New Planting Procedure - Summary of Assessments

NPP Reference Number	MX008
Country of the NPP Submission:	México
RSPO Membership Number	1-0416-22-000-00

Section 1: General Information

INDUSTRIAS OLEOPALMA S.A. DE C.V. is a 100% Mexican company dedicated to the cultivation, production, processing and marketing of palm oil and its derivatives. It belongs to the OLEOMEX GROUP, a conglomerate of fifteen companies that range from the establishment and maintenance of plantations to industrial processing, refining of oils and their commercialization with the food and pharmaceutical industry, which has a 40-year tradition. INDUSTRIAS OLEOPALMA S.A. DE C.V. It has developments for the production of fresh fruit bunches (RFF) in the southern region of the United States of Mexico, but it also has benefit plants for the processing of RFF, as well as by-products: kernel, biomass, among others. The OLEOMEX group was founded in 1978, in the city of Guadalajara, Jalisco at the initiative and leadership of Engineer José Luis Pérez Martínez.

OLEOPALMA was born in 1999 with an agricultural project of 150 collaborators. Currently, the company's properties are located in the states of Chiapas, Tabasco and Campeche. Around the year 2001, the first extraction plant was inaugurated in Mapastepec, Chiapas. Followed by another in 2004 in Palenque, Chiapas, in 2012 in Jalapa, Tabasco and in 2016 in Marqués de Comillas, Chiapas. The company's administrative headquarters is in Guadalajara, Jalisco.

It is important to mention that all the production coming from the plantations owned by INDUSTRIAS OLEOPALMA S.A. DE C.V. are processed by the benefit plants of the same company and the oil produced is sold to a company that is part of the OLEOMEX Group called Industrializadora OLEOFINOS, which is certified under the chain of custody system, since 2012 it is a member of the standard RSPO and the implementation and compliance process to obtain certification began in 2015. Finally, it is interesting to note that this industrializer has clients such as Nestlé, Pepsico, Bimbo, Mondelez and Colgate.

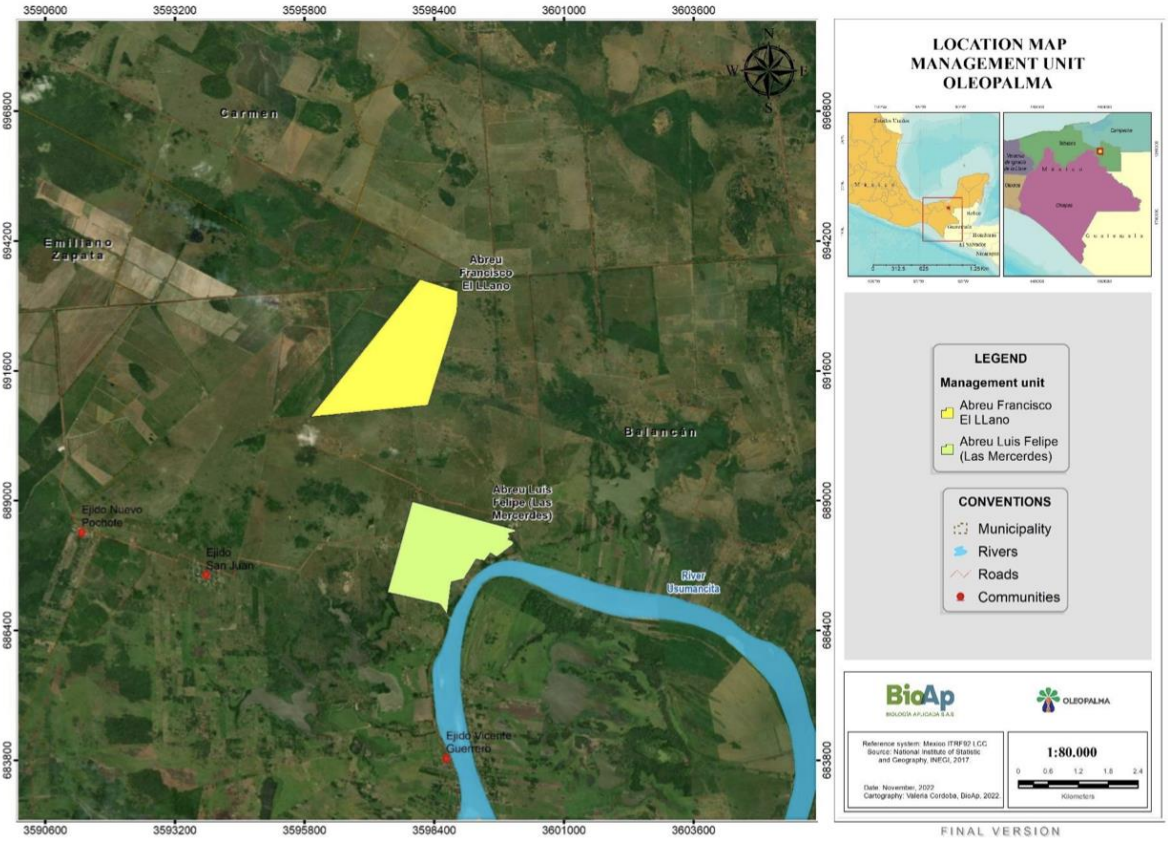
Currently, INDUSTRIAS OLEOPALMA S.A DE C.V. has oil palm plantations established in various regions of the states of Tabasco, Campeche, and Chiapas, in the United States of Mexico. The organization is a member of the RSPO through the Corporate membership of Grupo OLEOMEX (Oleoquímica Mexicana). To date, INDUSTRIAS OLEOPALMA S.A DE C.V. it has not been the subject of complaints or campaigns against it.

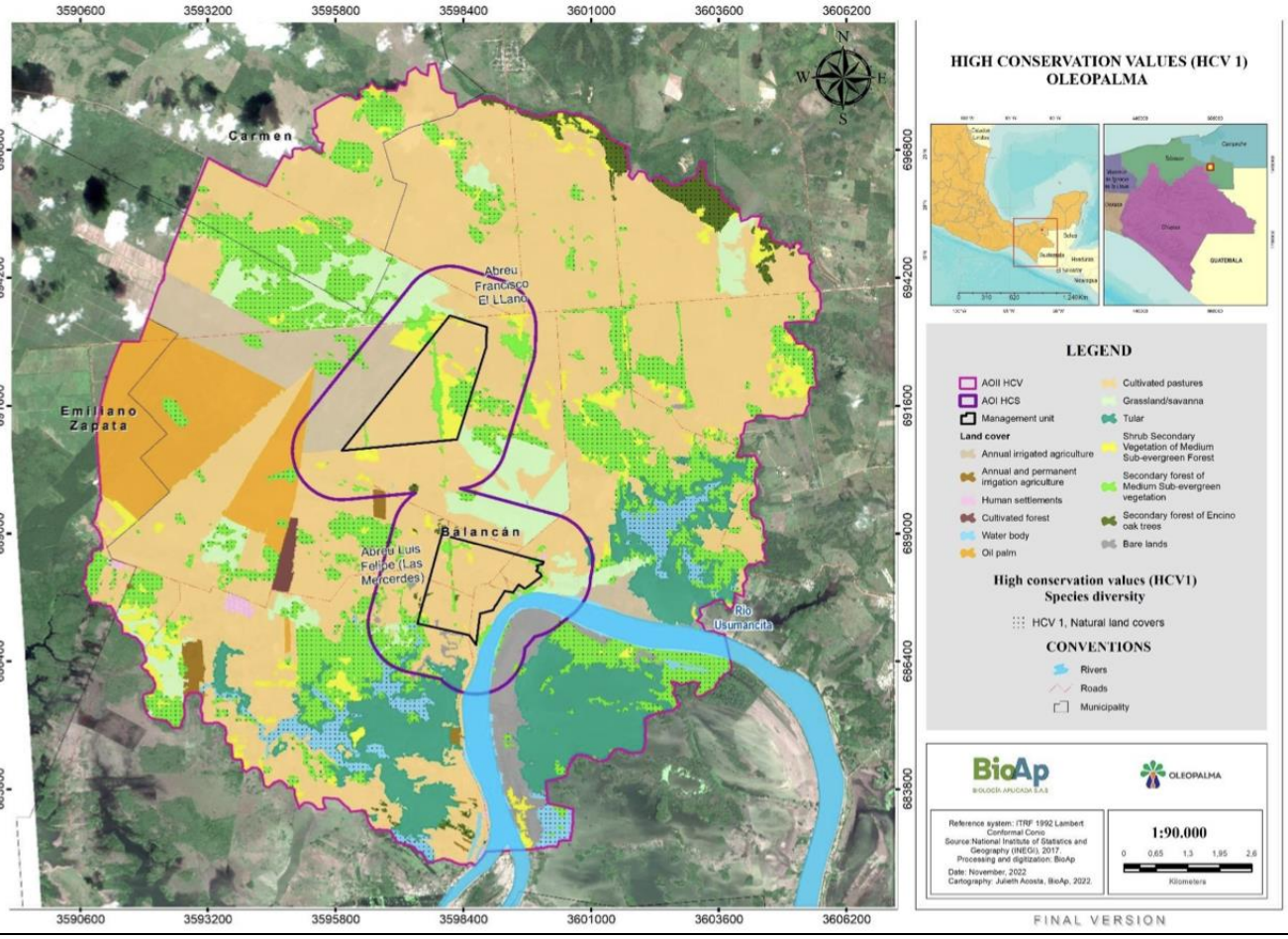
The assessments described in this document were carried out for two (2) Management Units (MU) named “El Llano” y “Las Mercedes” both territories are private property due to land ownership with a lease agreement with the organization INDUSTRIAS OLEOPALMA S.A. DE C.V. for the development of oil palm cultivation. These MUs are located at the municipality of Balancan, state of Tabasco, in the United States of Mexico (*see Figure 1*). Las Mercedes MU has an area of 299.83 hectares, while El Llano MU has a total area of 402.33 hectares, comprising a total area of 702.16 hectares between both.

Within the Management Units no peat soils nor HCV 2, HCV 5, HCV 6 areas nor local community lands were found. Thus, the conservation areas (which do not correspond to any of the abovementioned categories) represent 46.50ha and the potential sowing areas 655.51 hectares, as indicated in *Table 1*.

Management Unit	Managing organization	District	Municipality	Área (ha)	Potential area for new development (ha)
EL LLANO	INDUSTRIES OLEOPALMA S.A. DE C.V.	TABASCO	BALACAN	402,33	366,66
LAS MERCEDES				299,83	288,85
GREAT TOTAL				*702,16*	*655,51*

Section 2: Maps





Areas and proposed time for new planting - 2024

Activities	Activities	January	Febrary	March	April	may	june	July	August	septemb	october	november	December
Area Recognition	Know the areas to establish the plan												
Herbicide Application	Application of herbicides to facilitate agricultural mechanization												
Dumped Trees	Throw out trees that are not in bird areas, which as a comment are shade trees for livestock.												
Area Mechanization	Mechanize to decompact the soil, here 1 pass of Subsoil and two passes of semi-heavy harrows will be made												
Lot Designs	The lots will be designed and the corresponding labels will be made in places for their separation.												
Construction of Primary and Secondary Streets	The street network will be built to be able to enter the lots to plant the plants.												
"Phosphoric Rock Application	This amendment will be applied as an enrichment of the soil and for the better adaptation of the seed [of legumes and the plants to be planted.												
Sowing Coverages	Planting covers to mitigate and promote the integrated management of erosion, excessive applications of herbicides												
Sowing	planting of the African plant to establish												
Roator Control	A preventive control will be established to control rodents.												
"Cajete Herbicides Application	Application of herbicides to control weeds and rodents												
Hanger Posts	Perch placements for cultural and biological control of mice and taituzas.												

Section 3: SEIA

Guidance Note: This section is where the summary findings of SEIA is captured. References and pictorial evidence are recommended. What are the methodology(ies), people involved in the process, date of assessment and findings? Note: Should an assessment carried out by internal staff, just fill the name of the staff and his/her designation.

The Environmental Impact Assessment (EIA) is a process designed to foresee and report about the affectation that a certain project may have on the environment throughout detailed identification of possible consequences that its execution may bring to the numerous environmental components that make up for the whole project; Likewise, it allows to establish corrective measures that can help to control, mitigate, prevent, compensate or to recover for the impacts caused.

Multiple methodologies have been documented concerning the identification and evaluation of environmental aspects and impacts, for this reason it is necessary to define a structure and model types used for this study.

In accordance with the above, BioAp defines that the analysis structure based on the Logical Framework Methodology (LFM) developed by the Economic Commission for Latin America and the Caribbean (ECLAC; 2015), where the analysis of involved entities, the problem tree, the analytical structure of the project are sequentially exposed these results will be evaluated by means of quantitative methodologies of cause and effect, among which are Jorge Arboleda´s methodology presented by Fedepalma in 2011 and the methodologies defined in the RSPO 2018.

Rendering the structure given by LFM concerning the assessment of environmental impacts, the scope (current plantations or new plantations and the extractor) of the study must be defined first, this will allow to describe the causes, effects and responsible for the anthropic alteration of the physical environment in biotic or socioeconomic scale. This methodology incorporates important analytical elements that help to manage this process.

Identification of activities was based on the review of primary and secondary information. For both scenarios, a table was designed which contains the name of the activity, its description, and the evaluation criteria that will be considered when identifying the impacts for each component.

- - Activity: It refers to the stages that are carried out for both the processing plant and at the oil palm plantations and are identified with the acronym AC (Activity).
- - Description: It gives a brief explanation of the process that is carried out in each activity; in the same way, it corresponds to a delimitation of the starting point and the end of the activity.
- - Evaluation criteria: The elements that will be studied in the evaluation process are exposed.

Date of assessment: ***19/04/2022***
Name of Assessor: ***Juan Pablo Zorro***
Assessor Designation and Company: ***Erika Naileth Casallas Garzón, Jina Katerine Melo Ramírez. BioAp S.A.S***

Table 2 presents the profile of each one of the professionals who participated in the preparation and development of the studies and evaluations conducted in the areas proposed for the New Oil Palm Plantations of the organization

Name	Role	Institution	Relevant experience
Juan Pablo Zorro Cerón	Biologist-Lead Assessor Full License LS (ALS14011J Z).	BioAp S.A.S.	Biologist. Photojournalism specialist. Master in Territorial Planning. Experience in HCV assessments, LUC (Land Use Change) studies, Environmental and Social Impact Studies, Remediation and Compensation Procedures for oil palm plantations in Colombia, Mexico, Brazil, Ecuador, Peru, and Guatemala under RSPO, ISCC schemes and Bonsucro®. Expert in Geographic Information Systems. He has advised more than 30 companies in the implementation of sustainability schemes such as RSPO, ISCC and Bonsucro. Trainer endorsed by RSPO through Checkmark Training for Lead Auditors in P&C. Reviewer for Latin America of LUCA studies for RSPO, member of the RPSO Latin America Consultative Group (GCAL).
Fabio Ernesto Álvarez Morales	Biologist. Specialist in Geographic Information System	BioAp S.A.S.	Overall experience about spatial interpretation using GIS resources. Aquatic ecosystems for environmental impact studies. He has participated as a GIS specialist in HCV studies in Colombia and Latin America under the RSPO and Bonsucro® schemes.
Wendy Julieth Acosta Rodríguez	Cadastral Engineer and Geodesy. Natural Resources Management Specialist.	BioAp S.A.S.	Experience in generation, analysis, and administration of geographic data; with expertise about spatial analysis, processing and interpretation of satellite images and aerial photographs focused on the development of LUCA, HCV and EISA studies.
Erika Naileth Casallas Garzón	Environmental Engineer. Natural Resources Management Specialist.	BioAp S.A.S.	Experience in gathering and processing information for the preparation of Environmental Impact Studies, Studies of High Conservation Values. Compensation and Remediation construction plans under the RSPO, ISCC and Bonsucro® guidelines.
Jina Katerine Melo Ramírez	Social worker. Specialist in Environmental Management and Education. Economist in training.	BioAp S.A.S.	Experience in Social Impact and HCV studies planning, Identification and weighting of interested parties, community work with ethnic and peasant population through the implementation of participatory tools. Projects coordination oriented to the training and environmental management knowledge, conflict

Name	Role	Institution	Relevant experience
			resolution and individual and community intervention. Development of evaluations and updating for HCV and EIS studies in oil palm plantations in Colombia, Guatemala, Ecuador and Mexico under international standards, and sugar cane in Colombia under Bonsucro® standard.
Camilo Valencia Gallego	Forestal engineer.	BioAp S.A.S.	Experience in conducting forest inventories to characterize ecosystems and the development of forest census for the public and private sectors.
Jonatan Josue Torres Díaz	Biologist. Specialist in Diagnosis and Environmental Management	BioAp S.A.S.	Broad experience in the embellishment of Environmental Impact Studies, Environmental Management Plans, management and control of fauna and characterization of fauna and flora.
Rodrigo Ramírez Sandoval	Biologist Specialist in Environmental Impact Assessment and Specialist in Industrial Safety, Hygiene and Environmental Management	BioAp S.A.S.	Experience in environmental impact assessment of more than 10 years, of which he has supervised environmental impact studies in the oil palm and sugarcane sector in Colombia and Latin America, under the RSPO and Bonsucro® schemes in the company Applied Biology BioAp SAS.
Maria Paula Romero Cerón	Bioengineer, Master in Renewable Energies and Energy Efficiency Bioengineer (Aspirant)	BioAp S.A.S.	Execution of Socio-Environmental Impact Assessments (SEIA) and Greenhouse Gas (GHG) assessments experience, accomplished nationally and internationally under the RSPO, ISCC and Bonsucro® certification schemes.
Gina Olarte González	Biologist Specialist in fauna	BioAp S.A.S.	Experience in conservation and ecology of neotropical mammals. Work conducted in the private, public and NGO sectors. With experience in HCV studies in Colombia, Ecuador, and Mexico.

