco</i>), to ensure that the crops acquire the necessary nutrients, and the expected results are obtained. 500 Kg/ha of dolomite lime is used meeting the drilling methodology for planting seedlings, 250 g of dolomite lime must be applied for each hole at the time of planting, mixed with the root covering substrate of each of the 820 cacao plantations, 1,000 plantain plants and 85 <i>abarco</i> plants. During the first year, another application is made at the base of each plant to improve nutrient absorption. This amendment application plan is proposed by FEDECACAO engineers. During a second phase of the project, applications of dolomite lime will be repeated; The results will have been favorable since the plants have had a good development, cocoa pods with a good number of almonds, and more than 30 seeds per pod.
Potential Adverse Effects	There are no known adverse effects of dolomite lime on the environment.
Name	Diammonium Phosphate Fertilizer (DAP)

Justification of Use	Super concentrated fertilizer suitable as a phosphate and nitrogen source in soils well supplied with potassium. Effective for a wide range of crops, this fertilizer was used at the time of planting the crops and twice more every 4 months, to strengthen the development of leaves and formation of the root system of the newly sown plants and increase survival success.
Potential Adverse Effects	Diammonium phosphate fertilizer is composed of nitrogen and phosphorus and is not a toxic substance that affects the natural conditions of the place where it is applied.
Name	Ridomil - Fungicide
Justification of Use	It is a systemic and contact fungicide, with a broad spectrum, highlighting its action on late blight, mildew and other diseases that affect various crops. It is used to control the spread of fungi that attack cocoa and banana plants. The application was only made in three moments of the crops during the first year.
Potential Adverse Effects	Fungicides can be harmful to nature depending on the degree of toxicity and the concentration applied. This fungicide is class IV of toxicity, a product that normally does not offer danger, minimal amounts were applied and directly on the cultivated plants, verifying that no spills or residues were generated. Its application was carried out with the support and recommendations of the expert professionals of FEDECACAO.
Name	Regen – Insecticide
Justification of Use	Regent® 4 SC (fipronil) It is an insecticide of the pyrazole ³⁶ group, formulated as a concentrated suspension that acts by contact and ingestion with rapid action, it does not have systematic action, nor is it fumigant. It was used only in the first stage of cultivation since young plants are susceptible to attack by adult and juvenile insects that attack the leaves, preventing normal development of established crops.
Potential Adverse Effects	The Regen insecticide has toxicological Category III - moderately toxic, however, all the measures recommended by the FEDECACAO experts were taken to avoid leaks and did not represent a risk to human health and biodiversity.
Name	Nitrogen Fertilizer Urea
Justification of Use	Urea is a carbonic acid amide, it is the solid nitrogen fertilizer with the highest concentration of nitrogen, 46% in urea form, it is a fertilizer with slow and prolonged action over time, which depends on the climate for its transformation, it dissolves with the water and its mixture with DAP is extremely useful in soils where the concentration and availability of organic matter (OM) is low. This is the case of the soils where the project is located, they have a low concentration of OM, therefore, it was necessary to apply Urea in the implementation phase to ensure the survival of the planted crops that require a high concentration of available organic matter.
Potential	Urea is not a toxic or dangerous substance for nature; however, its application was

³⁶ The pirazol (IUPAC: 1,2- Diazacyclopenta-2,4-diene, molecular formula: C₃H₄N₂) is a heterocyclic organic compound consisting of a simple aromatic ring of three carbon and two nitrogen atoms in adjacent positions. Any compound that contains such a ring is also called pyrazole.

Adverse Effects	accompanied and recommended by FEDECACAO's expert technicians.

In the technical proposal for agro-forestal project (Annex 8 of this document: technical proposal of FEDECACAO), the activities to be carried out on good agricultural practices for the establishment of 100 hectares of agroforestry crops of cocoa, corn, plantain, and *abarco* are presented. These practices are described step by step from the beginning of the project and with the preparation of the *conucos*, the distance of points where the plants are planted, the appropriate technique for the preparation of holes, application of amendments per hole, planting of plant material, subsequent care, fertilization and phytosanitary management, among other activities. Likewise, the beneficiaries are trained in environmental management of crops, protection of forests / soils / water of their communities, to favor the development and production of crops.

The agro-silvo-pastoral project of self-sufficient integral farms, agroecological techniques are proposed, where amendments and compost will be prepared to improve the quality and fertility of soils and crops. The sustainable production of liquid biofertilizers from soil microorganisms and native plant extracts is also proposed, these technologies prevent growers from depending on commercial agro-inputs and learn to manufacture them with the resources they have in their communities (Annex 9 of this document: technical proposal of the project agro-silvo-pastoral - *Granja Tarapaca* Foundation; Annex 10 of this document: proposal for the structuring project for ornamental fishing in the Selva de Matavén Forest area - *Funindes* Foundation; Annex 11 of this document: proposal for a community nature tourism project - *Cuidar la Tierra* Foundation).

5.2.10 Waste Products (B2.9)

Waste products such as packaging and plastic containers are cleaned, classified according to their use, those that have the potential to be recycled are stored to later be taken to Inírida and sold to recyclers. Solid waste that cannot be recycled or reused is sent to garbage dumps located in each urban center (Inírida or Cumaribo). These garbage sites are holes temporarily opened in the ground and once they have a considerable amount of waste, they are covered with earth.

Organic or putrescible residues are left in the soil of the crops and used as compost to improve soil conditions.

5.3 Offsite Biodiversity Impacts

5.3.1 Negative Offsite Biodiversity Impacts (B3.1) and Mitigation Measures (B3.2)

The REDD+ Project is a collective initiative that benefits indigenous communities, since emissions from unplanned slash and burn, deforestation and degradation of land and forests are reduced through the implementation of control and surveillance routes of the RIU-SM indigenous guards, providing at the same time technical tools and legal mechanisms to stop the interventions of external actors who intend to make use of soils and biodiversity for individual gain. The project strengthens communication to allow communities to generate early warnings of the impacts, and it favors the environmental governance scenarios of the town councils and the traditional authorities of the territory (Table 106).

On the other hand, the project grants compensation for conservation actions in carbon credits, and trains indigenous captains in natural resource management. With the obtained resources, food guarantee, agroforestry and enforcement of production chains projects are implemented that seek to reduce the pressure from these beneficiary communities on protected forests and lands. However, the project estimates a leakage percentage and generates a value related to this (migration of people outside the project area and the hectares that may affect it), which allows us to estimate such leaks, considering that the communities established on the edge of the protected forest area function as protection and buffer barrier. These leaks are related to the migration of indigenous communities to affect biodiversity to lands outside the project area.

Table 106. Probable negative off-site impacts and mitigation measures

Negative off-site impacts	Mitigation measures
Deforestation and exploitation of biodiversity resources outside the Project Area could be generated for two main reasons: 1. Leaks caused by migrations of RIU-SM residents to extract biodiversity resources in neighboring forests and lands, outside the project area. 2. Due to pressure from external actors, who can no longer enter the RIU-SM to subtract biodiversity resources, due to the control and surveillance that is carried out.	1. The mitigation measures to avoid leaks that may be generated from the Project Area towards offsite project correspond to the to the implementation of actions that provide the alternative means of subsistence for indigenous communities inside of the RIU-SM, derived from implementation of Sustainable Management Plan for Land and Forest and Project Activities by compensation resources, specifically in relation to supporting the supply of food and materials necessary for the maintenance and improvement of the living conditions of these indigenous communities while rational use of biodiversity resources is made, in such a way that the territory of the reservation is protected and they do not need to continue with their usual practices outside the RIU-SM. In this way, the communities residing in the RIU-SM are beneficiaries of the resources obtained by the Project and the activities financed by it. With the workshops, training and projects carried out, more and more people in the communities understand the importance of the Project and act with greater care when using natural resources and their services, reducing their impacts. One way to verify this is through the training workshops that are held for 315 indigenous guards and another 315 captains, where they express their concern about the effects of climate change on their communities, such as heavy rains, floods and prolonged summers, generating losses in their crops. They also express concern about the

	reduction in food taken from fishing for consumption. It must be considered that the spatial limits of the Project include the Leakage Belt, an area where the indigenous communities are located and where it is expected that land management practices will be improved to avoid impacting areas outside. 2. It is sought that external threats decrease due to the control and surveillance that has been carried out permanently by the communities and, especially, by the captains and the indigenous guard, who inspect the territory and attend events, which are reported by base authorities and civil authorities and, if possible, intervene on the spot. These events are becoming less frequent, and the most delicate have been dealt with by sending verification and control commissions.
The loss of coverage and the decrease in the possibility of generating connectivity between neighbor ecosystems, caused by the deforestation of lands and forests outside the project area.	The beneficiary communities of the REDD+ Project exercise their customary rights and take advantage of their natural resources such as wood to build houses and boats, bushmeat and fish for food. Even so the productive projects are offering alternatives to improve their quality of life and allowing to reduce the pressure on natural resources, offering protein and food grown in their conucos and materials (as in the case of agroforestry), this has made it possible to protect the coverage of their forest borders and to preserve connectivity corridors with other areas inside and outside the project area, allowing greater movement of species.
The loss of genetic variability of flora and fauna of the RIU-SM degenerate the local genotypic heritage due to overexploitation of biodiversity resources outside of the project area.	Through the implementation of productive projects, the food security of the communities and the productive chains is strengthened. Opportunities are generated to obtain economic resources that do not depend on the extraction of natural resources from the forest.