The Social Impact Assessment (SIA) is the process of identification and management of the social issues within the development of a project, including the involvement of the affected communities through participatory processes of identification, evaluation, and management of possible social impacts. Although it is still used as a mechanism to predict the impact and as an instrument for those social impacts to be considered, its role is equally important as part of the continuous management of social impacts throughout the project development cycle, from its conception. to the post-closing stage (Vanclay, F; Esteves, A; Aucamp, I; &, Franks, D., 2015).

The Social Impact Assessment for the establishment of the new plantations by Industries INUSTRIAS OLEOPALMA S.A DE C.V. carried out consultations with the beforehand defined interested parties about the positive and negative impacts resulting from the agronomic activities (crop establishment, crop maintenance and harvest), this with the purpose of identifying the potential effects on the territory.

Based on the conclusions resulting from the consultation process, the social aspects recognized, and the analysis of the activities proposed for the establishment of the new plantations, an identification of impacts is created in conjunction with the evaluation criteria and the social aspects integrating it.

It is required to mention that each of the impacts is framed according to the social structure, therefore, the social, economic, and cultural aspects of the territory are to be understood. Therefore, these impacts must be understood as a projection and not as a constant throughout the development of the project. This is vital for the company, and it is mandatory to require the

respective update of the study, those with the purpose of integrating new elements of social dynamics. For this, the identified impacts are described with their respective social aspects by stakeholder category (*Table 6 and Table 7*).

Jorge Arboleda´s method was taken as basis for the socioeconomic impacts assessment that the establishment of new oil palm plantations may cause. Each impact must be evaluated based on the parameters or criteria presented in *Table 8.*

Criteria	Description	Classification	Meaning
Class (C)	This principle defines the social change importance produced by a certain action of the project	Positive (+)	(P) Analyzed condition Improvement
		Negative (-)	(N) Aggravate the analyzed condition
Presence (P)	There is absolute certainty that most impacts will occur. Very few of them could show a level of uncertainty that must be determined. This criterion qualifies the possibility that the impact may occur and is expressed as a percentage of its occurrence probability.	True	100% of probability that the impact will be present (scored with 1.0)
		Very probable	70–99% of probability that the impact will be present (scored 0.7 to 0.99%)
		Probable	40-69% of probability that the impact will be present (scored 0.4 to 0.69%)
		Unlikely	20–39% of probability that the impact will be present (scored as 0.2 to 0.39%)
		Very improbable	Probability to happen is less than 20% (0.01 y 0.19)
Duration (D)	Periods of the impact´s active existence is assessed by this criterion. Initiating from the moment its consequences begin to manifest and shows effects on any environmental factor. It must be evaluated independently of the reversibility or management possibilities of the impact. It is expressed as a function of the impact´s lifetime permanence.	Very long or permanent	Impact´s lifespan is greater than 10 years (scored as 1.0)
		Long	Impact´s lifespan goes from 7 to 10 years (scored as 0.7–0.99)
		Average	Impact´s lifespan goes from 4 to 7 years (scored as 0.4–0.69)
		Short	Impact´s lifespan goes from 1 to 4 years (scored as 0.2–0.39)
		Very short	Impact´s lifespan is less than 1 year (scored as 0.01-0.19)
Evolution (E)	Rates the speed with which the impact occurs, which is, the speed how it unfolds from the moment the effects begin to manifest until the impact is fully present. This criterion is important because depending on the way the impact evolves, the way of its management may or may not vary. It is expressed in terms of the time elapsed between the onset of the effects until the moment when the impact reaches its greatest consequences or until the maximum change on the factor considered occurs.	Very fast	The impact reaches its maximum outcome in less than 1 month after its onset (it is rated as 1.0)
		Fast	The impact reaches its maximum outcome between 1 y 12 months (rated as 0.7 – 0.99)
		Average	The impact reaches its maximum outcome between 12 y 18 months (0.4 y 0.69)
		Slow	The impact reaches its maximum outcome between 18 y 24 months (0.2 y 0.39)
		Very slow	The impact reaches its maximum outcome in more than 24 months (0.01 y 0.19)
Magnitude (M)	Rates the dimension or size of the variation suffered in the environmental factor analyzed due to a project´s activity. It is expressed in terms of percentage of the factor´s affectation or modification (for this reason it is also called relative magnitude)	Very high	If the affectation is greater than 80%, meaning that the factor is almost destroyed or changed (it is scored with 1.0)
		High	Affectation to the factor is found between 60 and 80%, meaning a partial modification (its scored as 0.7 – 0.99)
		Average	Affectation to the factor is found to be between 40 and 60%, meaning an average modification (its scored as 0.4 and 0.69)
		Low	Affectation to the factor is found to be between 20 and 40%, meaning it shows a low modification (its scored as 0.2 – 0.039)
		Very low	Affectation to the factor is found to be lower than 20% (Its scored as 0.01 y 0.19).

Social impact qualification (Cs) is the expression of the criteria combined actions with which the social impact was estimated and represents the severity or importance of the damage that it is causing. The formula developed by the EPM (by its acronym in Spanish) group is:

Cs = C (P [E*M+D])

Where:
Cs= Social qualification C= Class
P= Presence
E= Evolution
M= Magnitude
D= Duration

The impacts assessment is a procedure that allows, in an orderly and objective manner, to establish the importance of an impact. Based on this, it defines the type of socioeconomic management measures to be adopted. The first applications of the equation showed results in which the rating differed from the obtained with other methodologies (or by ratings assigned by specialists in the field). A subsequent analysis determined that the criteria used had a different relative weight in the equation, so it had to be affected by weighting constants that would balance it. Through a sensitivity analysis, the following weighting constants were determined: a = 7.0 and b = 3.0. The following equation was then obtained to express the socioeconomic rating of a given impact: Cs = C (P [axEM+bxD]).

Replacing a & b values we obtained Cs = C (P [7.0xEM+3.0xD])

According to the scores assigned individually to each criterion, the absolute value of **Cs** is greater than zero (0) and less than or equal to ten (10). The value generated by the equation is then converted into an expression that indicates the importance of the impact, assigning qualification ranges according to the numerical results obtained.

After the analysis, impacts identified for each social component are rated, using the parameters above described, allowing us to obtain the weighted rating for the socioeconomic impact that was considered. This is obtained by the average of grades assigned to each activity. Based on this qualification and on the prioritization of impacts, it is possible to determine which measures will be proposed in the social management plan to be executed and which are the most significant for the project.

Table 9. Attributes for the estimation of socioeconomic impacts

Attributes for impact assessment		
Criteria	Qualification	**Value**
Class	Positive	+
	Negative	-
Presence	Certain	1.0
	Very probable	0.7 – 0.99
	Probable	0.4 – 0.69
	Unlikely	0.2 – 0.39
	Not likely	0.01 – 0.19
Duration	Exceptionally long	1.0
	Long	0.7 – 0.99
	Average	0.4 – 0.69
	Short	0.2 – 0.39
	Exceptionally short	0.01 – 0.19
Evolution	Extremely fast	1.0
	Fast	0.7 – 0.99
	Average	0.4 – 0.69
	Slow	0.2 – 0.39
	Very slow	0.01 – 0.19
Magnitude	Very high	1.0
	High	0.7 – 0.99
	Average	0.4 – 0.69
	Low	0.2 – 0.39
	Very low	0.01 – 0.19
Ponderation constants	a = 7.0	
	b = 3.0	

The chromatic key for the identified negative impacts is as follows:

Table 10. Chromatic key for negative social impacts.

Qualification (Ca)	Impact significance
Ca entre -8.0 y -10.0	**Very high**
Ca entre -6.0 y -8.0	**High**
Ca entre -4.0 y -6.0	**Average**
Ca entre -2.0 y -4.0	**Low**
Ca entre -0.0 y -2.0	**Very low**

Table 22 shows the impacts obtained through the participatory dialogue stage between the consulting team and the representatives communities' attendants to the consultation process, there the different social aspects acknowledged and

showing greater significance among the actors and the communities are specified, which converge in the presence of impacts as focused on social, economic, and cultural conditions in the territory.

In addition, *Table 23* shows the relationship and communication as an impact identified between the Balancan council and the INDUSTRIAS OLEOPALMA S.A DE C.V., in relation to the establishment of new oil palm plantations, to determine strategies between the parties in favor of the population.

6.2 SIA´s management plans

Name	Objectives	Measure type	Impacts to which it acts	Enforcement place	Responsible	Supervising indicators
Labor entailment	- To link unskilled labor to resident personnel within the direct area of influence of the project. - To offer quality employment for local unskilled labor during all activities of the new oil palm plantations. - To generate employment opportunities for women in accordance with the requirements of the new oil palm plantations.	Control Prevention Mitigation	- Changes in living conditions - Changes in the local economy	- New palm plantations in Las Mercedes and El Llano properties	Responsible for Human Talent or Human Resources at Oleopalma.	- Percentage of local labor hired. - # trainings carried out / # trainings scheduled*100 - # of women hired / # of women estimated to be hired*100. - Percentage of monthly staff turnover.
Community relations: management, communication, information, and community participation	- To provide timely, clear, and transparent information to the communities regarding the company's actions and all issues of community interest and relevance. - To address complaints or claims, suggestions, requests for information submitted by the community or citizens, providing timely and adequate care. - To implement actions in conjunction with the communities of influence with the aim of minimizing the effects of the establishment of palm cultivation, as well as contributing to the sustainable development of the territory. - To address complaints or claims, suggestions, requests for information submitted by the community or citizens, providing timely and adequate care.	Control Prevention Mitigation	- Changes in living conditions - Changes in the local economy - Civic relations	New palm plantations AOII in Las Mercedes and El Llano properties.	Head of CSR at INDUSTRIA OLEOPALMA S.A DE C.V.	- Percentage of compliance with agreements defined in the plan with communities. - # meetings held / Number of meetings scheduled in the year. - # requests received in the year / # requests attended and closed in the year*100 - Number of field visits carried out / Number of scheduled field visits *100
Traffic management	- To implement the necessary preventive and	Control Prevention Mitigation	- Changes in traffic and road infrastructure	New palm plantations AOII in Las Mercedes and	OSH and CSR Headquarters	- # trainings carried out / # meetings scheduled*100

Name	Objectives	Measure type	Impacts to which it acts	Enforcement place	Responsible	Supervising indicators
	corrective measures to avoid and mitigate the impact on existing infrastructure and service networks. - To Identify critical areas where risks of accidents may arise to prevent them. - To generate adequate conditions to reduce the impact due to the increase in heavy-duty vehicles in the area.			El Llano properties.		- Percentage of traffic incidents or accidents annually. - # people treated and corrected for damage / # people with damage report*100

6.3 EIA´s management plans

Name	Objectives	Measure type	Impacts to which it acts	Enforcement place	Responsible	Supervising indicators
Program for the environmental and social management group conformation.	- To ensure compliance and effective development of the actions proposed in the environmental management plan (EMP).	Control	- Does not apply	MUs Las Mercedes y El Llano	Plantations Environmental Chief and OSH Leader	- (# of reports prepared / # of reports scheduled) *100. - (# of trainings developed / # of trainings scheduled) * 100. - (# of PMAs implemented / # of PMAs proposed) *

Name	Objectives	Measure type	Impacts to which it acts	Enforcement place	Responsible	Supervising indicators
						100. - (# of complaints, concerns or claims resolved / # of complaints, concerns or claims received) * 100.
Environmental and social training program	- To train and sensitize the personnel associated with the project on technical issues, environmental management, safety, occupational health and social responsibility, according to the needs identified in each of the components to be addressed.	Prevention	- Breach of regulations due to ignorance. - Failures in the procedures.	MUs Las Mercedes y El Llano	Environmental manager	- (# of trainings conducted / # of trainings scheduled) *100. - (# of workers trained / total # of workers linked to the project) *100.
Soil resource management program	- To minimize the impacts caused by the activities of pre-planting, construction and adaptation of roads and drainage, application of fertilizers and agrochemical products, among others. - To technically	Control Prevention Mitigation	- Changes in air quality - Changes in soil quality - Changes in surface water quality	MUs Las Mercedes y El Llano	Plantation Leader	- Square meters of intervened areas / Square meters of adequate areas (planted)) *100. - (Volume of material removed / Volume of material recovered) *100.

Name	Objectives	Measure type	Impacts to which it acts	Enforcement place	Responsible	Supervising indicators
	dispose of the material generated in the different stages. - To define and establish the environmentally viable measures and procedures for the development of vegetation cover and stripping removal activities. - To minimize the impacts caused to the atmosphere by the mobilization and transit of vehicles and heavy machinery during the development of the project.					
Integral solid waste management program	- To establish activities to ensure proper management of ordinary, hazardous and special waste, taking into account all management stages: generation (minimization), separation at source, transportation, temporary storage, use, treatment and	Prevention	- Changes in soil quality. - Changes in the soil structure. - Changes in the quality of surface waters. - Changes in groundwater quality. - Changes in air quality.	MUs Las Mercedes y El Llano	Plantation Environmental Leader	- (# ecological points adjusted to the color code/ # ecological points) *100. - (# of trainings carried out / # of trainings scheduled) *100. - (# of workers trained / total # of workers linked to the project) *100.

Name	Objectives	Measure type	Impacts to which it acts	Enforcement place	Responsible	Supervising indicators
Program for agrochemical products safely handling	- To establish measures for the storage, transport, handling, and application of the different agrochemical products used in the planting area, so that the occurrence of labor accidents, occupational diseases and damage to the environment can be prevented.	Prevention	- Changes in soil quality. - Changes in the soil structure. - Changes in the quality of surface waters. - Changes in groundwater quality. - Changes in air quality. - Impact on the availability of water resources	MUs Las Mercedes y El Llano	Environmental Leader and OSH Leader	- (# biological beds built / # biological beds scheduled to be built) *100. - (# agrochemical containers used / # agrochemical containers returned) *100. - (# of training sessions on handling and use of agrochemicals / # of proposed training sessions) * 100.
Water resource management program	- To formulate and implement strategies that allow establishing savings and good use of water resources to maintain water availability and protection of ecosystems, minimizing their use as much as possible. .	Prevention	- Changes in soil quality. - Changes in the soil structure. - Changes in the quality of surface waters. - Changes in groundwater quality. - Impact on the availability of water resources	MUs Las Mercedes y El Llano	Plantation Environmental Manager	- (# of implemented strategies / # of proposed strategies) * 100. - (# of trainings carried out / # of trainings proposed) * 100.

Section 4: HCV-HCSA Assessment; OR ALS HCV and Standalone HCSA assessment

RSPO Note: A reference should be made to the full report. All the related maps should be included here. What are the methodology(ies), people involved in the process, date of assessment and findings? Note: Should an assessment carried out by internal staff, just fill the name of the staff and his/her designation.

ALS Satisfactory Date Obteined (ALS HCV % HCV.HCSA assessment): Januart 19, 2023

https://www.hcvnetwork.org/reports/evaluacion-integral-avc-hcsa-para-2-unidades-de-manejo-propuestas-para-el-desarrollo-de-nuevas-plantaciones-de-palma-de-aceite-de-industrias-oleopalma-s-a-de-c-v-ubicadas-en-los-estados-unidos-mexicanos-tabasco-municipio-de-balancan

Below is the profile of each of the professionals who participated in the preparation and development of the studies and evaluations carried out in the areas proposed for the New Oil Palm Plantations of the organization.

Fecha en que se firmó el contrato de evaluación	Agosto 03 de 2020
Fecha de inicio de la evaluación	Octubre 20 de 2020
Fecha de la primera presentación del informe al ALS	Agosto 23 de 2022
Fecha del primer reenvío del informe (si corresponde)	Noviembre 29 de 2022
Fecha del segundo reenvío del informe (si corresponde)	Enero 23 de 2023
Nombre del asesor principal de ALS	Juan Pablo Zorro Cerón
Información de contacto del Asesor Líder	BIOAP S.A.S. Carrera 7 No. 50-20, oficina 301 A. Bogotá D.C. juan.zorro@bioap.com.co Tel: +57 1 7551372 Cel.: +57 316 4695718
Información de contacto de la Organización que encarga la evaluación AVC	INDUSTRIAS OLEOPALMA S.A. DE C.V. Jorge Coronel Gerente de Sustentabilidad jorge.coronel@oleopalma.com.mx Teléfono: +52 (01) 993 3580860 Ext. 8820 Celular: +52 916 142 4336

The identification and evaluation of the threats to the HCV areas was carried out considering the present effects on the High Conservation Values identified due to the environmental conditions and the anthropic activities that take place there. These threats were identified considering the time scale in which they occur, finding present threats (in the AOII) and potential ones that come from the proposed activities (new oil palm plantations) or from external activities.

All threats were identified and classified based on the results obtained from the characterization process of the study areas, as well as the findings of the stakeholder consultation. Likewise, the threats proposed by the evaluation team were compiled based on their experience in other evaluations related to the agricultural sector and specific observations were included considering the field phase. For the above, the guide developed by the Zoological Society of London was taken as a guide. (Zrust, y otros, 2013) for monitoring threats in areas with High Conservation Values; The threats identified for each of the HCVs present are shown in the *Table 34.*

Table 34. Threat assessment for the HCV areas.

HCV Present	Main threats identified
HCV 1 Species diversity	*POTENTIALS:* - Absence of transition or buffer zone between the oil palm and the forest cover, affecting both the cover and the individuals who inhabit or use the forest remnants, both being exposed to the typical tasks of oil palm cultivation. - Little understanding of staff about the value of protected wildlife. - Loss of native fauna and flora due to the application of agrochemical products. - Affectation on the habitat of RAP, endemic and/or migratory species due to the inadequate disposal of solid waste. - Wildlife run over. - Operational threats because of the erroneous development of activities and tasks within the plantations by the workers. *CURRENTS:* - Loss of habitat of RAP, endemic and/or migratory species due to the extraction of forest products in the forest cover. - Wildlife run over. - Hunting of RAP, endemic and/or migratory species for recreational purposes. - Affectation on the habitat of RAP, endemic and/or migratory species due to the inadequate disposal of solid waste. - Fragmentation of the ecosystem and habitat because of the construction of roads, houses and roads by other actors. - Natural, accidental, or provoked forest fires. - Low understanding of the surrounding communities about the importance of the identified HCV areas. - Expansion of the agricultural frontier in natural areas leading to the loss and/or displacement of fauna to other areas.
HCV 3 Ecosystems and habitats	*POTENTIALS:* - Low understanding of company personnel about the importance of the identified HCV areas. - Absence of a transition or buffer zone between the oil palm and the forest cover, affecting both the cover and the individuals who inhabit or use the forest remnants, both being exposed to the typical tasks of oil palm cultivation. - Little understanding of staff about the value of threatened ecosystems. - Affectation and alteration to the phenological cycle of the flora species that make up the

HCV Present	Main threats identified
	protected ecosystems due to the application of agrochemicals. - Operational threats because of the erroneous development of activities and tasks within the plantations by the workers. - Loss of the ecosystem due to the expansion of the agricultural frontier. *CURRENTS:* - Affectation and alteration to the phenological cycle of the flora species that make up the protected ecosystems due to the application of agrochemicals. - Fragmentation of the ecosystem and habitat because of the construction of roads and paths by other actors. - Loss of forest cover due to the extraction of wood for the improvement of farms. - Natural, accidental, or provoked forest fires. - Low understanding of the surrounding communities about the importance of the identified HCV areas. - Expansion of the agricultural frontier in natural areas leading to the loss and degradation of the ecosystem.
HCV 4 Ecosystem services	*POTENTIALS:* - Contamination of water sources due to the use of agrochemical products and/or fertilizers and discharges. - Low understanding of company personnel about the importance of the identified HCV areas. - Operational threats because of the erroneous development of activities and tasks within the plantations by the workers. *CURRENTS:* - Absence of riparian coverage in some riparian areas. - Low understanding of the surrounding communities about the importance of the identified HCV areas. - Conversion of riparian areas to areas for agricultural use. - Increased risk of erosion on the slopes of bodies of water. - Contamination of bodies of water due to the development of agro-industrial and domestic activities that affect aquatic biota. - Reduction in the flow of surface and underground water sources due to water withdrawal for agricultural and industrial use. - Deforestation and/or degradation of riparian zones during the preparation of the land for the expansion of the agricultural frontier. - Natural, accidental, or provoked forest fires that affect the riparian zone.

To guarantee the maintenance of the identified HCVs, a series of management recommendations are suggested aimed at the protection, conservation and improvement of the significant and critical environmental and social values present within the evaluated areas. These recommendations consider the environmental and social characteristics of the study area, the results of the consultation with interested parties and the internal and external threats identified for each HCV.

For HCV 1 and HCV 3 areas considered present in the context of the assessment due to the identification of vegetation cover with the capacity to host significant concentrations of biological diversity, mainly RAP, endemic or migratory species, as well as nationally threatened ecosystems. A buffer strip of 20 meters is proposed around these areas, defined according to the guidelines of (Bentrup, 2008) whose main objective is to protect the concentrations of biological diversity characteristic of these areas, favoring the flows of matter and energy with the surfaces. surrounding natural resources, especially considering the current threats to this environmental value in terms of loss of species and of the ecosystems and habitats in which they reside.

For the areas considered HCV 4, the proposed management corresponds to a water protection round of about 100-meter around the Usumacinta River, as well as the protection and conservation of bodies of water associated with this coverage. In said round of protection, management must be aimed at conserving the areas of forest cover that are within them and starting a reforestation process with native species in order to guarantee the provision of associated ecosystem services.

Finally, for all HCV areas considered to be present in the Management Units, the delimitation of a 10m differentiated management strip is proposed as an additional management area to the previously mentioned buffer strips and water protection rounds, in order to generate a transition zone between the cultivation of oil palm and the management and HCV areas, preventing activities related to the development of the crop from negatively impacting the environmental and social values that are sought to be protected and improved.

The management and monitoring recommendations for these HCV areas are shown in *Table 35.*

Identified value	Recommendations and Management Areas	Monitoring recommendations
Forests with High Carbon Stocks (HCS) HCV 1 31.34ha of secondary arboreal vegetation of semi-evergreen forest and body of water, covers in which 26 species of fauna were registered within the Management Units, of which 19 are cataloged as RAP. HCV 3 32.36ha of secondary arboreal vegetation of semi-evergreen forest and secondary arboreal vegetation of oak forest, associated with ecosystems currently threatened at the national level.	- A buffer strip of 20 meters is proposed around the HCV 1 and HCV 3 areas identified within the MU. In this strip, the recovery of the natural vegetation is proposed to create a natural barrier between the HCV 1 and HCV 3 areas and the cultivation of oil palm.	- Design a format in which the number of plants to be planted in the buffer strip (HCVMA 1/HCVMA 3) is recorded, accompanied by their respective photographic record that serves as support towards the actions developed. - Frequently monitor the growth of the sown plants, recording the height of the plants, the number of leaves and the size of every six months, to evaluate the evolution of this management action and determine if it is necessary to adjust or implement additional actions.
	- In addition to the buffer strip, it is recommended to delimit a differentiated management strip of 10 m only when oil palm cultivation is adjacent to the buffer strip, to generate a transition zone between the eastern and HCV and HCVMA - In the differentiated management strip, all activities related to oil palm cultivation may be carried out. However, it is recommended that the management in this area be of a cultural nature, reducing the application of agrochemical products and/or fertilizers and opting for the application of organic products, so that disturbances are not generated in the HCVMA or in the HCV areas. .	- Design a format in which to record the management measures that will be carried out within it. - Monitor the productivity and growth of the palms that are there.

Identified value	Recommendations and Management Areas	Monitoring recommendations
	- Clearly demarcate and delimit the HCV 1 and HCV 3 areas and their respective management areas (MAHCV).	- Design a format in which the number of plants to be planted is recorded for the delimitation of the HCV 1/HCV 3 and HCVMA 1/HCVMA 3 areas, accompanied by their respective photographic record that serves as support towards the actions developed. - Monitor the development of the nectar line planted between the plantation and the HCVMA.
	- Design and implement a Conservation Policy that promotes NO deforestation, NO hunting, NO fishing, and NO burning accompanied by internal and external environmental awareness.	- (# divulgation talks held / # divulgation talks scheduled) *100
	- Design and implement a Conservation Policy to penalize hunting, felling, fishing, and burning workers. After the sanction, a plan must be established in which the worker is made aware, to avoid repeating said actions in the future.	- Design a format that records the number of workers sanctioned in a period, for example, one month. - (# awareness talks held / # awareness talks scheduled) *100. - Lists of attendance at awareness talks for both workers and other interested parties. - Information on poaching, illegal logging and land use change must be collected and analyzed at least quarterly to determine the magnitude of the damage and formulate strategies to stop its evolution.
	- Install signage related to the prohibition of hunting, cutting and burning in areas with a high flow of people and where it is considered that there is vulnerability to the areas considered HCV 1 and HCV 3.	- # of “no hunting” signs installed. - # of “no logging” signs installed. - # of “no burning” signs installed.
	- Install signage in areas with high foot traffic that allows the identification of HCV 1 and HCV 3 areas. The signage may be accompanied by information panels containing relevant data on what HCV 1 is, what its importance is and why it is necessary to protect the areas considered to be of High Conservation Value; these panels may be accompanied by photographs of the RAP, endemic and/or migratory species identified in the HCV 1 areas.	- # of “HCV 1 Area” signs installed. - # of "HCV 1 Area" information panels installed.

Identified value	Recommendations and Management Areas	Monitoring recommendations
	- Install signage on the entrance routes to the plantations that inform about the protection of wildlife.	- # "protect wildlife" signs installed.
	- Provide training with didactic and visual aids to recognize HCV and MAHCV areas present in the MUs.	- (# awareness talks held / # awareness talks scheduled) *100.
	- Design and implement an annual internal monitoring program for fauna and flora, confirming or ruling out the presence of RAP species in the UM.	- Frequently monitor HCV 1 areas to supervise and control the possible extraction of species of fauna and flora. Monitoring must be carried out by a properly trained person. - Carry out annual monitoring of the presence and abundance of species of fauna and flora, and RAP species, endemic or migratory, to generate follow-up and comparison on them in the HCV 1 areas.
	- Design and implement, together with some interested parties and workers, environmental awareness programs on issues related to HCV 1 and HCV 3.	- (# awareness talks held / # awareness talks scheduled) *100. - Attendance lists for awareness talks for both workers and other interested parties.
	- Install signs with the message “Prohibited the application of agrochemicals” in HCV 1 and HCV 3 areas or their respective management areas.	- # of signs "prohibited to apply agrochemicals in the HCV 1/HCV 3 or MAHCV 1/MAHCV 3 areas" installed.
	- Train company employees in the responsible use of agrochemical products.	- (# of training on the handling and use of agrochemical products / # of training scheduled to be carried out) *100. - Training attendance lists.
	- Guarantee that the construction of infrastructure, roads, pathways, irrigation, or drainage lines do not promote the fragmentation of HCV 1/HCV 3 areas or their management areas.	- Design a map – location plan of all the infrastructure to be built in the MUs so that its distance from the HCV 1/HCV 4 areas or their management areas is evidenced.
HCV 4 Water protection rounds that provide support and regulation ecosystem services.	- In accordance with the proposed measures for the management of HCV 4 (HCVMA) areas, a 100 m round of water protection is proposed around the Usumacinta River.	- Design a format that records the number of plants to be planted in the water protection round (HCV 4), accompanied by their respective photographic record that serves as support towards the actions developed.
	- Clearly demarcate and delimit the HCV 4 areas and their respective management areas (HCVMA).	- Frequently monitor the growth of the sown plants, recording the height of the plants, the number of leaves and the size of every six months, in order

Identified value	Recommendations and Management Areas	Monitoring recommendations
		to evaluate the evolution of this management action and determine if it is necessary to make adjustments or implement additional actions.
	- Design and implement a Conservation Policy that promotes NO deforestation, NO fishing and NO burning accompanied by internal and external environmental awareness.	- Design a format in which the number of plants to be planted is recorded for the delimitation of the HCV 4 and MAHCV 4 areas, accompanied by their respective photographic record that serves as support towards the actions developed.
	- Design and implement a Sustainability or Zero Deforestation Policy, raising awareness among workers about its purpose and in the event of any type of affectation, report on the steps to follow and improvement actions that should be implemented.	- Monitor the development of the nectar line planted between the plantation and the MAHCV.
	- Pursuant to this Policy, logging and burning workers must be penalized. After the sanction, a plan must be established in which the worker is made aware, to avoid repeating said actions in the future.	- (# awareness talks held / # awareness talks scheduled) *100
	- Install signage related to the prohibition of logging, fishing, and burning in areas with a high flow of people and where it is considered that there is vulnerability to the areas considered HCV 4.	- Design a format that records the number of workers sanctioned in a period, for example, one month.
	- Install signage in high-traffic areas of people to identify HCV 4 areas. The signage may be accompanied by information panels containing relevant data on what an HCV 4 is, what its importance is and why it is necessary to protect the areas considered with High Conservation Values; These panels may be accompanied by photographs of the bodies of water and the riparian strips present in the Management Unit.	- (# awareness talks held / # awareness talks scheduled) *100
	- Design and implement, together with some interested parties, environmental awareness and training programs on issues related to HCV 4.	- Lists of attendance at awareness talks for both workers and other interested parties.
	- Provide training with didactic and visual aids to recognize the HCV and	- Information on poaching, illegal logging and land use change must be

Based on the definitive land cover map, sampling points were selected for the development of the Rapid Ecological Assessment (REA). The estimation of the presence of rare, threatened, endangered and endemic species, as well as the conservation

condition of the covers in the Management Units, was conducted based on a field study focused on the identification of RAP species (fauna and flora) in those areas. To obtain information about the flora and fauna species with potential distribution for the region, especially RAP species, lists, databases, and available inventories were reviewed.

The high degree of transformation presented by the ecosystems in the study area and the absence of forest- type covers or natural covers in the management units, the experience of the evaluation team and the reviewed literature, the presence of concentrations of RAP species was discarded, however, a sampling consisting of active search tours, visual identification and use of sound signals for birds was carried out, as well as the installation of camera traps for mammals (*see Table 12*).

Data gathering was conducted in ten (10) transects. Both the transects and the faunal vegetation scenarios undertook the greatest number of vegetation classes, for which reason secondary vegetation, savannah, holm oak and riparian vegetation were conducted in the covers (*Figure 9*). The transects for the sampling of fauna undertook the greatest number of habitats present in the evaluated area.

Section 5: FPIC

Guidance Note: This section is where the information on stakeholder mapping is put and all required information that the building blocks for FPIC have been conducted. References and pictorial evidence are recommended. What are the methodology(ies), people involved in the process, date of assessment and findings?