5.3.2 Net Offsite Biodiversity Benefits (B3.3)

The implementation of the Sustainable Management Plan for Land and Forest ensures the conservation

and protection of the RIU-SM forests, and guarantees the sustainability of the different ecological units and habitats important for flora and fauna of RIU-SM. That is to mention that conserving the plant cover of the lands and forests of the RIU-SM maintains biological connectivity through corridors and important habitats for the transit between ecosystems, reproduction, feeding and the refuge of biodiversity, which at the same time guarantees the maintenance of the productivity and functionality of the forests.

5.4 Biodiversity Impact Monitoring

5.4.1 Biodiversity Monitoring Plan (B4.1, B4.2, GL1.4, GL3.4)

For this biodiversity monitoring plan, the following should be considered:

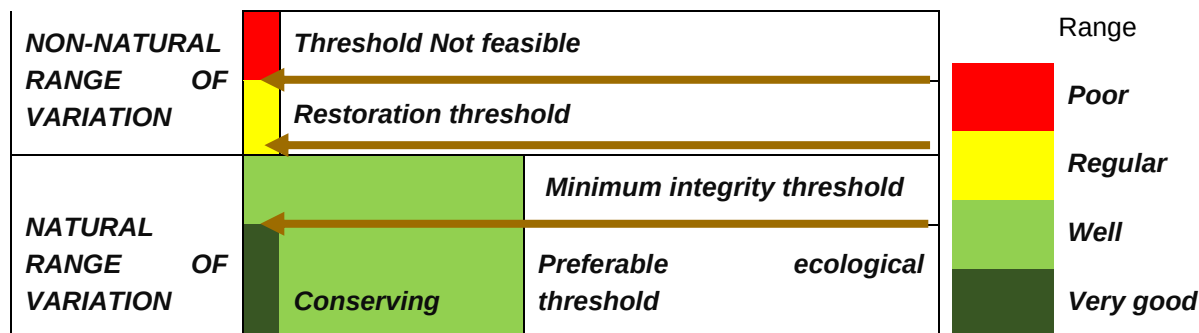
- The complementarity or compatibility of the monitoring actions for conservation with the objectives of the national forest and biodiversity programs and of the conventions and international agreements on the matter, are articulated with the REDD+ Project RIU-SM, the feasible conservation agreements and with the institutional support of governmental and non-governmental actors.
- The REDD+ Project activities should promote and support the full and effective participation of stakeholders, in particular indigenous peoples and local communities, to monitor and control the conservation and recovery of forests and lands of the RIU-SM. At the same time with the participation of indigenous communities, with the design and establishment of a communication and information system in the RIU-SM, it reaches strengthening of the governance of the ACATISEMA association and participatory design of monitoring of biodiversity.
- The REDD+ Project measures are compatible with the protection, conservation and recovery of natural forests and lands and biological diversity of the RIU-SM and serve to encourage the environmental services derived from their ecosystems, to provide for human well-being.

According to the results of the scientific research of the natural history of HCVs, and based on biodiversity inventories and abundance analysis, and following the criteria, recommendations, and proposed rules for the management of HCVs, this document presents five relevant steps to perform the ecological. These steps correspond to the selection of key attributes, identification of the indicators for each key attribute, determination of ranges of variation for the indicators and for each attribute, and the qualification and prioritization of threats to each HCV. (Granizo, Bernal, & Benitez, 2006)

1. Selection of key attributes. Based on the knowledge of the key attributes critical for the maintenance and conservation of biological biodiversity within an ecological system, it can be predicted if an HCV would be lost in a certain period. For this, different categories must be identified that facilitate a comprehensive choice of these attributes. The categories are size (a measure of the area or abundance of the HCV locations), composition (an integral measure of the composition, structure, and biotic interactions that characterize the location), and landscape context (an integral measure of two attributes: the dominant environmental regimes and established and maintained processes which the HCV High Conservation Values location and connectivity).
2. Identification of the indicators for each key attribute. By choosing the right indicators, it is possible to measure changes in key ecological attributes. A useful indicator for monitoring ecological integrity and viability should be quantifiable, accurate, consistent, sensitive to change, biologically relevant, sensitive to human-induced pressures, anticipating the status of the key attribute, cost-effective, and socially relevant (THE NATURE CONSERVANCY – TNC, 2003)
3. Determination of ranges of variation for the indicators and for each attribute. When evaluating the health

of HCVs, it begins with the premise of whether the ecological attributes are within their natural ranges of variation (preferable ecological threshold and minimum integrity threshold), see Illustration 15. These thresholds are influenced by natural factors and they do not have an anthropogenic origin, the object is viable in ecological terms. But if this range of natural variation is broken, due to anthropogenic causes, beyond the minimum integrity threshold, it may happen that the HCV is altered (restoration threshold) and that, in the most extreme case, it is extinguished or permanently eliminated. (Granizo, Bernal, & Benitez, 2006).

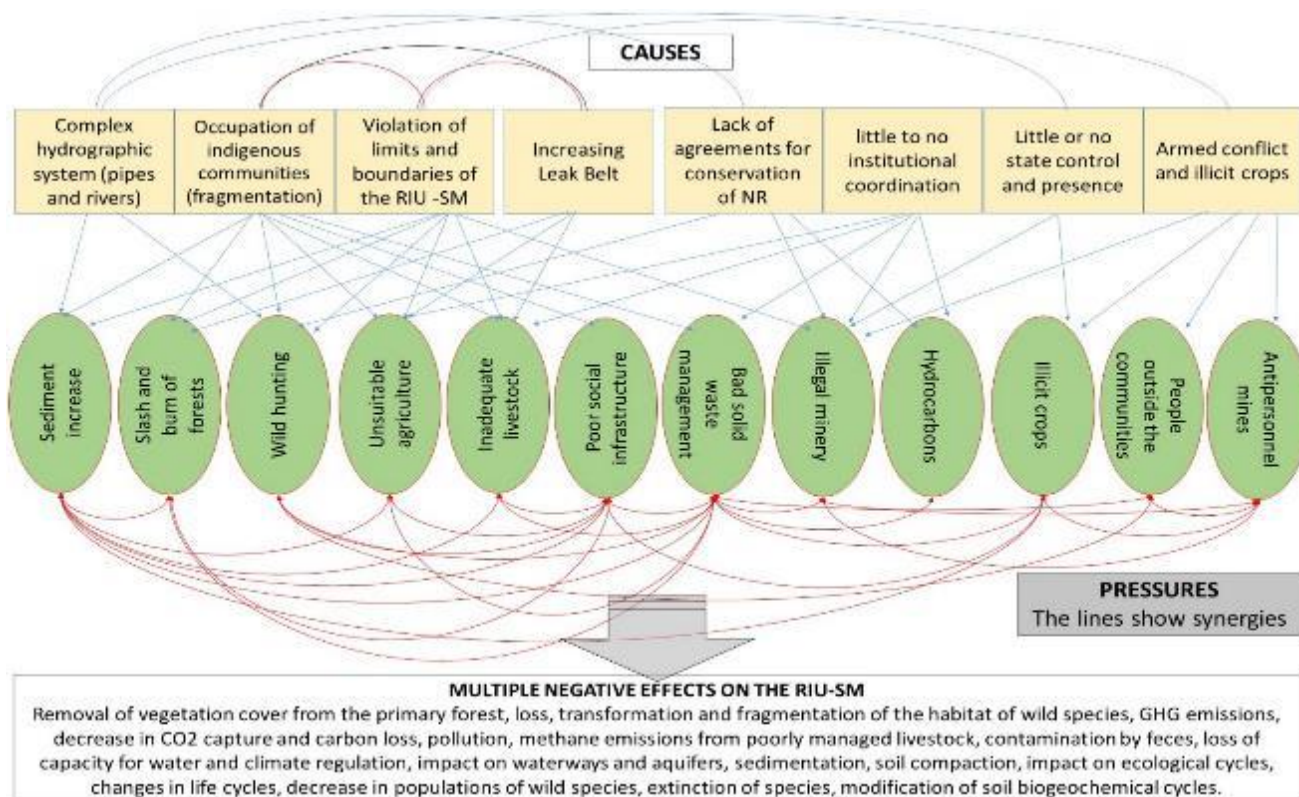
Illustration 15. Scheme of ecological thresholds and their determination of ranges of variation



Source: Manual for the design of NNP monitoring programs in Colombia. (Pardo et al 2007)

4. Identification of threats to HCVs and evaluation criteria. Threats are the most influential dangers on prioritized HCVs, which can occur with a certain degree or intensity, at a site and for a specified period, compromising the fulfillment of the RIU-SM conservation objectives. To determine the threats to HCVs, in the forest and lands of RIU-SM follows the guidelines of the theory of change from the analysis of threats to biodiversity presented by (Isola, Secaira, Molina, & Granizo, 2006). See the Illustration 16.