Calling process and prior approaches with Nuevo Pochote, Vicente Guerrero and San Juan communities, were identified by the consulting team throughout the definition and characterization of the HCV's Indirect Area of Influence. This was carried out by INDUSTRIAS OLEOPALMA S.A. DE C.V., whose members held a negotiation with ejidos´ representatives in which the project for new oil palm plantations was presented through an informative document. Aspects such as the scope of the project, activities to be developed and the role of the community were identified. Additionally, during the meeting the document was delivered and by signing the acceptance documents, the communities agreed to participate in the consultation exercise with the interested parties; These minutes contain the name and position in charge of the representatives who will participate in the meeting, date and time of the consultation, agreements between the parties, among others. These documents are in custody by the organization and were reviewed by the social consulting team. The foregoing considering that the scoping study phase was not necessary, since the consulting team had developed preliminary HCV and EISA studies in the study area that allowed for the recognition of relevant analysis factors such as: non-identification of community use areas within MUs, recognition of property boundaries and land tenure by private parties, MUs historical changes for agricultural purposes, etc.

Based on the due diligence components verification, the consulting team confirmed land legibility as defined within the public deed documents and property certificates and lease contracts of the MUs, considering that this is considered as private property and its use and management is governed by agreements between the parties.

In addition, a follow-up and guidance were developed by the consulting team for a transparent development of the first approach to the communities and other interested parties through meetings with those responsible for the organization INDUSTRIAS OLEOPALMA S.A. DE C.V., taking as a precautionary measure that this will not be used as a persuasion mechanism to achieve personal benefits of community representatives.

Even so, the consultant team will follow up and lead the transparent development of the first approach to the communities and other interested parties through meetings with those responsible for the companies , taking as a precaution that this will not be used as a persuasion mechanism to obtain personal benefits from the community representatives, which is made explicit in the informative document. In accordance with the above, the consulting team begins the HCV-HCSA study with the Scoping Study phase and the collection of information from secondary sources.

Consultation to interested parties was oriented under the principles of transparency and respect for free participation and opinion, so it was necessary for the interested parties to approve to take photographs, attendance record (only for adults), and recording of opinions by BioAp SAS consulting team. In addition, from the implementation of the participatory mapping it is identified that the communities have concerns regarding palm crops and their possible effects on the ecosystems present in the area, therefore, they want that according to the results of the studies apply actions to mitigate harmful effects on the environment, as well as this can contribute to the improvement of payment conditions in labor in the area.

On the other hand, the commitment to the participants of the socialization and feedback of the results of the HCV and EISA studies as well as the actions proposed for continuous improvement is verified, this as part of the establishment of a joint work agenda with the parties. Interested.

Property	Location	Area (ha)	Registration No.	Deed	Acquisition mode	Comments
El Llano	Rancheria Vicente Guerrero, Municipio de Balancan, Estado de Tabasco	403-41-16	726435	No. 23795 volume 352 del 22-03-2018	Leasing contract between Francisco José Abreu Diaz and Oswaldo Abreu Diaz as lessors and the Sociedad de Palmicultores San Nicolas as lessees.	The lease is given on a fraction of the rustic property called El Llano, with a fraction of 382-00-00 Has. It has a maturity date of 20 years which ends on February 28, 2038.
Las Mercedes	Rancheria Vicente Guerrero, Municipio de Balancan, Estado de Tabasco	343-86-51	726340	No. 23796 volume 352 de 22-03-2018	Lease agreement between Sociedad de Producción Rural de Responsabilidad Limitada de Capital Variable Abreu Agropecuaria lessors and Sociedad de Producción Rural de Responsabilidad Limitada Palmicultores San Nicolas as tenant.	The lease is given on a fraction of the rustic property called El Llano, with a fraction of 300-00-00 Has. It has a maturity date of 20 years which ends on February 28, 2038. There is a limitation of judicial embargo registered preventively by virtue of the fact that the property is in the name of Sociedad de Producción Rural de Responsabilidad Limitada de Capital Variable Abreu Agropecuaria through file number 641/2021 related to the lawsuit in the mercantile executive channel and in execution of the direct exchange action.

Table 19 presents the summary of the participants for the consultation process developed in the field phase, where the number of participants, applied methodological tool and photographic record are specified. In total, the consulting team had 84 participants in the activities carried out; among them: Communities of the area of influence and government entities.

Category	Date	Interested parties	Activity	Participants	Total	Photographic records
Communities	31/01/2021	Vicente Guerrero	Participatory Dialogue	23	83	
	31/01/2021	San Juan	Workshop / Participatory Dialogue	45		
	03/02/2021	Ejido Nuevo Pochote	Workshop / Participatory Dialogue	15		

Category	Date	Interested parties	Activity	Participants	Total	Photographic records
Government entity	03/02/2021	Balancan municipality council.	Interview	1	1	
Total participants: 84						

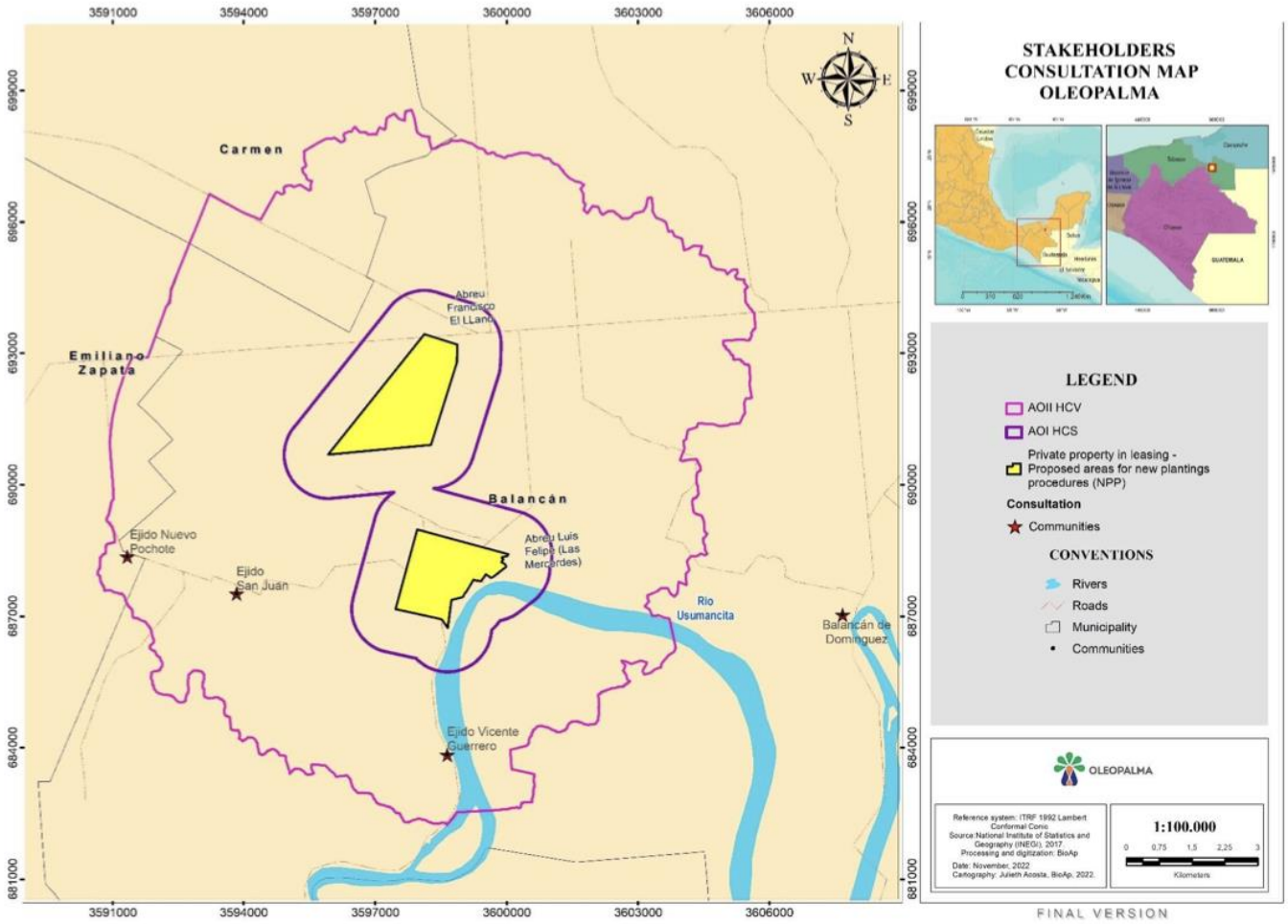


Figure 10. Interested parties' consultation map.

The consultation of interested parties was carried out with a large part of the social actors as established in the agreements defined during the previous approaches and call. However, the meeting with the representation of the Emiliano Zapata council could not take place due to the availability of time of the representatives of the entity; Likewise, in Balancan only the Environmental Protection and Sustainable Development Department participated, finding these two limitations. The foregoing considering the contingency due to the COVID-19 pandemic and the administrative changes due to electoral processes that were taking place during the social field phase.

The information obtained from the field work is presented in *Table 20*, where the perceptions of the territory and its relationship with the project are presented, as well as the identification of possible HCV areas. Said perceptions, comments and suggestions were identified during the participatory activities with the interest groups and are considered according to their relevance for the study by the consulting team.

Title or position	Organization or social group	Consultation Method	Main concerns and/or recommendations	Evaluation team report
Environmental protection and development leader	Balancan council	Interview	- The official reports aspects regarding the vulnerability of the Usumacinta River, due to the high transformation and loss of forest cover and floods. Likewise, he also states that illegal hunting occurs within the territory, for which the administration, together with other local authorities, develops operations to control this activity. - The delegate indicates that palm cultivation has his personal and institutional approval if the company complies with the legal requirements of the municipality. - He affirms that the beginning of the cultivation of the palm carried out extensive activities that negatively affected the natural resources. - The representative also exposed the programs and projects that are being carried out by his agency. These include joint efforts between communities, companies, and the government to promote the conservation of natural resources. - He pointed out that the company is not recognized in the area. - Suggests that institutional support is available to carry out work aimed at conservation and sustainable investment.	According to the interview, HCV 5 and 6 areas are not identified within the AOI, however, the importance of the Usumacinta River as a site that provides ecosystem services within the territory is recognized. In addition, the recommendations regarding the non-affectation of natural areas close to the MUs are considered, within the HCV – HCSA and EISA studies.
Community representatives	San Juan	Workshop	- Participants associate affectations to the lagoon near the community due to its own discharges, which predisposes the supply of fish for sporadic self-consumption purposes. - They recognize the hunting of species such as deer and raccoon, as well as conflicts with residents due to the sporadic consumption of iguanas. - Inform the use of firewood as the main means of combustion, which is extracted from their plots. - They imply the loss of the cultural traditions of the Mayan people (Ch'ol and Tzeltal), despite having a population that self-determines as an indigenous ethnic group. - The community fears that there will be contamination cases	The presence of HCV 5 and 6 within the community territory is ruled out, due to the cultural changes of the Ch'ol population that resides in the Ejido, as well as important areas for the subsistence of the community, since they have alternate sources. In addition, the recommendations regarding the non-affectation of natural

Title or position	Organization or social group	Consultation Method	Main concerns and/or recommendations	Evaluation team report
			affecting water quality and quantity. - They have the expectation that the crop will bring work with good payment conditions to the population. - They signaled that they hope that, if the company starts activities, no harmful chemicals or products are used. - They also indicated their wish that the plantation be established soon. - They pointed out that there is awareness of cases of non-conformity regarding working conditions in the palm industry, in which Oleopalma was identified.	areas close to the MUs are considered, within the HCV – HCSA and EISA studies.
Community representatives	Vicente Guerrero	Participatory dialogue	- The community relates natural areas such as the Usumacinta River and Laguna Perdida, which cause flooding within the community, due to their proximity to them and the connectivity with swampy areas. - The community indicated that they fear that the new plantations will bring foreigners to the area. - They consider that crops can also cause damage to roads and other crops. - They hope that communication channels can be established between the community and the company. - They consider it necessary for the company to open vacancies for the community and offer dignified and legal conditions, in case of establishing the plantations.	The presence of HCV 5 and 6 within the community territory is not identified, due to the changes associated with the establishment of agricultural activities and population migration. In addition, the recommendations regarding the non-affectation of natural areas close to the MUs are considered, within the HCV – HCSA and EISA studies.
Representantes de la comunidad	Ejido Nuevo Pochote	Workshop	- The community hopes that the new plantations that are established will bring with them new job offers for the population. - As they pointed out, it is necessary that if these new positions are created, fair remuneration and decent working conditions should also be considered. - They expect future commitments between the community and the company to be fulfilled. - The community indicated that they are currently having problems	The presence of potential threats to natural areas and the community with the establishment of new oil palm plantations is recognized, which will be integrated into the HCV analysis and the socio-environmental impact assessment of the project.

Title or position	Organization or social group	Consultation Method	Main concerns and/or recommendations	Evaluation team report
			with another oil palm company that is affecting roads and water sources in the area. - They are afraid of a further decrease in the groundwater level that will affect their deep well as a consequence of the establishment of additional oil palm.	

Section 6: Soil and topography

RSPO Note: This section should indicate the type of soil identified and the area of it. Sampling points should be indicated. Topographic maps will be included here as well. Any potential areas identified as steep terrain according to the P&C 2018 definition should be mentioned accordingly. What are the methodology(ies), people involved in the process, date of assessment and findings? Note: Should an assessment carried out by internal staff, just fill the name of the staff and his/her designation.

Date of Assessment: *May 2023*
Name of Assessor: *Juan Pablo Zorro*
Assessor Designation and Company: *Fabio Ernesto Álvarez Morales, Wendy Julieth Álvarez Morales, BioAp S.A.S.*

Based on the soil chart of the United Mexican States Series II (Chart E15-9) (INEGI, 2002) one soil unit corresponding to Vertisol pelico (Vp) was identified in the Management Units. Vertisol (V) is a type of soil characteristic of temperate and warm climates, especially in areas with a marked dry season and a rainy season; It is characterized by its massive structure and its high clay content that expands when wet, forming sliding surfaces called facets, and because they are collapsible when dry, they can form cracks on the surface or at a certain depth. They are very fertile soils, but their hardness makes tillage difficult, they have low susceptibility to erosion and high risk of salinization (INEGI, 2002).

On the other hand, the topography of the land made it possible to identify that in both cases the gentle slope, characterized by having inclinations between 0 and 5°, is the one that predominates, occupying 80.47% of the El Llano MU and 76.60% of Las Mercedes MU; This is followed by the moderate slope, where the inclinations are between 5 and 10° and which represents 18.90% of the El Llano MU and 22.29% of the Las Mercedes MU. The other categories (steep and fairly steep slope) occupy less than 1% of the surface area of the MUs.

In accordance with the National Interpretation of the Principles and Criteria for the Production of Sustainable Palm Oil in Mexico (Roundtable on Sustainable Palm Oil, 2020), it is indicated in Criteria 7.5, 7.6 and 7.7 that new oil palm plantations should not be developed on steep slopes, on marginal and fragile soils or on peaty soils, regardless of their depth. Annex 1 of this document includes the following definitions:

- Fragile soil: A soil that is susceptible to degradation (reduction in fertility) when disturbed. A soil is particularly fragile if degradation leads rapidly to an unacceptably low level of fertility or if the degradation is irreversible using economically viable management inputs.
- Marginal Soil: A soil that is unlikely to produce acceptable economic returns for the proposed crop based on reasonable projections of crop value and improvement costs. Degraded soils are not marginal soils if their improvement and the resulting productivity is profitable.
- Steep terrain: Surfaces with an inclination of more than 25° or as indicated in a National Interpretation process.

Thus, and considering the identification and soil description for each study MU, no soil units are identified that can be classified as marginal or fragile, peat soils or areas with steep slopes (>25°); however, in areas with a steep slope, the necessary measures must be adopted to ensure the preservation of the soil and prevent its erosion, taking into account the previously mentioned guidelines and definitions within the framework of the RSPO.