Illustration 16. Diagram of threats, causes, and effects on biodiversity according to theory of change



Source: REDD+ Project RIU-SM

5. *Qualification and prioritization of threats to each HCV.* After identifying the threats, they are ordered in a matrix against the prioritized HCVs and is qualifying each one in front of each HCV, determining the maximum and minimum values to show an imminent risk, then this value must be placed in front of each identified threat, determining the threat with the highest hierarchical value, the medium values, and the low values.

Subsequently, a numerical score is assigned to regroup and establish a finer level, to determine the critical threats and acute threats. This classification and prioritization of threats will be presented after monitoring the population trends of species of fauna and flora, in the 2022 period.

MONITORING PLAN FOR BIODIVERSITY VARIABLES

The measures proposed by the REDD+ Project for the conservation of biodiversity is presented in the Sustainable Management Plan for Land and Forest, which proposes the participatory activities of control and surveillance of the forests of the RIU-SM, the strengthening of governance and the communication that allows to make early alerts of affectations and attend to these findings. Next, the variables to be monitored in the biodiversity monitoring plan of the REDD+ Project RIU-SM are presented.

VARIABLE NUMBER 1 TO MONITOR. Key attributes of areas hosting HCV 1.1 ("Rebalses" and flooded

forest) y HCV 1.2. (gallery forests). The monitoring of the conservation status of these ecosystems with the function of habitat and niche of the triggering species; for which it is necessary to know the deforestation, productivity, and connectivity indices; that allow the construction of indicators of the availability of habitat for fauna and flora according to IUCN criteria and / or endemism in the Project Area.

These data make it possible to propose measures to maintain and improve the state of conservation of these areas and their biodiversity above a critical value within the threshold scheme determined for each species (Scheme of ecological thresholds and their determination of ranges of variation) (Granizo, Bernal, & Benitez, 2006).

For future validity (from 2022 and every five years onwards) the monitoring plan is verified to determine composition, richness (number of species), abundance, structure of sizes and / or sizes, spatial distribution, and accumulation curves of focal species in IUCN and / or endemic criteria, present in the project area.

Table 107. Sampling method, monitoring frequency, measurement type, and focal area of Variable 1 to be monitored

Sampling method	Plant cover monitoring: Remote monitoring with satellite images. Monitoring of focal species: Updating of inventories through line and point transects, where the largest number of independent variables of the habitats or ecological units integrated into the natural history of the species are correlated with the presence and ecological activity of the observed specimens, and the selected methodologies to determinate biodiversity indicators
Monitoring frequency	Plant cover Deforestation and habitat availability in the Project Area: Annual / biennial from 2013. Monitoring of vulnerable, endangered, and critically endangered flora and fauna: Five-year from 2022 (2027, 2032, 2037...)
Measurement type	The type of measurement is nominal scale, where the critical habitats that host the species are identified and described, as are threats to these critical habitats, such as the attributes of the triggering species mentioned below.
Focal area	These correspond to coordinates verified in the social mapping workshop during the captain's workshop in November 2020 and are presented on the map in Section "2.1.5 Project Zone Map" of this document.

VARIABLE NUMBER 2 TO MONITOR

The key attributes of the Helobiomes, Peinobiomes, Lithobiomes and Zonobiomes characterized in the REDD+ Project RIU-SM, these biomes are in all areas of the spatial limits and are based on official information from the "Instituto Geográfico Agustín Codazzi – IGAC", the "Instituto de Hidrología, Meteorología y estudios Ambientales – IDEAM" dependent on the "Ministerio de Ambiente y Desarrollo Sostenible – MADS", entities authorized to provide official information on this subject.

These intact landscapes, with forests and large ecosystems at the level of mosaics of ecosystems significant at the global, regional, national levels, could include viable populations of most species that occur naturally in the RIU-SM forest

The monitoring of the conservation status of these biomes in addition to the deforestation, productivity, and connectivity index focuses on taking DBH measurements of focal flora species of each landscape unit,

compared from the following baseline information:

- ✓ The presence of trees that reach 15 to 17 meters in height, families like CHRYSOBALANACEAE (cf. *Licania wurdackii*); TILIACEAE (*Mollia speciosa*), and LEGUMINOSAE like *Heterostemon mimosoides*, *Tachigali* sp. and *Swartzia argentea* in Helobiomes.
- ✓ the presence and sizes of emerging individuals from 17 to 19 meters in height, of the next families LEGUMINOSAE (*Swartzia Schomburgkii*, *Heterostemon Mimosoides*, *Macrosamanea Pubiramea* and *Tachigali* Sp), CHRYSOBALANACEAE, MYRTACEAE, SAPOTACEAE, STERCULIACEAE and VOCHYSIACEAE. The canopy reaches 12 to 14 meters, is open and consists mainly of *Parinari* sp. CHRYSOBALANACEAE; also, *Pachira* sp. BOMBACACEAE and *Hevea* sp. EUPHORBIACEAE in Lithobiomes.
- ✓ The presence of emergent arboreal individuals from 20 to 25 meters in height, belonging to the next families LEGUMINOSAE (*Senna* sp., *Abarema* sp., *Macrosamanea* sp.), MYRISTICACEAE (*Virola* sp. and MORACEAE (cf. *Maquira calophylla*). the most frequent palm trees are *Manicaria saccifera* (seje) and trees like *Pouteria* sp. (SAPOTACEAE), *Protium* sp. (BURSERACEAE), *Brosimum* cf. *alicastrum* (MORACEAE) in Peinobiomes.
- ✓ The presence of emergent trees that reach from 18 to 20 meters in height with species like *Xylopia* sp. (ANNONACEAE), *Sloanea* sp. (ELAEocarpaceae), *conceveiba* sp. (EUPHORBIACEAE) and *Micropholis* sp. (SAPOTACEAE). The canopy measures between 10 to 13 meters in height and its open in presence of a human town for 20 years. The underwood has species such as *Tapirira guianensis* (ANACARDIACEAE), palms like *Iriartella setigera* and *Leopoldinia* sp; *Protium* sp. (BURSERACEAE), *Hirtella Guainiae*, *Licania* sp. and *Parinari* sp. (CHRYSOBALANACEAE) in forest in sedimentary plains (BT-A); and the presence of emerging trees from 17 to 20 meters in height to the APOCYNACEAE family. The canopy is discontinuous and presents tree species such as *Parinari* sp. (CHRYSOBALANACEAE), *Protium* sp. (BURSERACEAE), *Ferdinandusia* sp. (RUBIACEAE) and *Qualea paraensis* (VOCHYSIACEAE) in Forest on sandy plains (BA) in Zonobiomes

Table 108. Sampling method, monitoring frequency, measurement type, and focal area of Variable 2 to be monitored

Sampling method	Stratified random sampling using existing plots, implementing a study of ecology and landscape structure, from base information on qualified attributes of biomes and selected methodologies to determine biodiversity indicators.
Monitoring frequency	Plant cover Deforestation and habitat availability in the Project Area: Annual / biennial since 2013. Monitoring of vulnerable, endangered and critically endangered flora and fauna: Five-year from 2022 (2027, 2032, 2037 ...)
Measurement type	The type of measurement is nominal and at a ratio scale, where the field of study is the interactions between spatial patterns and different ecological processes. The study of landscape ecology is based on the spatial structure of landscapes and the relationship with their variations over time, with special emphasis on the disturbance that man causes over time on connectivity and on the forest functionality
Focal area	The study area is located to the east of the Colombian Orinoquia highlands, in the extreme southeast of the Vichada department, between the Vichada rivers, to the north, and Guaviare to the south; specifically, it is in the lower basin of the Matavén channel, in the

	municipal jurisdiction of Cumaribo. Due to its physiographic and geological characteristics, the study area is part of the western edge of the Guiana Shield, and corresponds to what is known as the RIU-SM.

VARIABLE NUMBER 3 TO MONITOR. Key attributes of Morichales (rare and threatened ecosystem) The monitoring of the conservation status of the Morichales, in addition to the information captured by satellite means, indicates rates of deforestation, productivity and connectivity; added to data from the *Mauritia flexulosa* (VU) species classified as vulnerable by IUCN Red List; They are palms of moriche of 15 m of height and DBH of 20 cm; and the presence of fauna species to indicate the health status of the morichal such as the Pecarí (*Dicotyles tajacu*); the tapir (*Tapirus terrestris*); some rodents such as the guatín (*Myoprocta acouchy*), guagua (*Agouti paca*), the guatusa (*Dasyprocta fuliginosa*), and some parrots like Amazona spp and Ara spp macaws; as some prioritized population data for future validity.

The information described above allows the morichales to be valued within the scheme of ecological thresholds and their determination of ranges of variation) (Granizo, Bernal, & Benitez, 2006); and it will be verified with information that is collected in future validity (from 2022 and every five years onwards) on some qualified attributes of the species that inhabit the *morichales* that are detailed below.

Table 109. Sampling method, monitoring frequency, measurement type, and focal area of Variable 3 to be monitored

Sampling method	Simple and stratified random sampling.
Monitoring frequency	Plant cover Deforestation and habitat availability in the Project Area: Annual / biennial since 2020. Monitoring of flora and fauna to indicate the conservation status and health of <i>Morichales</i> : Five-year from 2022 (2027, 2032, 2037 ...)
Measurement type	Sustainability indices (carrying capacity, ecological footprint) of biomes and impact on ecological units. Functional diversity of the moriche <i>Mauritia flexulosa</i> and water volume, such as the attributes of the trigger species mentioned below.
Focal area	These correspond to coordinates identified in the social mapping workshop during the captain's workshop in November 2020 and are presented on the map in Section "2.1.5 Project Zone Map" of this document.

Next, we present the measures implemented by the project to maintain and improve the High Conservation Values and how these measures are verified and evaluated.

To maintain and improve HCV 1.1, which correspond to *rebalses* and flooded forests that harbor endangered, critically endangered and vulnerable flora and fauna species; HCV 1.2, which corresponds to gallery forests that host endemic species. HCV 2.1, 2.2, 2.3 and 2.4 that correspond to ecosystems and mosaics at the landscape level according to (Villarreal Leal, et al., 2009) and according to the approach of the "Project Description Design" for VCS (PDD-VCS, 2009) helobiome, peiniobiome, zonobiome and lithobiome, and HCV 3.1 which corresponds to *morichales* as rare and threatened ecosystems, the following measures are proposed:

Table 110. Measures to maintain HVCs

Measures	Indicators	Means of verification
1. Development of the Sustainable Management Plan for Land and Forest of the RIU-SM.	- At least 1 fluvial and/or 1 land surveillance routes designed and implemented per zone. - At least 1 control and surveillance route realized per year.	- Reports of the control and surveillance routes.
2. Control and surveillance activities of the indigenous guard, to prevent deforestation on the RIU-SM forest.	- The 100% of the indigenous guardians trained per zone, per season realized control and surveillance patrols.	- Reports on alterations in the RIU-SM forests.
3. Implementation of productive projects and food guarantee, to keep part of the community dedicated to the productive work of their conucos.	- At least 10% in short term, 50% in medium term, and 80% in long term of the families per zone benefit with the agroforest and agri-food projects.	- Reports of performance and productivity of the family or farm production units (Hectares / KG of products)
4. Continue with the verification of the protected forest coverage to avoid deforestation with the participative actions of control and surveillance.	- 100% of transition coverage reports are presented. - 95% of forest coverage are protected of the deforestation.	- Annual reports which contain the resume of patrols formats and early alarms about the affectation on RIU-SM, and about monitoring of socioeconomic impacts.

Table 111. Measures to improve HCVs

Measures	Indicators	Means of verification
1. Implement the Sustainable Management Plan for Land and Forest of the RIU-SM.	- 10% of decrease about reports and findings of deforestation per year. - 5% of increase about soils associated to vegetation in regeneration areas in the coverage transition tables of the Project Area each year.	- Document with the assessment of the elaborated indicators of coverage, with biomass data, productivity, and connectivity of forest and lands.
2. Develop educational programs and didactic material for the strengthening of pedagogical capacities for training in natural resource management.	- At least 2 training workshops about control and surveillance are developed per zone each year, including theoretical and practical educational tools.	- Memories and contents of workshops and courses on natural resource management topics, as with the ethnic and territorial life plans.
3. Implement agroforestry and food guarantee projects, which seek to reduce the dependence of the	- At least 2 productive projects and techniques implemented to improve food production in	- Progress reports on productive projects.

forest, reducing the deforestation and affections to the HCV.	short term, 5 in medium term, and 10 in long term.	
4. Obtaining compensation resources for stopping deforestation and reducing greenhouse gas emissions.	- 10% of deforestation avoided in the Project Area in short term, 50% in medium term, and 100% in long term. - 10% of greenhouse gases emissions (defined with the early warnings shared for the environmental authorities) are controlled in short term, 50% in medium term, and 100% in long term. - 100% of carbon credits acquired represented of forest coverage of Project Area.	- Final reports of the validated and transition tables of cover plant.

Monitoring Plan for the Climate Change adaptation benefits of Biodiversity (GL1)

1. With the implementation of the RIU-SM land and forest management plan, the loss of plant cover and the destruction of forests with a function of habitat and routes of movement of species of fauna and flora of the RIU-SM are avoided. This benefit is measured from the connectivity analysis added to the productivity evaluation, and for the evaluation in future validity (from 2022 and every five years onwards), subsequently, it measures the functionality of the ecosystem starting the functionality of the biodiversity. The indicators of this benefit correspond to:
 - a. At least 1 fluvial and 1 land route per zone for control and surveillance. At least one report per zone, per year.
 - b. At least 90% of Project Area is conserved with vulnerable ecosystems and ecological units.
 - c. Maintenance and improve the primary productivity of 100% of earth and lands of Project Area, through forest coverage analysis and biomass data.
 - d. Maintenance the 80% of connectivity index on Project Area from remote landscape analysis.
 - e. At least 1 functional biodiversity assessment every 5 years for flora and 1 for fauna, for ecological unit, which indicates the adaptative response for the climate change of the biodiversity (to measure and evaluate in future).
2. Due to the strengthening of control and surveillance actions of the RIU-SM, through better communication media, methods, and strategies, the deforestation is prevented, generating early warnings of the impacts and findings of the indigenous guards, and slowing the growth of the agricultural frontier towards the primary forest. The indicators of this benefit correspond to:
 - a. 100% of patrol reports for 100% of indigenous guardians participating.
 - b. At least the 90% of early warning cases detected as findings.
 - c. At least the 90% of cases attended and conflicts resolved on the use of forests and lands of the RIU-

SM.

3. Opportunities for own food production (carbohydrates and proteins) are provided, engaging communities/families in the improvement of production conditions in their traditional agricultural production sites, with the purpose of generating food guarantee, generate trade-in surpluses, and reducing the dependence of the extractive and consumption of the biodiversity of the RIU-SM

The indicators of this benefit correspond to:

- a. 10% of communities implement pilot projects by RIU-SM Sector in short term, 50% in medium term, and 80% in long term
 - b. 10% of families and people per community benefiting from agricultural food projects in short term, 50% in medium term, and 80% in long term.
 - c. 10% of hectares intervened in short term, 50% in medium term, and 80% in long term.
 - d. At least 90% of resources allocated for compensation of collective actions for reducing emissions; reduce deforestation and avoid forest degradation to implement agricultural for food production projects.
4. Local capacities are installed and strengthened to administer and exercise environmental governance, increasing the participation of the community in the project and in the monitoring actions for the control and surveillance of the lands and forests of the RIU-SM. The indicators of this benefit correspond to:
 - a. 10% of communities participants in the use and decision-making scenarios related to sustainable land and forest management in short term, 50% in medium term, and 80% in long term, which involves the control and surveillance of the RIU-SM forests.
 - b. At least 1 training workshop / meeting with captains and indigenous guard per zone per year.
 - c. 90% of resources assigned to governance and institutional strengthening (headquarters, logistics, operations) are executed.
 - d. At least 2 tools and mechanisms for communicating to the collective to strengthen participation with the training of multipliers, with social dynamization, and with spaces for social validation of the adaptive benefits generated by the REDD+ Project RIU-SM (1 indigenous guard workshop and 1 workshop for captains per year), (newspaper, media pages).