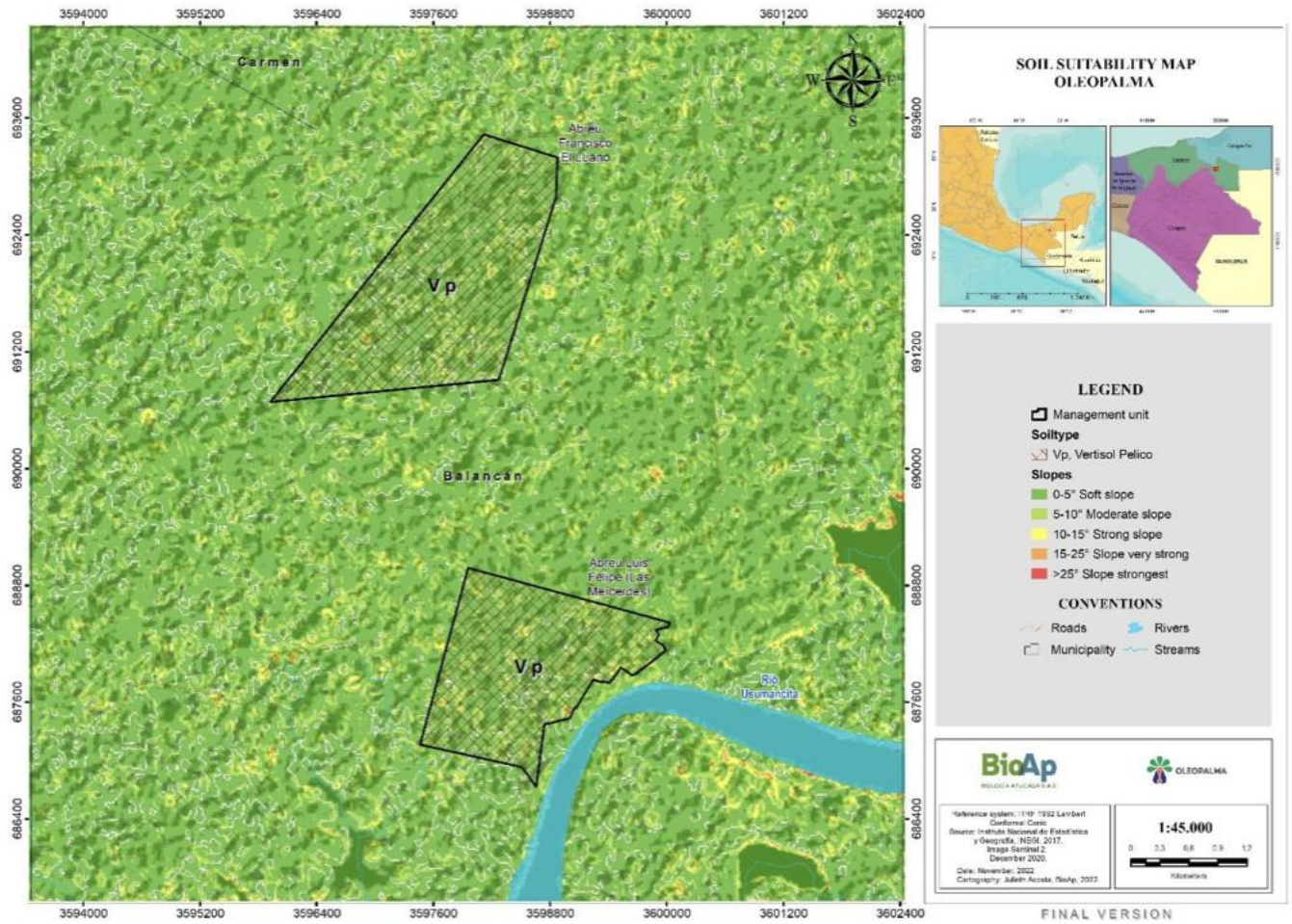


Figure 24. Soil Suitability Map.

Section 7: Greenhouse Gas (GHG)

RSPO Note: this section should be used to explain the findings that come out from the usage of the New Development GHG calculator. Please include what are the significant sources and type of emissions expected from this area. What are the methodology(ies), people involved in the process, date of assessment and findings? Note: Should an assessment carried out by internal staff, just fill the name of the staff and his/her designation.

Date of Assessment: *March, 2023*
Name of Assessor: *Juan Pablo Zorro*
Assessor Designation and Company: *María Paula Romero Cerón / BioAp S.A.S*

GREENHOUSE GAS (GHG) EVALUATION STUDY FOR THE DEVELOPMENT OF NEW PLANTATIONS (NPP) IN THE MANAGEMENT UNITS ABREU FRANCISCO EL LLANO AND ABREU LUIS FELIPE (LAS MERCERDES) OF INDUSTRIAS OLEOPALMA SA DE CV (MEXICO)

PREPARED FOR:

OLEOPALMA

PRODUCED BY:

BioAp
BIOLOGÍA APLICADA S.A.S

BOGOTA DC
MARCH 2023

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LIST OF ACRONYMS AND ABBREVIATIONS

AVC: High conservation values
HCS: High carbon stock
UM: Management unit

GHG: Greenhouse gases
INEGI: National Institute of Statistics and Geography
LUC: Land use change
RFF: Fresh fruit bunches
tCO2: Ton of Carbon Dioxide
RFV: Empty fruit clusters
PKS: Husk
AC: Ammonium chloride
AN: Ammonium nitrate
COD: Chemical oxygen demand
APC: Crude palm oil
DAP: Diammonium phosphate
FW: Fresh weight
GWP: Global Warming Potential
H&C: Harvest and collection
KER: Palm Kernel Extraction Rate
MOP: Muriate of potassium
OER: Oil Extraction Rate
PK: Palm kernel
PKO: Palm kernel oil
PKE: Palm kernel ejector
EEAP: Palm oil mill effluent
RSPO: Roundtable on Sustainable Palm Oil
Seq: Kidnapping

1. INTRODUCTION

The Roundtable on Sustainable Palm Oil (RSPO) is an international multi-stakeholder certification scheme for sustainable palm oil whose mission includes advancing the production, procurement, financing and use of sustainable palm oil products; and the development, implementation, verification, assurance and periodic review of credible global standards for the entire sustainable palm oil supply chain.
Criteria 7.7., 7.10 and 7.12 of the 2018 RSPO principles and criteria have added several new requirements regarding the sustainable development of oil palm plantation expansion, most importantly the prohibition of any new peat plantations, the adoption of the Carbon Stock Approach (HCSA) toolkit and AVC-HCSA manual and the requirement to conduct an integrated assessment before any new development.
The RSPO GHG assessment for new developments 2021, currently in its fourth version, aims to update the procedures of the previous version in line with the 2018 PYC. Among the significant revisions to this version, evaluations are carried out to identify and estimate carbon stocks before and after new developments, as well as the main sources of emissions that may result from development related to palm plantations.
The purpose of this procedure is to guide RSPO members planning new development to identify and estimate carbon stocks prior to development, as well as the main sources of emissions that may result directly from development related to palm plantations. The selection of optimal scenarios for development will be carried out taking into account the social, environmental and economic impacts of development,
The result of this evaluation will be the final development plan specifying the proposed development and conservation. Emphasis has also been placed on encouraging the use of widely available guidelines and practices, while adding other information and calculations (e.g. belowground biomass (BGB), soil carbon, scenario testing) to facilitate application and implementation. report of this procedure.
The present study is developed in order to determine the greenhouse gas emissions present in the new oil palm areas of the Abreu Francisco El Llano Y Abreu Luis Felipe MU (Las Mercerdes) of INDUSTRIAS OLEOPALMA SA DE CV, located in the state of Tabasco, Mexico.
For this study, two (2) management units (MU) were considered with a total area of 702.16 ha, in which the potential planting areas were evaluated and identified, and with it the greenhouse gas emissions generated. a future, the consumption and production of the current plantations that the company has, as well as the information provided by the extraction plant, were taken as a reference.

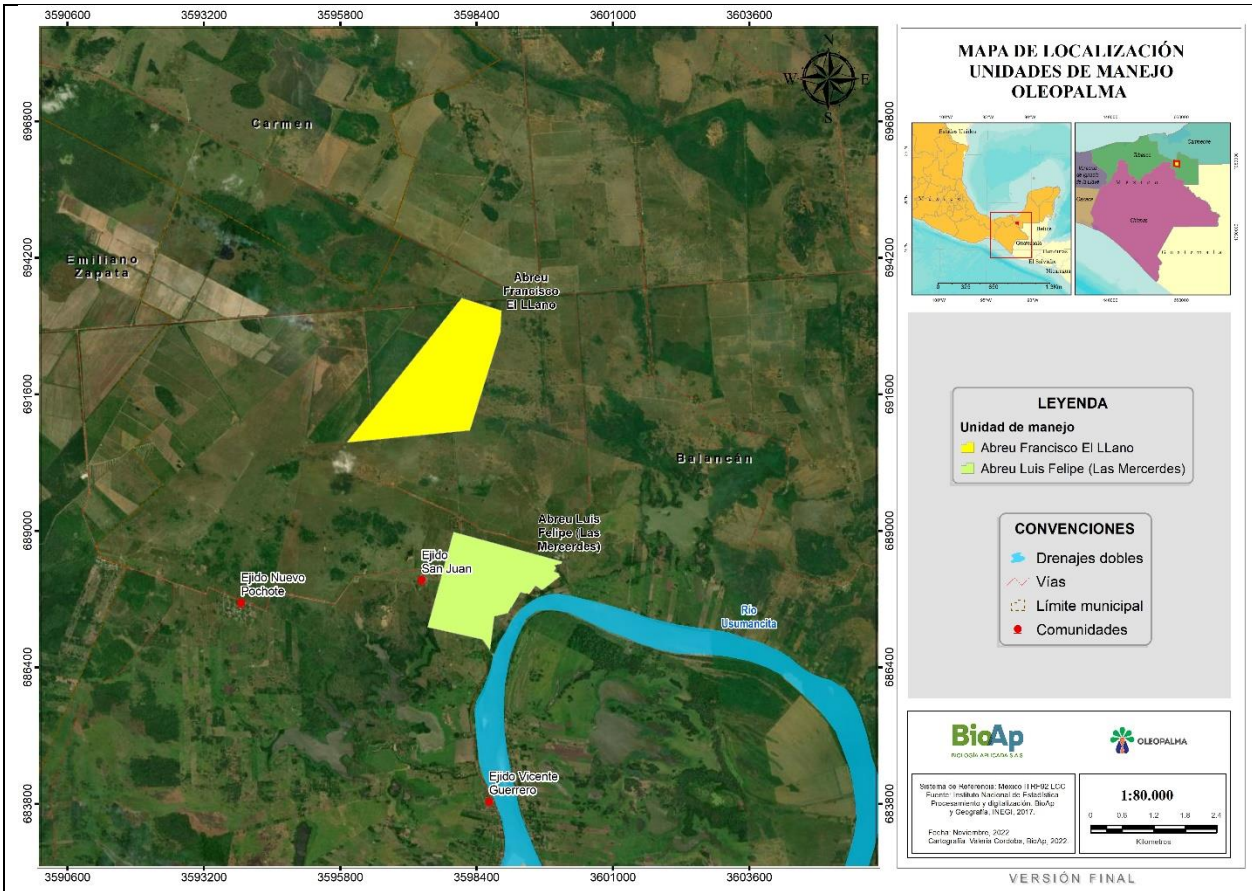


Figure 1Location of management units.

2. SCOPE

This study aims to comply with Principle 7, Criterion 7.10 and 7.12 established by the RSPO (2018) for the production, conservation and improvement of ecosystems and the environment. Two UMs were validated with a total area of 702.16 ha, of which 655.51 ha were identified as potential planting areas, 46.50 ha as conservation areas and 0.14 as human settlements, then in the **Table 1**presents the areas proposed for the new plantation evaluated.

Table 1. Areas for the development of new plantations

DRIVE UNIT	AVC area (ha)	Potential planting area (ha)	Other areas (ha)	Total area (ha)
ABREU FRANCISCO EL LLANO	35.52	366.66	0.14	402.32
ABREU LUIS FELIPE LAS MERCEDES	10.99	288.85	-	299.83

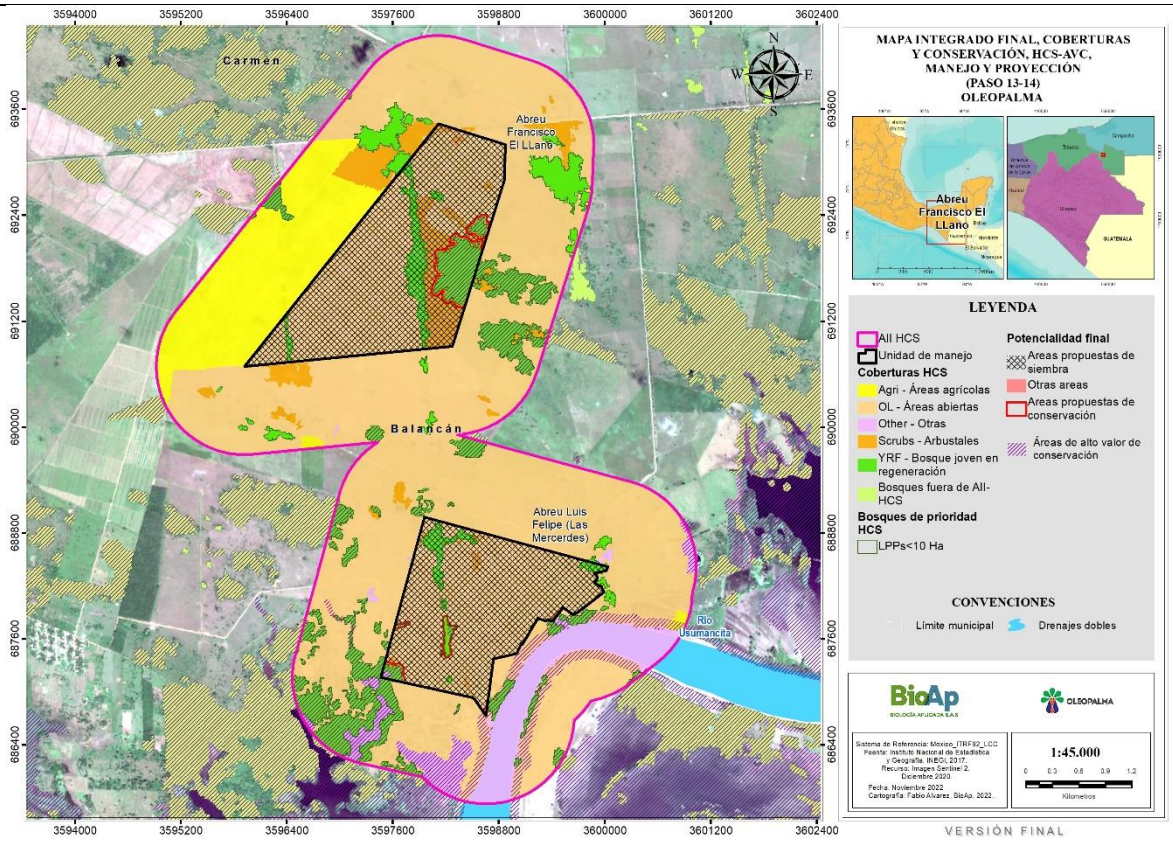


Figure 2. Potential planting and conservation areas.

3. METHODOLOGY

3.1 Image interpretation

For the analysis of coverage and biomass estimation, satellite images were used as base information supported by official vector information on coverage in the digital resources of the National Institute of Statistics and Geography (INEGI); The information processing was carried out under the ArcGIS desktop system with ESRI license (Version 10.5), Quantum GIS (QGIS desktop version 2.12.1) and ERDAS IMAGINE.

Satellite images are one of the most suitable and precise resources to obtain conclusive results that allow decision making. In this case, LANDSAT 8 images were used, being the main source of analysis to corroborate and update coverage. This process was carried out carried out under the concept of visual interpretation and band mapping. This method was divided into 2 phases (interpretation and verification and analysis and digitization).

Phase 1. Interpretation and verification

For the interpretation of the management area, LANSAT 8 images from 2018 were analyzed, with a resolution of 30 m for the OLI (*Operational Land Imager*) bands 1-7, in the same way the panchromatic OLI band 8 was used with a resolution of 15 m was used to carry out the capacity adjustment, these bands were compiled into an image and structured in a mosaic over the general management area.

For interpretation, combinations of bands were made which allowed determining the type of coverage and its state, supported as previously described with vector data on coverage and land use from the INEGI. Likewise, field coverage, some geographical features, structures and constructions were corroborated, said data were georeferenced and documented.

Phase 2. Analysis and digitization

All the information was organized and analyzed together, firstly, the visual interpretation was carried out on the images, superimposing the coverage verification points and the land use shape, this process was carried out by combining bands using the SENTINEL 2 sensor For the interpretation, the combinations 3,2,1 for natural color and 4,3,2 for infrared of vegetation status were used and thus finally the vector layer was digitized by UM and the value of areas for each type of coverage. The entire process was carried out in a geographic database.