Table 112. Monitoring Plan for Exceptional Biodiversity Benefits (GL3)

Monitoring Populations of triggering species	Population trend indicators of species	Threats to these species
FLORA: <i>Pachira quinata</i> (EN); <i>Mauritia flexuosa</i> (VU) FAUNA: <i>Chiropotes satanas</i> CR; <i>Cebus aequatorialis</i> CR; <i>C. versicolor</i> EN; <i>Inia geoffrensis</i> EN;	Presence of at least one individual of a species on the IUCN Red List that is critically endangered or endangered. Presence of at least	Loss of connectivity of the forests and lands of the RIU-SM due to deforestation. Loss of productivity of forests and lands of the RIU-SM Destruction of critical habitats by fragmentation of ecosystems and the growth

Monitoring Populations of triggering species	Population trend indicators of species	Threats to these species
<i>Ateles belzebuth</i> EN; <i>Leopardus tigrinus</i> VU; <i>Aotus brumbacki</i> : VU; <i>Agamia agamí</i> (VU); <i>Crax alector</i> . VU; <i>Patagioenas subvinacea</i> . VU; <i>Ramphastos culminatus</i> : VU; <i>Tinamus guttatus</i> VU; <i>T major</i> : VU.	30 individuals or 10 pairs of a vulnerable species. (Detail in point 5.1.18) High priority status of biodiversity conservation.	of the agricultural frontier. Loss of birds and other vertebrates responsible for pollination and seed dispersal, as well as forest productivity due to human consumption Disappearance of mammalian connectors of ecosystems, due to wildlife meat consumption.

Source: (Villarreal Leal , et al., 2009) and (Ariza Vera, Polanco Ochoa, Yepes Guzmán, Suárez Navarro, & ACATISEMA, 2006)

With the scenario of land use without a project, there is no benefit whatsoever. However, in the project scenario, compensation benefits are granted to the communities for reducing emissions and avoiding deforestation of the lands and forests of the RIU-SM, through the implementation and start-up of the Sustainable Management Plan for Land and Forest.

This plan directs control and surveillance actions, together with the strengthening of communication to carry out early warnings of the effects that may arise, governance is strengthened, food guarantee and productive projects are implemented, local people are trained on natural resource management; with the purpose of reducing dependence on the use of flora and fauna resources of the lands and forests of the RIU-SM.

The safeguards of REDD+ projects call for the realization of a program for the evaluation of impacts on biodiversity, where indicators of the population trend of each of the triggering species and/or ecological units and the threats on it are presented, at the same time, REDD+ projects must demonstrate the effectiveness of the measures necessary and adopted to maintain or improve the status of their population.

5.4.2 Biodiversity Monitoring Plan Dissemination (B4.3)

Description of the dissemination of the Monitoring Plan and its results

The REDD+ Project RIU-SM presents in its Activity 1.2, a strategy for the strengthening of communication, which involves the preparation of pedagogical material, the holding of workshops and training, as well as the generation of spaces to socialize the Project Activities and generate alerts early on the impact that occurs on the lands and forests, and on the biodiversity of the RIU-SM.

The strengthening of the means of dissemination for the communities and other stakeholders, both the monitoring plan and the results, is carried out through the web pages of ACATISEMA and the REDD+ Project RIU-SM.

The dissemination of the monitoring plan and its results are wide and correspond to printed reports, booklets, or guides for presentation at events and for dissemination at ACATISEMA bulletins, publications of audiovisual reports, and digital reports in pdf, available for consultation.

For more details of the means of communication established as stated in Sections “2.3.2 Dissemination of Summary Project Documents”, “2.3.3 Informational meetings with Stakeholders” and “2.3.9 Stakeholder

Consultation Channels”.

5.5 Optional Criterion: Exceptional Biodiversity Benefits

5.5.1 High Biodiversity Conservation Priority Status (GL3.1)

Presence of individuals of endangered or vulnerable species

The implementation of research on species with some level or criterion of threat or vulnerability, and with relevant threats and social conflicts allows us to make decisions to guide conservation efforts. Species are presented in the Tables 113 and 114.

Table 113. Presence of individuals of endangered or vulnerable species

	Site on the Project Zone	Evidence – Presence of:
Presence of at least one individual of a species on the IUCN Red List that is critically endangered or endangered	Uva Amanavén river, lagunas, rebalses, jungle, forest canopy.	FLORA: <i>Brosinum alicastrum</i> (EN) FAUNA: <i>Chiropotes satanas</i> (CR); <i>Cebus aequatorialis</i> (CR); <i>C. versicolor</i> (EN); <i>Inia geoffrensis</i> (EN); <i>Ateles belzebuth</i> (EN).
Presence of at least 30 individuals of a vulnerable species - VU.	Rebalses, flooded forest, in leakage belt.	FLORA: <i>Mauritia flexuosa</i> (VU); <i>Bombacopsis quinatum</i> (VU); and <i>Ocotea cymbarum</i> (VU).
Presence of at least 10 pairs of a vulnerable species - VU.	Rebalses, gallery forest canopy of natural or secondary forest, mainly the plots selected for forest monitoring and salt licks.	FAUNA: <i>Patagioenas subvinacea</i> ; (VU); <i>Inia geoffrensis</i> (EN); <i>Agamia agamí</i> (VU); <i>Crax alector</i> (VU); <i>Ramphastos culminatus</i> (VU); <i>Tinamus guttatus</i> and <i>T. major</i> (VU); <i>Aotus brumbacki</i> . (VU); <i>Leopardus tigrinus</i> (VU).

Source: (Villarreal Leal , et al., 2009) and (Ariza Vera, Polanco Ochoa, Yepes Guzmán, Suárez Navarro, & ACATISEMA, 2006)

Table 114. Global population of species present at the site at one stage of their life cycle

Global population of species that are present at the site	Site on the project area	Stage of the life cycle of the species	Evidence
At least 5% of the global population of a restricted range species	Natural or secondary forest canopy, reservoirs and sites determined as a focal area of HCV 1.2.	Niche made of resident anteaters (foraging areas, nests, perch and reproduction). All its stages.	Presence of: <i>Hormiguero yapacana</i> (<i>Aprositornis disjuncta</i>) <i>Hormiguerito Barbiamarillo</i> (<i>Myrmotherula ambigua</i>) (Ariza-vera et al 2006 and Villareal – Leal

Global population of species that are present at the site	Site on the project area	Stage of the life cycle of the species	Evidence
			<i>et al</i> , 2009)
At least 5% of the global population of a species with large but clustered distributions	Natural or secondary forest canopy, reservoirs and sites determined as a focal area of HCV 1.2.	Niche made of resident birds (foraging areas, nests, roosting and reproduction). All its stages.	Presence of: Colibrí ermitaño de pico grosero (<i>Phaethornis malaris</i>), Jacamar gabula (<i>Galbula albirostris</i>), cenizo batará (<i>Thamnophilus nigrocinereus</i>), paujil culi colorao (<i>Mitu tomentosum</i>), el manakin con collar (<i>Heterocercus flavivertex</i>), empavesado amazónico (<i>Hylophilus brunneiceps</i>), loro pechiblanco (<i>Pionites melanocephalus</i>), tangurú de hombros blancos or monja negra (<i>Monasa atra</i>), eufonia plumizo (<i>Euphonia plumbea</i>). (Ariza-vera <i>et al</i> 2006 and Villareal – Leal <i>et al</i> , 2009)
At least 1% of the global population of a species uses the site seasonally.	Migratory birds. Temporary presence of water mammals in lagoons and / or rivers. Primates and other mammals (nomadic, transient, and / or substitutes)	Migratory routes in established seasons. Breeding areas, local migration routes, feeding and / or foraging areas. Breeding areas, local migration routes, feeding and / or foraging areas.	Research reports and bird observations by trained local monitors. Research reports for the conservation of aquatic mammals and prioritized monitoring. RIU-SM natural history reports of mammals and monitoring of functional biodiversity of species prioritized by ecological function. (Ariza-vera <i>et al</i> 2006 and Villareal – Leal <i>et al</i> , 2009)
At least 1% of the global population of a species is on the site.	Resident birds or populations of endemic species.	Habitat and niche made, foraging areas, reproductive areas.	Research reports and bird observations by trained local monitors. (Ariza-vera <i>et al</i> 2006 and Villareal – Leal <i>et al</i> , 2009)

Source: (Villareal Leal , *et al.*, 2009) and (Ariza Vera, Polanco Ochoa, Yepes Guzmán, Suárez Navarro, & ACATISEMA, 2006)

5.5.2 Trigger Species Population Trends (GL3.2, GL3.3)

A ‘trigger specie’ is any species that makes a site meet the necessary conditions to achieve the status of a Key Biodiversity Area. According to the publication “*Identification and gap analysis of Key Biodiversity*

Areas: Targets for comprehensive protected area systems (Langhammer, P.F. *et al.*, 2007). The RIU-SM Unified Indigenous Reserve is granted this status, based on the criterion of being an area conserved by indigenous communities that manage its use, in a way that guarantees the persistence of the elements of biodiversity and existing ecological units (see Table 115).

Table 115. Trigger species population

Trigger Species	FLORA <i>Pachira quinata</i> (EN); <i>Mauritia flexuosa</i> (VU); (Population attributes of triggering flora species from the RIU-SM are presented in the Table 116 below).		
Population Trend at Start of Project	At start of the Project, the populations tend to decrease due to the increment of activities that involve the fragmentation of habitats, due to the increase in extractive activities of flora and fauna for human consumption and due to the eventual overlap of family productive areas, or conucos with the niche made of wildlife species. In the following tables the list of qualified population attributes of the trigger species listed in the text is presented.		
Without-project Scenario	In the scenario without a project, it is likely that the loss of plant cover will continue to occur due to activities of traditional use of logging and burning of forests without planning, which causes fragmentation of habitats and the subsequent decrease of populations of vulnerable species and the loss of some endangered and critically endangered species.		
With-project Scenario	Following the necessary measures designed by the project to maintain and improve the state of conservation, such as the population of each trigger species in the project area and the way in which these measures are verified and evaluated.		
	Measures needed and designed to maintain the population status of each trigger species in the Project Zone:		
	Measures	Indicators	Means of verification
1. Implementation of a trigger species monitoring plan.	- Number of workshops per zone. - Number of traditional authorities per zone. - Number of communities per zone participating in workshops to assess presence or absence, as a trend of populations of triggering species of flora and fauna reported in secondary information (first 2 years).	- Study of the trend of population and functional biodiversity of flora and fauna species in categories of critical danger, danger, vulnerable, and/or endemic.	

	2. Implementation of food guarantee projects, which seek to provide food and nutrition to indigenous families.	- Number of families by zones that are beneficiaries of food security projects and that seek to provide food and nutrition to indigenous families per year.	- Minutes of socialization and progress of projects initiated per zones. - Database of participants and beneficiary families per community.
		- Number of productive and agri-food projects that are implemented per year.	- Technical reports on project performance. - Photographic and video records.
	3. Feasibility studies of conservation agreement agreements for species of flora and fauna and/or triggering ecological units.	- Number of captains training per year about natural resources management and administration.	- Minutes of workshops for captains about natural resources administration training.
		- Number of indigenous guards and number of captains designing measures for prevent and mitigate the threats on biodiversity.	- Minutes of the theoretical-practical workshops to indigenous guard on control and management of threats on the lands and forests of RIU-SM. - Participative Action Plans for the prevention and mitigation of threats for biodiversity.
		- Number of species of flora and species of fauna endangered, and endemic on the RIU-SM.	- Minutes with analysis of the results of captain's workshops.
		- Number of institutions engaged for the agreements.	- Document with feasibility study filed for the implementation of pertinent conservation agreements for the year 2025. - A down payment plan that must have at least: 1. Clear and simple statement of the conservation result(s), 2. Initial responses or actions to identified threats. 3. Schedule of meetings

			and / or workshops required to present the model of agreements to the identified stakeholders. 4. List of groups with which the team should meet (from the entire community to a select group of leaders). 5. Establish communication routes with the various actors. 6. List of materials and needs to present the model in accordance with the possible participants.
	Measures needed and designed to enhance the population status of each trigger species in the Project Zone:		
	Measures	Indicators	Means of verification
	1. Implementation of the Sustainable Management Plan for Land and Forest and the monitoring plan of the High Conservation Values of community and biodiversity of the RIU-SM presented in this document. 2. Implementation of agroforestry and food guarantee projects, which seek to reduce dependence on the triggering flora and fauna resources.	- Number of trigger species identified by area in each monitoring period. - Amount of population indicators (alpha, beta), verified information on trend of trigger species per area measured. - Number of hectares (recovered conucos) transformed into productive heterogeneous agricultural areas. - Number of tons and / or arrobas produced in recovered conucos. - Quantity of tons and / or arrobas of agricultural production used for own	- Reports of indicators of the presence/absence of trigger species. - Population trend indicators, such as functional biodiversity indicators that will be calculated every five years from 2022. - Progress reports on productive projects (prioritizing information on beneficiaries with the tradition of the hunt of wildlife meat and with the kilograms of protein and carbohydrates produced in the conucos).

		consumption and traded surpluses.	
	3. Design and implementation of agreements for the conservation of species of flora and fauna and/or triggering ecological units.	- Quantity of conservation agreement(s) on specie(s) of flora and fauna and / or ecological unit(s) trigger(s) Designed and implemented to the 2025	- Reports about the increase of people linked to productive initiatives.
	In the scenario with the project, the surveillance and control activities, the strengthening of communications and governance let reduce the threats on the biodiversity, caused for the deforestation. In addition, with the agri-food and productive projects, with the strengthening of Captains about natural resources administration, to reduce the anthropogenic threats over the biodiversity. About the number of individuals of trigger species at the end of the project; it's not possible to determinate because the scientific information about these species is low and limited.		

Table 116. Population attributes of triggering flora species from the RIU-SM

<i>Pachira quinata</i> (EN):	Family Bombacaceae. Known as pochote, saqui-saqui, red ceiba or hawthorn cedar, it is a phanerogamic species of tree, of the Malvaceae family. It can be found in the tropical dry forests of Costa Rica, Nicaragua, Panama, Venezuela, and Colombia. Thorn cedars have long, pointed spines on their trunk and branches. The wood of the species is very valuable and desired for its high dimensional stability, for its resistance to termite and pest attack, its easy workability and its excellent finish and appearance. There are pure plantations in Colombia, Costa Rica, Honduras, Panama and Venezuela. Some companies have also developed genetic improvement programs for the species and have clonal seed orchards and clonal propagation programs. The species is also planted on barbed wire fences.
<i>Mauritia flexuosa</i> (VU):	Known as moriche, 15 m high and the vast majority do not exceed 20 cm DBH. It proliferates in floodplains in the Amazon, the Orinoquia and the neighboring eastern Andean foothills at less than 900 meters above sea level, forming large populations, the Morichales, which constitute a particular type of wetland and ecosystem that attracts fauna in the fruiting season. As with many species of palm trees, it is a tree that forms extensive plant associations on the banks of rivers, called morichales or aguajales, a very thick and nourished vegetation, almost impenetrable.

Table 117. Population attributes of fauna species triggers from the RIU-SM

<i>Inia geoffrensis</i> (EN):	Population There is limited information on the structure of the Inia population throughout its

	range. The taxonomy is not completely resolved and the taxonomic status of the currently recognized subspecies <i>I. g. boliviensis</i> and the putative new species <i>I. araguaiaensis</i> needs further evaluation. There are no abundance estimates or abundance trends for the entire range. Estimates ranged from a few dozen to a few thousand individuals (eg, Vidal et al., 1997, Gómez-Salazar et al. 2012b, Pavanato et al. 2016, Williams et al. 2016) A multi-station survey of dolphins in the Mamirauá reserve of 11,240 km² between 1999 and 2001 (that is, before the rapid decline mentioned below) estimated the abundance of <i>Inia</i> at 13,000 (Martin and da Silva 2004a). The abundance estimation program was carried out from 2006 to 2016, with 26 expeditions and covering almost 28,000 km of rivers in all the states of the range. Some of the results of this program revealed that the density was low in the rivers of Ecuador and in parts of the Orinoco River, while the densities were relatively high in rivers such as the Itenez / Guaporé on the border of Brazil and Bolivia and the Rio Samiria in Peru (Gómez-Salazar et al. 2012a, b; Pavanatto et al. 2016, Williams et al. 2016). Current Population Trend: Decreasing <i>Source: The IUCN Red List of Threatened Species™ ISSN 2307-8235 (online) IUCN 2008: T10831A50358152.</i>
<i>Ateles belzebuth</i> (EN):	Population In western Amazonia, White-bellied Spider Monkeys have large home ranges (150-400 ha) with only little overlap (20-30%) between them (Klein and Klein 1976, Di Fiore and Campbell 2007, Link and Di Fiore unpubl. data). Given that groups comprise of 20 to 40 individuals, population densities tend to be relatively low. In fact, Derby (2008) estimated population densities for <i>Ateles belzebuth</i> as 6.8 and 7.8 individuals/km² at Yasuni National Park and Tiputini Biodiversity Station, respectively. The species is still common within protected areas. Klein and Klein (1976) estimated a population density of 15 to 18 individuals/km² in La Macarena, Colombia and 11.5 individuals/km² in the Parque Nacional Yasuní, in Ecuador (Dew 2005). In Brazil, population estimates are based on studies carried out at the Estação Ecológica de Maracá, reaching 5.5 to 10 individuals/km² (Mendes Pontes 2004). Nunes et al. (1998) reported 34 individuals/km² based on a small study in a relatively confined area. <i>Ateles</i> population densities in various species and study sites are discussed by McFarland Symington (1988), who concluded that the main factors that determine population densities involve the abundance and productivity of certain key plant resources. Nonetheless, given their large body size, spider monkeys are preferred hunting targets for several indigenous communities (Franzen 2006) and thus populations rapidly decline where hunted. For instance, in the north of Peru Aquino et al. (2013) reported 15.5 to 16.5 individuals/km² in areas with moderate to low hunting pressure, but only 1.5 individuals/km² in areas subjected to high hunting pressure. Population densities in the Reserva Nacional Pacaya Samiria in Peru were also as low with only 1 individual/km² (Aquino and Bodmer 2006). Current Population Trend: Decreasing <i>Source: The IUCN Red List of Threatened Species™ ISSN 2307-8235 (online) IUCN</i>