4. OVERLAPPING AREAS OF HIGH CONSERVATION VALUE (HCV) AND CARBON-FIXING PLANT COVERS.

For the overlap, these must be superimposed together with the recognized restriction areas and the areas with high carbon storage values (HCS), in this way the identification of the main coverage and ecologically important areas for the maintenance of the local and migratory flora and fauna. In the case of the Abreu Francisco El Llano and Abreu Luis Felipe (Las Mercerdes) MUs, 46.50 ha were identified as conservation areas, in the table they are presented in a general way and in the table the conservation areas are presented by MU , in which the corresponding coverages are identified:

Table 2Project conservation areas.

PROPOSED CONSERVATION AREAS	HA
Water body	0.53
Cultivated Grassland	4.30
Secondary arboreal vegetation of the Medium Subevergreen Forest	35.50
Shrub Secondary Vegetation of Medium Subevergreen Forest	6.18
GRAND TOTAL	**46.50**

Table 3. Conservation areas by UM

PROPOSED CONSERVATION AREAS BY UM	
Abreu Francisco El Llano	**35.52**
Cultivated Grassland	1.86
Secondary arboreal vegetation of the Medium Subevergreen Forest	27.94
Shrub Secondary Vegetation of Medium Subevergreen Forest	5.72
Abreu Luis Felipe (Las Mercerdes)	**10.99**
Water body	0.53
Cultivated Grassland	2.44
Secondary arboreal vegetation of oak forest	1.55
Secondary arboreal vegetation of the Medium Subevergreen Forest	6.01
Shrub Secondary Vegetation of Medium Subevergreen Forest	0.46
GRAND TOTAL	**46.50**

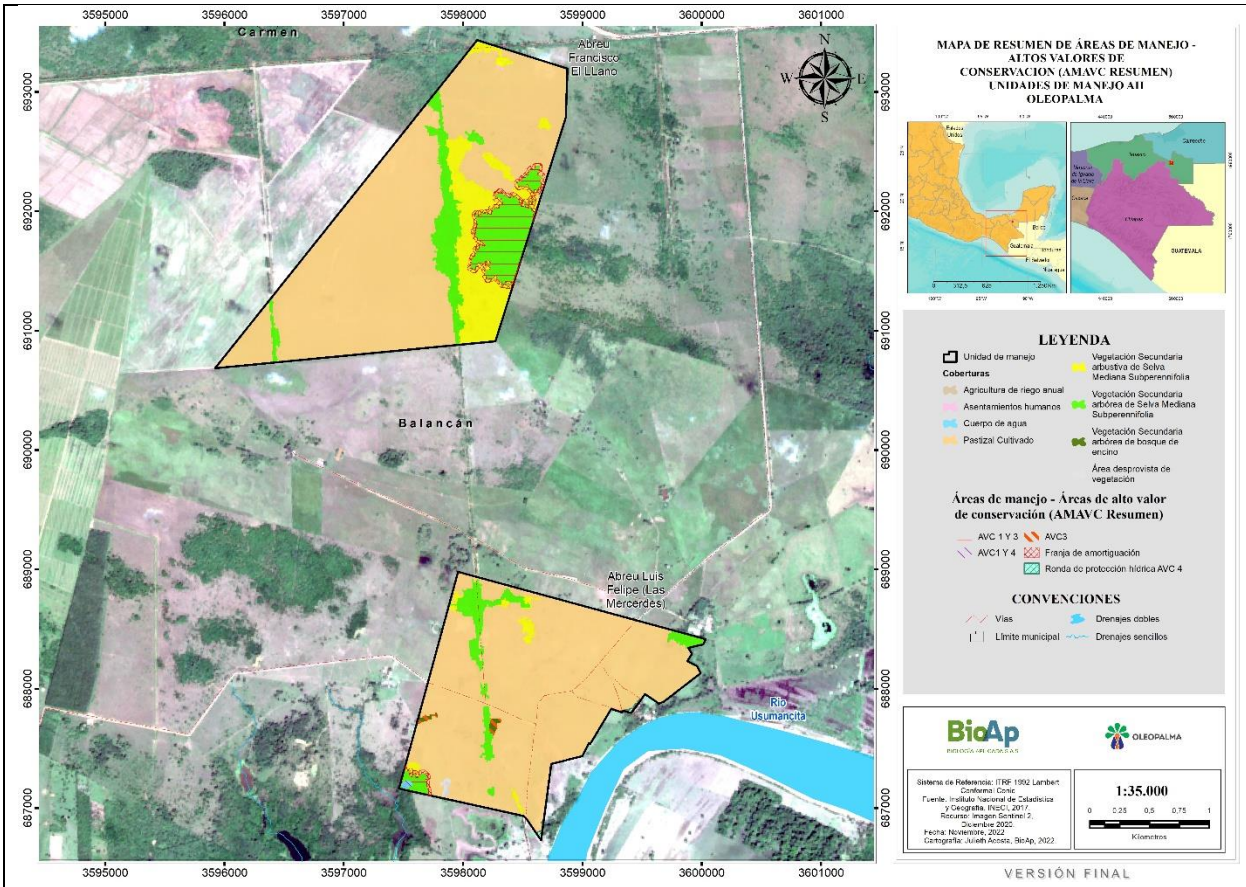


Figure 3. Management areas – High conservation values.

5. ESTIMATION OF GHG EMISSIONS WITH THE RSPO GHG NPP TOOL.

Once the information from the HCS and AVC studies is available, the New Developent GHG Calculator spreadsheet opens, where it is worth mentioning that when downloading the tool, RSPO gives the option to download it in the desired language, For this study, it was downloaded in the original version (English), it is important to keep in mind that regardless of the language in which the tool is downloaded, the information that must be filled out remains the same.

In this spreadsheet, there are 16 tabs of which only 8 must be filled out. Likewise, in the tool these tabs are in yellow. It is worth mentioning that for this study the peat tab was not filled out, since it is not The presence of this was identified in the study areas.

LUC emissions	FFB production	Fuel	Peat	Fertilizers and N_2O	Conservation area	Extractor data

It should be taken into account that all the information that is filled out in these tabs are the expected performance and production values for the new development. Additionally, the tab where the summary of the results is made is presented, where it presents:

- Field emissions and sinks for small producers.
- Field emissions and sinks for use in large-scale operations.
- The emissions generated in the extraction plant.
- Total emissions, tCO_{2e} (field and extractor).

Below is a step-by-step description of how to run the calculator.

A. LUC emissions:

In this tab you must enter the areas that are going to be cleared for new plantations and the estimated carbon stocks of the existing soil cover. If carbon stocks were estimated by indicators using the default values provided in the GHG assessment procedure, then you can select the list of default values provided on the same tab. However, if field measurements were carried out, the type of land cover and the corresponding carbon stocks must be defined (filling the yellow cells).

B. Production of FFB :

The expected yield data of tRFF/ha for the new development must be entered; it is important to keep in mind that the planted area data is automatically entered by the same tool. Therefore, it is important to complete the LUC tab, since the tool will automatically indicate what the final expected yield will be per ton of Fresh Fruit Bunch per year in the plantations for the new development.

C. Fuel in the field

The expected annual fuel consumption is indicated, which must include the transportation of FFB to the extraction plant, the transportation of FFB and/or fertilizers to the field, transportation of workers and materials in the field, operation of machinery, such as spreaders. of fertilizers, pumps and fertilizer turners, and maintenance of infrastructure such as roads and drains. Fuel used for land clearing activities (in preparation for new planting) is excluded.

D. Fertilizers and N_2O

The expected annual consumption of fertilizer must be entered. For this data, an average of the annual use of fertilizers that are being applied in the plantations that the company already has can be made. This sheet calculates the total CO_{2e} produced from the manufacturing, transportation and use of fertilizers. The N_2O produced from the application of fertilizers in the RFV, fertilizer and EEAP field is also calculated .

The tool provides a list of simple fertilizers, however, for compound fertilizers, each user must first add it in the "User-defined fertilizers" sheet. Emissions from the manufacture of compound fertilizers can be estimated using the "User-defined fertilizers" sheet.

E. Conservation areas seq:

In this tab it is necessary to enter the total conservation areas, taking into account the conservation areas established for each scenario and also the areas identified as HCV. Once the total area is obtained, it is important that the equation be carried out to determine the tC and in this way enter it into the average Cseq, this is done in order to calculate the emissions of the entire conservation area (ha). The RSPO default Cseq rate is provided on the same tab. You can use the regional/national/local custom Cseq rate by providing references of that rate.

F. Extractor data :

It is important to note that if the new development does not include mill operations, it will not be necessary to enter data on this sheet. However, for the company it does apply since it is planning to send all the fruit generated from the new developments to its respective extraction plant, therefore, the projected data of this, in terms of CPO and PK production, must be indicated. (t/year), the estimate of methane production from EEAP and fuel consumption in the extraction plant as well as electricity consumption from the network. Depending on the scenario, an estimate is made for the capture of methane for burning or electricity generation, or if none of these processes is done, but it is left to be sent to the ponds and carry out the conventional procedure.

6. SCENARIOS

According to the results obtained from the carbon stock and the analysis of the Greenhouse Gas (GHG) calculator, 4 scenarios were defined. Table Table 4a description of the scenarios.

Table 4. Description of scenarios

SCENERY	DESCRIPTION
Scenario 1	All potential areas for new oil palm plantings, except the area of human settlements, it is important to mention that all areas identified for conservation will also be respected. For this scenario, in terms of fertilizer and fuel consumption, it was taken as refers to the consumption that exists in already established plantations. In this case, for the extraction plant, effluent treatment is carried out in a conventional manner, that is, methane capture is not generated.
Scenario 2	All potential areas for new oil palm plantings, except the area of human settlements, it is important to mention that all areas identified for conservation will also be respected. For this scenario, the use of a smaller amount of fertilizers and fuel was also proposed. The extraction plant for effluent treatment is conventional, and a lower consumption of electricity acquired from the electrical grid is also proposed.
Scenario 3	All potential areas for new oil palm plantings, except the area of human settlements, it is important to mention that all areas identified for conservation will also be respected. For this scenario, the use of a greater amount of fertilizers and fuel was also proposed. As for the extraction plant in the effluent treatment, it is conventional, however, it was also proposed to start with a 10% methane capture.

Scenario 4	All potential areas for new oil palm plantings, except the area of human settlements, it is important to mention that all areas identified for conservation will also be respected. For this scenario, the use of a greater amount of fertilizers and fuel was also proposed. Regarding the extraction plant in the treatment of effluents it is carried out in a conventional way, regarding the treatment of PKS it was proposed that 20% be distributed for energy generation and 8% for direct distribution in the field.

		S1	S2	S3	S4
Area avoided for development	**Conservation area**	46.50	46.50	46.50	46.50
Potential areas for new developments (ha)	**Annual agriculture**	0.0003	0.0003	0.0003	0.0003
	Area devoid of vegetation	0.90	0.90	0.90	0.90
	Pastureland	564.41	564.41	564.41	564.41
	Tree secondary vegetation	40.02	40.02	40.02	40.02
	Shrubby secondary vegetation	50.18	50.18	50.18	50.18
EEAP treatment	**Conventional treatment**	AND	AND	AND	AND
	methane capture	-	-	10%	-

6.1 Emissions scenario 1

For scenario 1, it was proposed to take the total of the potential areas for planting with a total of 655.51 ha, as well as the areas identified for conservation with 46.50 ha, the remaining 0.14 ha refers to human settlements therefore not was considered for no use. In this scenario we take as a reference the fertilizers that are currently used in the established plantations that are within the area of influence of the UM proposed for the new plantings, this in order to be able to have values that are closer or as a reference and that can be used in the development of the project, as well as the fuel consumption of agricultural activities.

Regarding the activities of the extraction plant, it is important to mention that the company has an effluent treatment system in anaerobic ponds (conventional), and they also use the electrical network to carry out office activities and other external activities. to the process. It is worth mentioning that the company also sells biomass, therefore, it is considered as a bonus.

Once the values were established, the required values were entered into the calculator, which gave us the following emissions as seen in Table 5.

Table 5. Emissions scenario 1.

FIELD EMISSIONS	t CO2e	t CO2e/ha	t CO2e/t FFB
Land use	**796.02**	1.21	0.05
Kidnapping by cultivation	**-5,699.75**	-8.70	-0.33
Fertilizers	**3,273.33**	4.99	0.19
N2O	**2,034.84**	3.10	0.12
Fuel in field	**95.87**	0.15	0.01
Peat	**0.00**	0.00	0.00
Credit for conservation areas	**-14,020.22**	-21.39	-0.82
Total	**-13,519.91**	**-20.63**	**-0.79**
EXTRACTOR PLANT EMISSIONS	**tCO2e**	**t CO2e/ha**	**tCO2e/tFFB**
POME	**3,340.77**	5.10	0.20
Fuel in extraction plant	**15.89**	0.02	0.00
Use of electrical network	**1.07**	0.00	0.00
credit (Energy export)	**0.00**	0.00	0.00
Credit (sale of biomass for energy)	**-154.48**	-0.24	-0.01
Total	**3,203.25**	**4.89**	**0.19**

Total emissions, tCO2e	-10,317

As can be seen in Table 5, the total values of emissions generated in both field and extraction plant activities are evident, in which a value of -10,317 tCO2e was obtained.
The emissions generated by field activities totaled -13,519.91 tCO2e. where it was identified that the activity that generates the highest emissions is given by the application of fertilizers, representing 12.63% of the total, followed by N_2O emissions with 7.85%, it is worth mentioning when evaluating emissions from fertilizer application in the field. The transport of the fertilizers from the point of origin to the storage point and finally the application is considered, while when evaluating N2O emissions, the emissions from the application of chemical and organic fertilizers to the field are evaluated, we continue with the emissions generated by the change in land use with 3.07% and finally emissions from fuel consumption with 0.37%. Likewise, we have activities that generate $CO_{2\ \text{capture}}$, where conservation areas are identified first, representing 54.09%, followed by crop sequestration with 21.99%.
Regarding the emissions generated in the extraction plant, a total of 3,512.20 tCO2e was obtained, where the main activity that generates the greatest impact is given by the treatment of effluents (POME), representing 95.12% of the total emissions. followed by fuel consumption with 0.45% and finally by the use of electrical grid energy with 0.03%, just like the field activities in the extraction plant, there are also activities that generate a positive impact in this case. It is the sale of biomass for energy generation which represents 4.40%.

6.2 Emissions scenario 2

In scenario 2, it was proposed, like scenario 1, to take the total of the potential areas for planting as well as the areas identified for conservation. In this scenario it was established that according to the amount of fertilizers, fuel that was used as reference that are currently used in the established plantations that are within the area of influence of the MU proposed for the new ones, half the quantity of these was entered, with the possibility that the activities at the beginning will not demand as much quantity.
Regarding the activities of the extraction plant, 100% was left with the effluent treatment system in anaerobic ponds (conventional), however, it was also proposed that there be a decrease in the use of the electrical network for the development of office activities and other activities external to the process. It is worth mentioning that the company also sells biomass, therefore, it is considered as a bonus.
Once the values were established, the required values were entered into the calculator, which gave us the following emissions as seen in Table 6

Table 6. Emissions scenario 2.

FIELD EMISSIONS	t CO2e	t CO2e/ha	t CO2e/t FFB
Land use	**796.02**	1.21	0.05
Kidnapping by cultivation	**-5,699.75**	-8.70	-0.33
Fertilizers	**1,629.20**	2.49	0.10
N2O	**1,067.70**	1.63	0.06
Fuel in field	**86.00**	0.13	0.01
Peat	**0.00**	0.00	0.00
Credit for conservation areas	**-14,020.22**	-21.39	-0.82
Total	**-16,141.03**	-24.62	-0.95
EXTRACTOR PLANT EMISSIONS	**tCO2e**	**t CO2e/ha**	**tCO2e/tFFB**
POME	**3,340.77**	5.10	0.20
Fuel in extraction plant	**15.89**	0.02	0.00
Use of electrical network	**1.02**	0.00	0.00
credit (Energy export)	**0.00**	0.00	0.00
Credit (sale of biomass for energy)	**-154.48**	-0.24	-0.01
Total	**3,203.20**	4.89	0.19
TOTAL EMISSIONS, tCO2e.	**-12,938**		

$_2$ were obtained , this as a result of the sum of the emissions given in the field activities and the extraction plant.
As we see in table 6, the emissions generated by field activities were a total of -16,141.03 tCO $_{2,}$ where it can be identified that there are both emissions and capture of CO2, it was identified that the case of the activities that generate the greatest emissions is given by the application of fertilizers with 6.99% of the total, followed by N $_{2\,O}$ emissions with 4.58, the change in land use with 3.24% and finally the emissions generated due to fuel consumption with 0.37%, likewise, as mentioned at the beginning, capture activities were also identified, where it was identified that the one that has the greatest impact is given by the capture of CO2 that is generated in the areas of conservation with 60.18%, followed by kidnapping by the cultivation establishment in the area representing 24.46%.
Regarding the emissions generated in the extraction plant process, a total of 3,203.02 tCO $_{2}$ was obtained, where it was identified that the main source of emissions is given by the POME, which represents 95.12%, followed by the fuel consumption with 0.45% and finally as a source of emission due to the use of the electrical grid with 0.03%. However, it is important to mention that the company has a bonus for the sale of biomass for energy which represents 4.40%.