	2021: T2276A191684587
<i>Cebus aequatorialis</i> (CR):	Population An ongoing population reduction of greater 80% over the past three generations (48 years) is suspected from loss of forested habitat available. Current Population Trend: Decreasing Source: <i>The IUCN Red List of Threatened Species</i>™ ISSN 2307-8235 (online) IUCN 2021: T4081A191702052
<i>Cebus versicolor</i> (EN):	Population A study comparing primate population densities in fragmented and continuous habitats found that at Serranía de Las Quinchas the <i>Cebus versicolor</i> population densities ranged from 20 to 30 individuals/km² and in the heavily fragmented forests of San Juan de Carare population densities reached from 98 to 117 individuals/km² (Link et al. 2010). Although this study reported high population densities, in some of the most conserved areas at Serranía de San Lucas, Bolívar Dept., <i>C. versicolor</i> was observed in much lower densities than most other sympatric primates. In a later study, population densities were recorded at Ojos Claros, Remedios, Antioquia Dept. at only 1.8 ind./km², La Cruz, Remedios, Antioquia Dept. at 3.2 ind./km², but at El Paujil, Quinchas, Boyacá Dept. at 19.6 ind./km², and at La Guinea, Quinchas, Santander Dept. at 29.4 ind./km² (de Luna and Link 2018). In northern Colombia, they can still sometimes be locally common in lowland inter-Andean forests as they can survive temporarily in small forest fragments, but the rapid destruction of their habitat and the pervasive capture for pet trade are driving the population decline. The population has decreased by at least 50% in the past three generations from habitat loss and hunting. Data from 2001 to 2019 show an annual tree cover loss from 0.51% to 0.63% per year, or 25% to 30% when extrapolated over a three-generation time period (based on Global Forest Watch data for the Colombian departments of Antioquia, Santander, Bolívar, and southern Cesar in Colombia, where the species is known or believed to range; Global Forest Watch 2020). The data suggest that, should forest loss continue at the same rate as the previous generation, 30% of this species' suitable habitat is likely to be lost by the year 2066. Combined with hunting for wildlife meat, the pet trade and in retaliation for crop-raiding, these threats put <i>Cebus versicolor</i> above the threshold for Endangered status, whereby a population reduction of 50% or more is inferred over the course of 48 years or three generations (the current [2019–2034] and two subsequent generations [2035–2066]) Current Population Trend: Decreasing Source: <i>The IUCN Red List of Threatened Species</i>™ ISSN 2307-8235 (online) IUCN 2021: T39952A81282279
<i>Chiropotes satanas</i> (CR):	Population The size of the remaining total population is not known, however, the number of mature individuals of this taxon might be less than 2,500. The black cuxiú is found in groups of medium size, ranging from 4 to 39 individuals, with a complex fission-fusion social system, which is influenced by the spatio-temporal distribution of resources

	(Veiga et al. 2006). Information on abundance and population density: Highly variable, with estimated densities of between 0.9 and 62.5 ind./km², the latter only within a forest fragment of less than 10 ha. Population Density Data: 0.90 ind./km² at Badajós Farm (IPIXUNA, Pará); 6.44 ind./km² at São Marcos Farm (Irituia, Pará); 3.24 ind./km² at Real Farming SA (Tailândia, Pará); and 6.75 ind./km² in the Gurupi Biological Reserve (Gurupi, Maranhão) (Ferrari et al., 1999). In a complex of forest fragments in the municipalities of Vila Nova dos Martírios and São Pedro da Água Branca in western Maranhão, population densities found at different farms were: Esplanada, 2.5 ind./km²; Santa Rosa, 10.1 ind./km²; Coração do Brasil, 11.4 ind./km²; Primavera, 27 ind./km²; and Martirinho, 62.5 ind./km² (Port-Carvalho & Ferrari, 2004). Abundance data: 0.34 encounters/10 km covered in São Marcos farm, Irituia, Pará; 0.28 encounters/10 km covered in the area of Real Companhia Agro Industrial, Tailândia, Pará (Lopes & Ferrari 2000); 0.56 encounters/10 km travelled, Amanda farm, Viseu, Pará (Pereira 2002); 0.4 sightings of groups/10 km covered in Gurupi Biological Reserve, Maranhão (Lopes, 1993). A population reduction of 50% or more is suspected over the course of 30 years or three generations due to habitat degradation and hunting. Current Population Trend: Decreasing Source: <i>The IUCN Red List of Threatened Species</i>™ ISSN 2307-8235 (online) IUCN 2021: T39956A191704509
<i>Leopardus tigrinus</i> (VU):	Population Relative abundance and estimated population densities vary greatly, and the northern <i>Leopardus tigrinus</i> is less abundant than the southern <i>Leopardus guttulus</i> and also the rarest of the tropical species of Neotropical cat (Oliveira 2011). <i>Leopardus tigrinus</i> is rare everywhere, including their reported habitats to date: Andean montane and cloud forests, Central American forests, Amazon forests, Rupununi Savannas and, Brazil's Cerrado and Caatinga domains (Moreno et al. 2011, Oliveira 2011, Payán and Gonzalez-Maya 2011, Oliveira et al. 2013). In the Amazon, density is very low, expected at approximately 0.01/100 km². Camera-trap surveys in other portions of its range indicate that the species generally occurs in densities between 1-5/100 km² or lower (Oliveira et al. 2010, 2013). In Central America the species rarely shows up in camera traps even where they are known to occur, suggesting that they either avoid traps or are naturally rare and elusive in that area (Schipper pers. comm.). A similar trend is also found in several areas in Brazil, where authors found it in most areas in intrinsically low numbers, and apparently those numbers are not owed to camera-trap shyness (Oliveira pers. comm.). The species was absent from all extensive camera-trap studies in the llanos of Colombia and all of the Amazon, depicting its extreme rarity there (Oliveira, Payán pers. comm.). The Northern Tiger Cat is negatively impacted by Ocelot numbers and does not seem to attain effective population size for long term persistence in any Conservation Unit possibly due to the "Ocelot effect" (Oliveira et al. 2010, Oliveira 2011). It seems that where Ocelots are rare or absent the average population density of tiger cats ranges from 5-20 ind./100 km² but expected to be much lower than 5/100 km² where Ocelots are present (high density estimates, ca. 20/100 km², are obtained only in very few and isolated areas) (Oliveira

	et al. 2010, Oliveira 2011). <i>Leopardus tigrinus</i> is classified as Vulnerable in Colombia (MAVDT 2005, Rodriguez-Mahecha et al. 2006) and as Endangered in Brazil (IBAMA/MMA 2014). The estimated species area of occupancy (AOO) for subspecies <i>L. t. tigrinus</i> and <i>L. t. pardinoides</i> was estimated from 893,200 to 1,020,800 km² of the total current available habitat (Oliveira et al. submitted, Payán and Gonzalez-Maya 2011). This includes applying a 20–30% reduction to compensate for inclusion of tiny fragments (which were considerable in many areas) (IBAMA/MMA 2011 a,b). Extrapolated population estimation based on the above distribution estimates and also estimated densities (0.01/km²), results in an expected total population size ranging from 8,932 to 10,208 adult individuals. Decline based on deforestation rates of the species' habitat is certainly above 10% over the next decades (Morton et al. 2006, Mulligan 2010, Garavito et al. 2012). Current Population Trend: Decreasing Source: <i>The IUCN Red List of Threatened Species</i>™ ISSN 2307-8235 (online) IUCN 2008: T54012637A50653881
<i>Aotus brumbacki</i> : (VU):	Population Little information is available regarding the total population size, structure and dynamics of <i>Aotus brumbacki</i>, save for the fact that few subpopulations have been documented or are assumed to be present in several protected areas. Of these, two subpopulations (Sierra de la Macarena National Park and Tiniqua National Park) have been reduced to fragments surrounded by areas where more than 70% of the forests have already been cleared since the year 2000 (Etter et al. 2006), and a third (El Cocuy National Park) lies within the largest identified 'hotspot of deforestation' located in the Colombian Llanos (Sancez Cuervo and Aide 2013). Much of this monkey's presumed range lies within regions of savanna habitats that have already been cleared forest, fragmented forest and ongoing 'hotspots of deforestation'. Surviving subpopulations remain threatened by ongoing and increasing habitat loss due to the planting of oil palm and illicit crops, expanding cattle ranching, increased oil exploration and mining, and fires. Based on these threats, it is suspected that the population has undergone a reduction of at least 30% over the last three generations (24 years), and that it will continue to decline at this rate for the next 24 years. Current Population Trend: Decreasing Source: <i>The IUCN Red List of Threatened Species</i>™ ISSN 2307-8235 (online) IUCN 2020: T39915A17923405
<i>Agamia agamí</i> : (VU):	Population Partners in Flight estimate the total population to number 50,000-499,999 individuals (A. Panjabi in litt. 2008), although the basis for this calculation is unknown (Martínez-Vilalta et al. 2014, Stier and Kushlan 2015) and the population may be considerably smaller (Stier and Kushlan 2015). Trend Justification This species is suspected to lose 18.6-25.6% of suitable habitat within its distribution over three generations (22 years) based on a model of Amazonian deforestation

	(Soares-Filho et al. 2006, Bird et al. 2011). Given the susceptibility of the species to hunting and/or trapping, it is therefore suspected to decline by $\geq 30\%$ over three generations. Current Population Trend: Unknown Source: <i>The IUCN Red List of Threatened Species</i>™ ISSN 2307-8235 (online) IUCN 2008: T22697200A93602031
<i>Crax alector</i> . (VU):	Population The global population size has not been quantified, but this species is described as 'fairly common' (Stotz et al. (1996). Trend Justification This species is suspected to lose 15.1-24.4% of suitable habitat within its distribution over three generations (35 years) based on a model of Amazonian deforestation (Soares-Filho et al. 2006, Bird et al. 2011). Given the susceptibility of the species to hunting and/or trapping, it is therefore suspected to decline by $\geq 30\%$ over three generations. Current Population Trend: Decreasing Source: <i>The IUCN Red List of Threatened Species</i>™ ISSN 2307-8235 (online) IUCN 2008: T22678534A92777326
<i>Patagioenas subvinacea</i> . (VU):	Population The global population size has not been quantified, but this species is described as 'fairly common' (Stotz et al. 1996). Trend Justification This species is suspected to lose 16.3-20.4% of suitable habitat within its distribution over three generations (20 years) based on a model of Amazonian deforestation (Soares-Filho et al. 2006, Bird et al. 2011). Given the susceptibility of the species to hunting and/or trapping, it is therefore suspected to decline by $\geq 30\%$ over three generations. Current Population Trend: Decreasing Source: <i>The IUCN Red List of Threatened Species</i>™ ISSN 2307-8235 (online) IUCN 2008: T22690328A93269904
<i>Ramphastos culminatus</i> : (VU):	Population The global population size has not been quantified, but this species is described as 'fairly common' (Stotz et al. 1996, del Hoyo et al. 2014). Trend Justification This species is suspected to lose 16.7-24.3% of its extent of suitable habitat in the Amazonian portion of its range over 35 years, as projected after 2002 using a model of forest loss in the Amazon basin (Soares-Filho et al. 2006). By taking the pessimistic (business as usual) scenario of forest loss and factoring in the species's susceptibility to hunting, fragmentation and edge-effects (following Bird et al. 2011), it is suspected to decline by 32.2% over three generations from 2002. Current Population Trend: Decreasing Source: <i>The IUCN Red List of Threatened Species</i>™ ISSN 2307-8235 (online) IUCN

	2008: T22726239A94915704
<i>Tinamus guttatus</i> (VU):	Population This species is described as 'fairly common' (Stotz et al. 1996). Based on the recorded population densities of closely-related species (<i>Crypturellus erythropus</i>: 1.1 individuals/km², <i>Tinamus major</i>: 1.65 individuals/km² and <i>Crypturellus variegatus</i>: 2.7 individuals/km² in French Guiana [Thiollay 1986]) and the area of mapped range (c.3,970,000 km²), and if between 9.5% and 11.3% of the range is occupied, the population is estimated to fall within the band 415,000-740,000 individuals, roughly equating to 275,000– 495,00 mature individuals. The population is therefore here placed in the band 200,000-500,000 mature individuals. Trend Justification An analysis of forest loss from 2000 to 2012 found that forest within the species's range was lost at a rate equivalent to 6% over three generations (20 years; Tracewski et al. 2016). The species is projected to lose 17.7-22.5% of suitable habitat within its distribution over the next three generations, based on a model of Amazonian deforestation (Soares-Filho et al. 2006, Bird et al. 2011). Given the susceptibility of the species to hunting and/or trapping (A. Lees in litt. 2011), it is suspected to decline by 25-29% over three generations. Current Population Trend: Decreasing Source: <i>The IUCN Red List of Threatened Species</i>™ ISSN 2307-8235 (online) IUCN 2019: T22678151A136647817
<i>Tinamus major</i> : (VU):	Population Partners in Flight estimate the total population to number 500,000-4,999,999 individuals (A. Panjabi in litt. 2008). Trend Justification This species is suspected to lose 14.8-18.5% of suitable habitat within its distribution over three generations (20 years) based on a model of Amazonian deforestation (Soares-Filho et al. 2006, Bird et al. 2011). Given the susceptibility of the species to hunting and/or trapping, it is therefore suspected to decline by a rate approaching 30% over three generations. Current Population Trend: Decreasing Source: <i>The IUCN Red List of Threatened Species</i>™ ISSN 2307-8235 (online) IUCN 2008: T22678148A110915916

Table 118. Population attributes of endemic triggering species

Yapacana anthill of the Orinoco and carpinterito antwren barbiamarillo are restricted to an area of approximately 62,000 km between Colombia, Venezuela and Brazil. These three species, along with nine others, inhabit an endemic bird area (EBA for this acronym in English language) called "forests of white sands of the Orinoco-Black" which has been identified as a priority area for the conservation of birds worldwide (Stattersfield, Crosby, Long, & Wege, 1998). This EBA extends from Puerto Ayacucho along the Orinoco River and its tributaries, as Ventuari (in southern Venezuela), Tomo and Vichada (Colombia) and in the tributaries of the Black River as Casiquiari (Venezuela), Guainía and Vaupés (Colombia) and Cauaburi, Xie, Icana, Uapes and Curicuriari (Brazil). Protecting this EBA is restricted to the Biosphere Reserve of the Upper Orinoco-Casiquiare, Black River Forest Reserve and several Indian reservations in

the three countries (Stattersfield, Crosby, Long, & Wege, 1998). Matavén Jungle is within this EBA and conservation of birdlife contributes to the worldwide conservation of endangered species and probably restricted. (Villarreal Leal , et al., 2009)

Selva de Matavén has 12 species that are restricted to biome or zoogeographic region of the Northern Amazon (AMN) and two other species restricted to northern South America (NSA) are recorded. A biome can be defined as a major regional ecological community characterized by forms of vegetation and plant species own. In the Neotropics, biomes are classified as proposed by Stotz et al. (1997). Species restricted to AMN are: grosbeak hermit hummingbird (*Phaethornis malaris*), the jacamar gab (*Galbula albirostris*), ashen batará (*Blackish-Grey Antshrike*), the nagüirrojo curassow (*Mitu tomentosum*), the collared manakin (*Heterocercus flavivertex*), the Amazon bunting (*Hylophilus brunneiceps*), the pechiblanca parrot (black-headed parrot), the white-shouldered tangurú (*Monasa atra*), the leaden euponia (*Euphonia plumbea*), the barbiamarillo antwren (*Myrmotherula ambiguous*), the mound of Yapacana (*Myr - meciza disjuncta*) and carpinterito del Orinoco (*Picumnus pumilus*). NSA species are restricted to Venezuelan flytrap (*Myiarchus venezuelensis*) and bobtail cuclillo (*Coccyzus pumilus*). These species, to completely be within a biome they are of global importance. Additionally, in the Forest of Matavén confluence of the AMN and NSA biomes, which makes this area an area of zoogeographical transition. In these transition zones contact species that they are geographically separated, resulting unique ecological communities, and varied. For this reason, their protection is a priority. (Villarreal Leal , et al., 2009).

The Sheets with the revised information about the species are presented in Annex 7 of this document.

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