6.3 Emissions scenario 3

For scenario 3, it was proposed, like scenarios 1 and 2, to take the total of the potential areas for planting as well as the areas identified for conservation. However, for this scenario it was established that the amount of fertilizers, which are taken as a reference, would be doubled, according to what is being applied in the AII of the UMs proposed for the new ones, this providing that the soil needs a greater amount of nutrients, among other circumstances, in terms of fuel consumption, it was left standard.
Regarding the activities of the extraction plant, it was proposed to begin with the capture of methane mainly for burning with 10% and 90% to continue with the effluent treatment system in anaerobic ponds (conventional). For the energy consumption of the electrical network remained with the default values, as well as the use of fuel, as already mentioned above the company has the sale of biomass, therefore, it is considered as a bonus.
Once the values were established, the required values were entered into the calculator, which gave us the following emissions as seen in Table 7.

Table 7. Emissions scenario 3.

FIELD EMISSIONS	t CO2e	t CO2e/ha	t CO2e/t FFB
Land use	**796.02**	1.21	0.05
Kidnapping by cultivation	**-5,699.75**	-8.70	-0.33
Fertilizers	**5,863.04**	8.94	0.34
N2O	**3,560.04**	5.43	0.21
Fuel in field	**121.12**	0.18	0.01
Peat	**0.00**	0.00	0.00
Credit for conservation areas	**-14,020.22**	-21.39	-0.82
Total	**-9,379.75**	**-14.31**	**-0.55**
EXTRACTOR PLANT EMISSIONS	**tCO2e**	**t CO2e/ha**	**tCO2e/tFFB**
POME	**3,069.71**	4.68	0.18
Fuel in extraction plant	**15.89**	0.02	0.00
Use of electrical network	**1.07**	0.00	0.00
credit (Energy export)	**0.00**	0.00	0.00
Credit (sale of biomass for energy)	**-231.01**	-0.35	-0.01
Total	**2,855.66**	**4.36**	**0.17**
TOTAL EMISSIONS, tCO2e.	**-6,524**		

$_2$ were obtained , this as a result of the sum of the emissions given in the field activities and the extraction plant.
As we see in table 7, the emissions generated by field activities were a total of -9,379.75 tCO $_{2,}$ where it can be identified that, like the other scenarios, there are both emissions and capture of CO $_2$. As a source of emissions, it was identified that the activity that generates the greatest amount of emissions is the

application of fertilizers with 19.50% of the total, followed by N_2O emissions with 11.84%, the change in the use of soil with 2.65% and finally the emissions generated by fuel consumption with 0.40%, likewise capture activities were identified, where the activity that has the greatest impact is the capture of CO 2 that is generated in conservation areas with 46.64%, followed by kidnapping by the cultivation establishment in the area representing 18.96%.
Regarding the emissions generated in the extraction plant process, a total of 2,855.66 tCO_2 was obtained, where it was identified that the main source of emissions is given by the POME, which represents 92.53%, followed by the fuel consumption with 0.48% and finally as a source of emission due to the use of the electrical grid with 0.03%. However, it is important to mention that the company has a bonus for the sale of biomass for energy which represents 6.96%.

6.4 Emissions scenario 4

Finally, in scenario 4, it was proposed, like the previous scenarios, to take the total of the potential areas for planting as well as the areas identified for conservation. In this scenario we take as a reference the fertilizers that are currently used in the established plantations that are within the area of influence of the UM proposed for the new plantings, this in order to be able to have values that are closer or as a reference and that can be used in the development of the project, as well as the fuel consumption of agricultural activities.
Regarding the activities of the extraction plant, it is important to mention that the company has an effluent treatment system in anaerobic ponds (conventional), and they also use the electrical network to carry out office activities and other external activities. to the process. In this scenario, it was established that the amount of RFV is distributed 80% for direct application to the field and 20% for energy generation. Likewise, the company sells biomass, therefore, it is considered as a bonus.
Once the values were established, the required values were entered into the calculator, which gave us the following emissions as seen in Table 8.

Table 8. Emissions scenario 4.

FIELD EMISSIONS	t CO2e	t CO2e/ha	t CO2e/t FFB
Land use	**796.02**	1.21	0.06
Kidnapping by cultivation	**-5,699.75**	-8.70	-0.40
Fertilizers	**3,273.33**	4.99	0.23
N2O	**2,003.70**	3.06	0.14
Fuel in field	**95.87**	0.15	0.01
Peat	**0.00**	0.00	0.00
Credit for conservation areas	**-14,020.22**	-21.39	-0.97
Total	**-13,551.04**	**-20.67**	**-0.94**
EXTRACTOR PLANT EMISSIONS	**tCO2e**	**t CO2e/ha**	**tCO2e/tFFB**
POME	**2,826.80**	4.31	0.20
Fuel in extraction plant	**13.44**	0.02	0.00
Use of electrical network	**1.07**	0.00	0.00
credit (Energy export)	**0.00**	0.00	0.00
Credit (sale of biomass for energy)	**-283.99**	-0.43	-0.02
Total	**2,557.33**	**3.90**	**0.18**
TOTAL EMISSIONS, tCO2e.	**-10,994**		

$_2$ were obtained , this as a result of the sum of the emissions given in the field activities and the extraction plant.
As we see in table 8, the emissions generated by field activities were a total of -13,551.04 tCO_2, where it can be identified that, like the other scenarios, there are both emissions and capture of CO_2. For this scenario, it was identified that the activity that generates the greatest amount of emissions is the application of fertilizers with 12.64% of the total, followed by N_2O emissions with 7.74%, the change in land use with

3.07% and finally the emissions generated by fuel consumption with 0.37%, capture activities were also identified, where the activity that has the greatest impact is the capture of CO 2 that is generated in conservation areas with 54.16%, followed by kidnapping by the cultivation establishment in the area representing 22.02%.
Regarding the emissions generated in the extraction plant process, a total of 2,577.33 tCO 2 was obtained, where it was identified that the main source of emissions is given by the POME, which represents 90.45%, followed by the fuel consumption with 0.43% and finally as a source of emission due to the use of the electrical grid with 0.03%. However, it is important to mention that since in this scenario it was proposed that the use of RFV not only be taken directly to the field, but also used as a source of energy in the process, a bonus was obtained that represents 9. 09%, that is, this practice would help the extraction plant's emissions greatly.

6.5 Scenario selection.

Once the 4 scenarios were established, several factors were taken into account for the selection in which an attempt was made to choose the scenario that best suited the development of the project.
In the case of field activities, it was possible to identify that for the 4 scenarios what generated the most impact was the application of fertilizers, however, it is very important to take into account that the amount and type of fertilizers can vary. , because its application and composition will depend on the state of the soil and the needs that the palm requires over the years, that is, a certain amount of these cannot be established, nor can the consumption of fuel in agricultural activities. However, it is also very important to highlight that planting palm crops in the area will bring a positive impact on the area, as will maintaining the areas identified for conservation.
For the extraction plant activities, the emissions generated by the POME were considered to have a greater impact, because it has a conventional treatment system, and the CH 4 emissions cause this process to be largely affected, in terms of the Consumption of electricity from the network and fuel are variables that with the development and implementation of good practices could reflect a decrease in consumption. It should be noted that the company has been implementing the sale of PKS for energy generation, which has been attributed to a positive impact.
Taking these aspects into account, it can be established that the scenario that adapts to the conditions proposed for the development of its new plantations is scenario **4** , since this best suits the operational capacity of the company. However, it is important to be clear that establishing this scenario does not guarantee that 100% of what is proposed will be met. In the case of the extraction plant, implementing the use of RFV as an energy source will be a process which with the time it can be adapted, this does not imply that the company has to increase this percentage immediately, I know that it is clear that it implies an adjustment in the operation and an economic impact can also be seen.
In the following graph we can see that the field emissions in the scenarios vary mainly to the amount of fertilizers applied, however, between scenario 1 and 4 very close emissions are obtained, while in scenario 3 it is observed that at Establishing a greater amount of fertilizers, the emissions will have a slightly more negative effect compared to the others, contrary to what happens in scenario 2, which when applying a lower amount of fertilizers, the emissions are much higher, that is, they have a positive impact.
In the case of the emissions from the extraction plant, it is observed that for scenarios 1 and 2 their emissions are very similar, due to the fact that the POME is managed in a conventional manner, while in scenario 3 identifies a decrease in its emissions because the implementation of methane capture is proposed, and finally in scenario 4 it is also possible to identify that the emissions generated are lower than those of the other scenarios, this occurs because it is about giving other beneficial uses of the by-products obtained during the process.

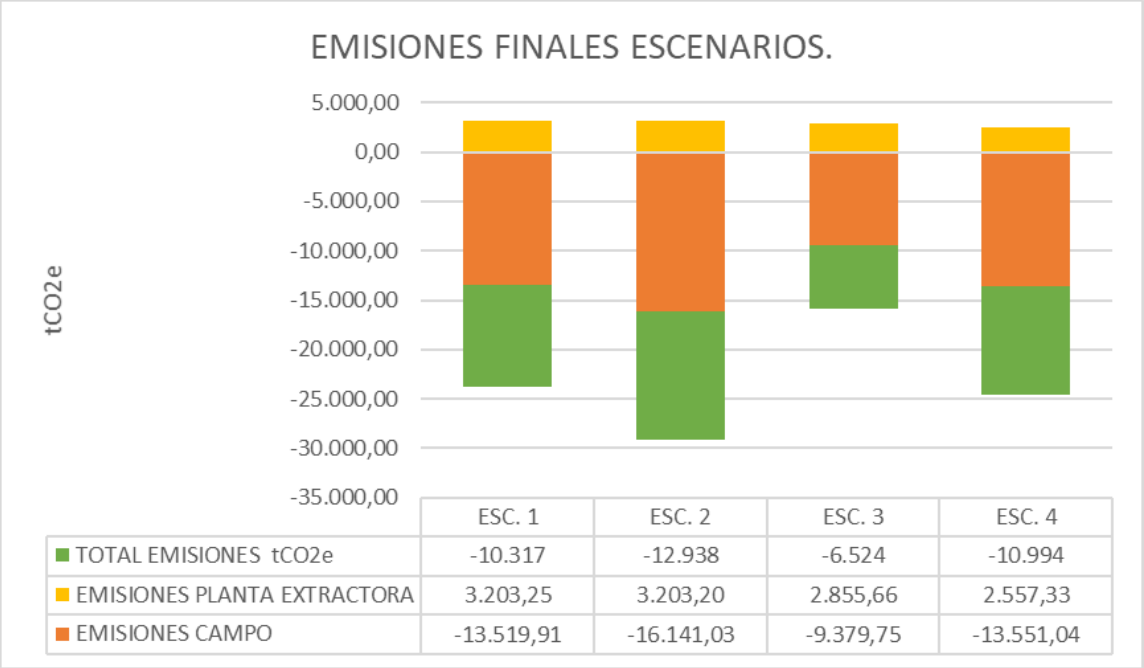


Figure 4. Graph of final emissions of the 4 scenarios.

7. RECOMMENDATIONS

To reduce GHG emissions in plantations and extraction plants, a series of good agricultural practices and operations must be implemented that will help to make better use of natural resources and also reduce operating costs. The management plans proposed below are developed in order to meet the goals established by the RSPO of generating an annual decrease in GHG emissions, which are produced both in plantations and in the extraction plant, however, it is worth mentioning that the The company is NOT subject to complying with them, but if plans for GHG reduction must be presented, therefore it has the option of modifying the proposed plans or can establish new ones to achieve the reduction of GHG emissions throughout its process. where all the activities carried out from planting to obtaining the final product are taken into account.

MANAGEMENT ACTION PLAN				
TYPE OF MEASURE:				
Preventive			x	
Corrective			x	
Mitigation			x	
Compensation				
Description of activities:				
No.	Action	Environmental benefit	Responsible	Year
1	Field implementation of organic fertilizers such as prepared Biofertilizers, in order to obtain optimal growth for palms, and thus reduce the use of chemical fertilizers in the field.	Optimization of the amount of organic fertilizers and reduction in the use of chemical fertilizers, in order to reduce associated GHG emissions.	Plantation management	2023-2024
2	Promotion of the use of legume covers to reduce the use of inorganic nitrogen fertilizers		Plantation management	2023-2024

3	Maintain weeds inside the box manually, using either a hoe or machete, in order to reduce or eliminate the use of herbicides. If the company continues with the application of herbicides, it must increase the implementation of good agricultural practices.	Reduction of N_2O emissions.	Plantation management	2023-2024
4	Design and implementation of a periodic maintenance plan for machinery and tools that run on fossil fuels.	Reduction of CO_2 emissions, since if you have old or poorly maintained machinery, their emissions will be greater.	Plantation management	2023-2024
5	Implementation of a savings plan and efficient use of energy in the extraction plant	Know the critical points with high energy consumption to propose environmentally efficient alternatives.	Extraction plant coordinator and environmental coordinator	2023-2024

Section 8: Land Use Change Analysis (LUCA)

RSPO Note: This section will be used to analyse that there has been no land clearing in the area before the NPP is submitted. Arrangement should be following the proxy dates indicated in section 2.2.7 of the current NPP Document. Please ensure that the minimum resolution is 300 dpi. What are the methodology(ies), people involved in the process, date of assessment and findings? Note: Should an assessment carried out by internal staff, just fill the name of the staff and his/her designation.

Date of RSPO approval as satisfactory: ***16/02/2023***
Name of Assessor: ***Juan Pablo Zorro***
Assessor Designation and Company: ***Juan Pablo Zorro, Wendy Julieth Acosta Rodríguez / BioAp S.A.S***

Landsat images: Multispectral Landsat images with 30 meters resolution were used for the interpretation of land use or land cover. These images were downloaded from the following site: http://earthexplorer.usgs.gov. Land use classification of the Landsat imagery was performed using the "visual classification" method, described below. The specifications of the images used are described in *Table 16.*

Image type	Path	Row	Image date	Bands
Landsat 7	21	48	27-nov-05	4,3,2
Landsat 7	21	48	4-jun-05	4,3,2
Landsat 7	21	48	19-dic-07	4,3,2
Aster lvl1	-5120900	-9998100	15-abr-10	2,3,1
Landsat 7	21	48	14-mar-10	4,3,2
Landsat 8	21	48	8-ago-14	5,3,2
Planet	0502E	1127N	dic-22	4,3,2

Google Earth AND Bing Images

Eventually it was necessary to use Google Earth images from 2003-2018 and some Bing images to verify the correct interpretation of the cover. This was done using the ArcBruTile app for ArcGIS software. Interpreting satellite imagery and creating cover maps for 2005, 2007, 2010, 2014, and 2020.

Data gaps in Landsat 7 Images. Landsat images from 2005, 2007, and 2010 contained an error commonly known as 'gaps', which are bands of invalid data caused by faults in remote sensor components. To fill in the information gaps, two or three images were used for each date.

Satellite band combination True color: the band combination was 321. False color: the bands were combined to obtain Landsat ETM + 432 and Landsat 8 543 combinations.

Pan-Sharpened Process. The Landsat images were enhanced by a combination with the 15-meter-per-pixel panchromatic band obtaining a 15-meter-per-pixel multispectral image. This process was performed with the Create Dataset Bitmap from the ArcGIS software.

Classification of satellite images. The interpretation of the vegetation cover was carried out within the property areas evaluated by visual classification.

Four criteria were used to classify areas that have been cleared for palm oil plantations cropping (no previous HCV studies had been documented previously) were specified by the RSPO (Table 17). These coefficients or categories are representative of the forest/habitat type and probable land use present in areas suitable for commercial palm oil plantations. In most situations, can be easily identified through the use of remote sensing.

Landcover	Description	Coefficients RSPO
Open areas	Areas without vegetation cover or with scattered vegetation cover and natural sands.	0
Clean grasslands	Areas without any vegetation cover or with scattered vegetation and natural sands	0
Grasses with shrubs	Pastures intervened by local activities, livestock, and small temporary crops, dominated by the presence of scattered shrubs.	0
Secondary forest	Ground cover dominated by successive vegetation.	0,7
Shrubs	Ground cover dominated by shrub vegetation. They are usually the result of unmanaged or abandoned pasture areas.	0
Urban – Industrial	It includes industrial zones, urban areas, roads, or other constructions.	0

Based on the analysis of the satellite images mentioned in the section *4.2.4*, we continue with the following stages

1. a) Assessment phase: consisting of the primary classification of satellite images.
2. b) Field verification phase: in which the present land cover is corroborated based on the changes in land use of the periods 2005, 2007, 2010, 2014 and 2022, taking coordinates and photographs for each case and whose information obtained is used for subsequent validation. In this phase, 6 classes were identified for the Management Units: clean pastures, open areas, pastures with shrubs, secondary vegetation, shrubs and urban-industrial; these coverages were subject to verification for the next step.
3. c) Analysis and evaluation phase: Data obtained in field are compared with the information of the classified land covers, information that is combined in a shapefile of precision evaluation points. Subsequently, the confusion matrix that is used to carry out the truth analysis of the terrain is constructed, as well as the Kappa value. If the latter is less than 60%, the information must be adjusted, otherwise the next step is continued.
4. d) Composition and reporting phase: in this phase, the analysis of the satellite images, digitization and final adjustment are carried out, including the classification of vegetation coefficients and the compensation analysis, and the preparation of the respective maps.
5. e) Phase of identification of land cover change areas: after obtaining the vectorized cover, the intersection is made to identify areas of change, which were recalculated and tabulated to identify land use values between the analysis periods. . The entire process was carried out using ArcGIS, ERDAS Imagine 2014, QGIS, BaseCAMP and Google Earth software. The georeferenced and preprocessed satellite images for each analysis period are shown below in the *Figure 26.*

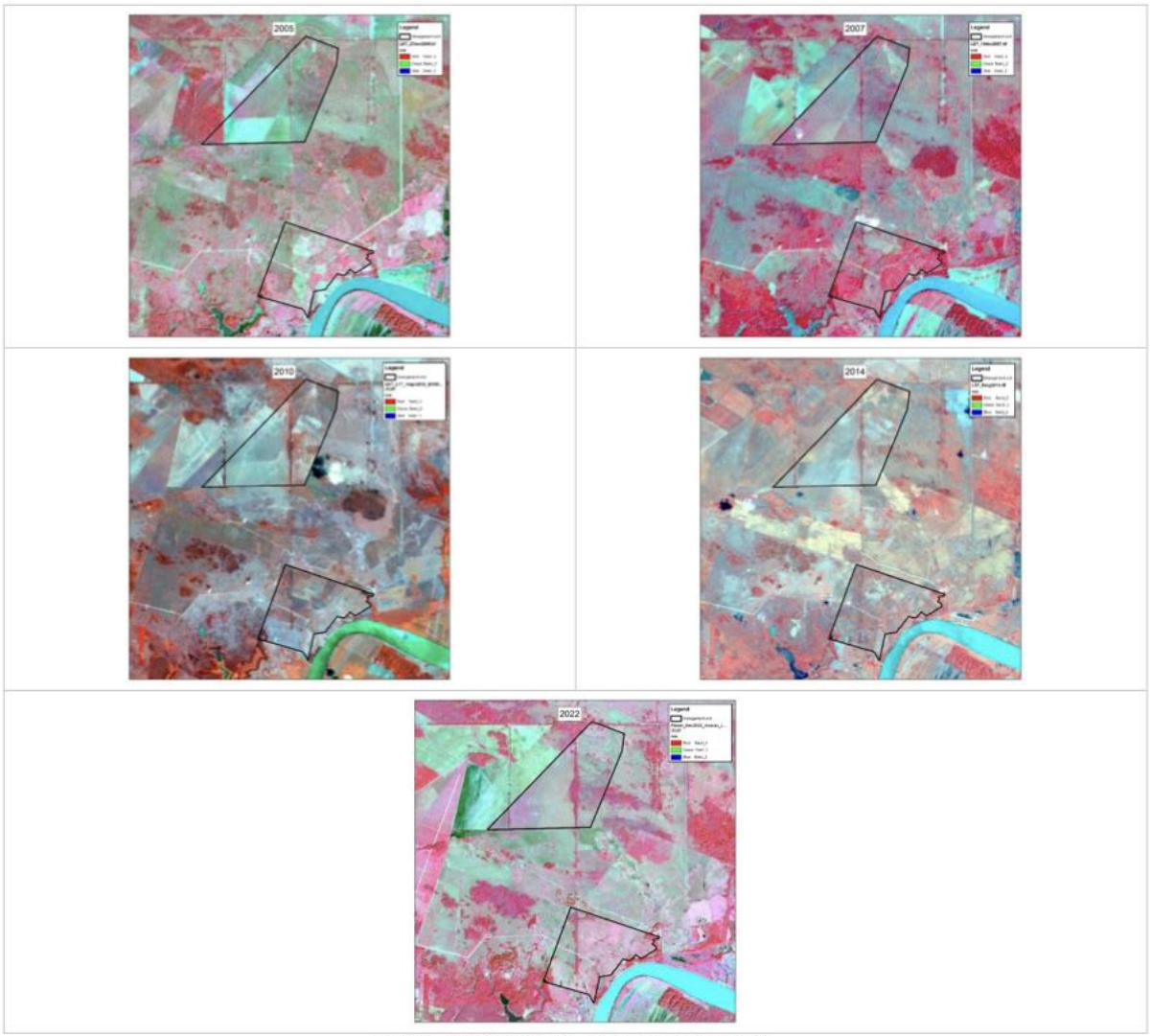


Figure 26. Satellite images used for LUCA.

Table 32. Historical change in land use by analyzed period.

	2005	2007	2010	2014	2022
Bare lands	0.28	0.28	18.96	0.28	0.28
Clean pastures	279.28	327.38	-	-	-
Crops	143.01	114.67	481.73	491.68	491.68
Floodable areas	6.39	6.39	6.39	6.39	6.39
High Secondary Forest	29.92	29.92	29.92	29.92	29.92
Low Secondary Forest	43.88	43.88	43.88	43.88	43.88
Pastures with shrubs	110.49	118.04	63.12	72.74	69.28
Scattered trees	2.78	2.78	2.78	2.78	2.78
Shrubland	81.20	53.90	50.45	49.57	53.02
Urban-Industry	3.12	3.12	3.12	3.12	3.12
Water body	1.80	1.80	1.80	1.80	1.80
TOTAL	**702.16**				

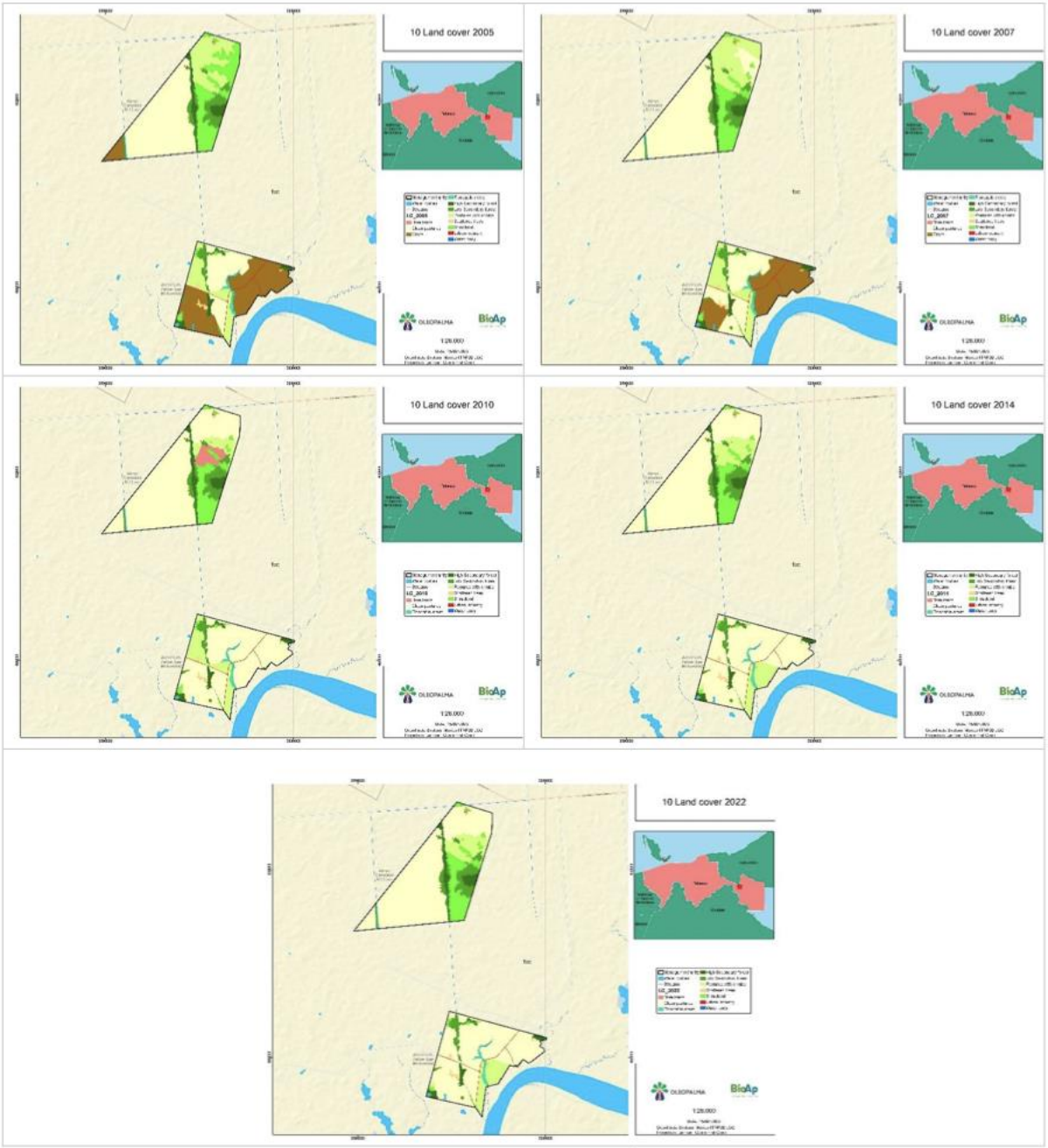


Figure 27. Unprocessed land cover change maps for each evaluated period.

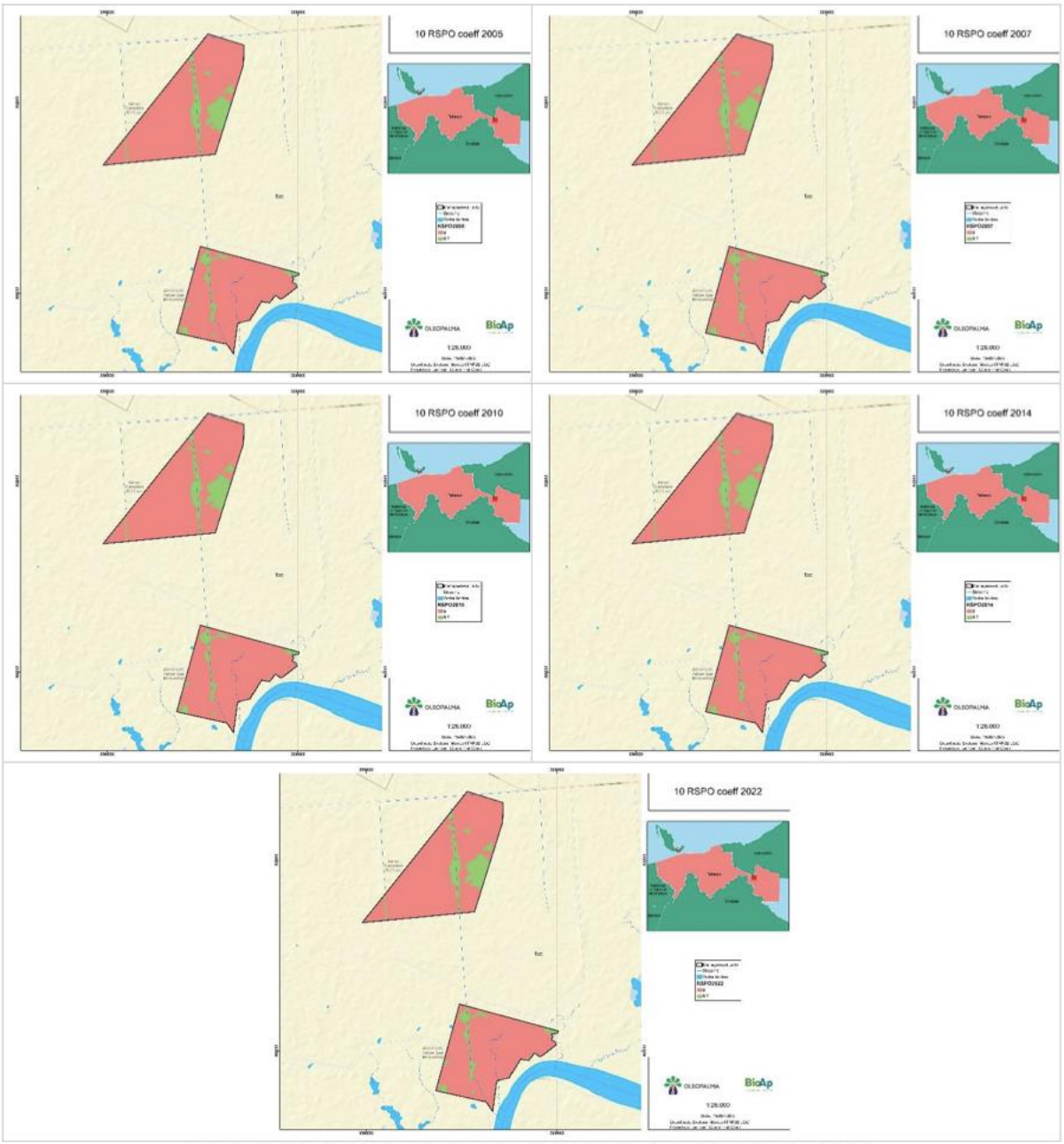


Figure 28. RSPO coefficient coverage change maps, for each period evaluated.

6.1 Responsible team

Corporation team from INDUSTRIAS OLEOPALMA S.A. DE C.V. which was responsible for the execution and monitoring of the Comprehensive Management Plans that include the results of the HCV-HCS, EISA and GHG studies is:

No.	Name	Organization	Position	Contact
1	Jorge Coronel	INDUSTRIAS OLEOPALMA S.A. DE C.V	Sustainability Manager.	jorge.coronel@oleopalma.com.mx
2	Juan Pablo Zorro	BIOAP S.A.S.	General Manager	juan.zorro@bioap.com.co

Section 9: Conclusions

RSPO Note: Please conclude all the findings of the assessment and how this will be translated into a management plan. If there is any known significant issue, the RSPO member needs to acknowledge its existence and ensure it is a priority for the management to address those issues.

During the field tour and documentary review of both internal documentation and studies carried out by an external company, it was possible to determine that these meet the minimum requirements established by the RSPO procedure, as well as the ranches in the field visit, it was possible to show that there is no risk clearing or clearing since these are livestock.

In addition, with the evaluations carried out, it was possible to verify that there are no peat soils or the existence of carbon.

The establishment of new plantations will be carried out in two ranches called: "El llano and Las Mercedes" these lands have the corresponding legality, and the owners can be identified, they signed a lease contract through a public deed for a period of 20 years with the right to be able to renew, in the procedure for new plantations in annex 5. (Legality in land tenure, more details are found).

Section 10: Confirmation of Report

RSPO Note: This section is used to confirm that all findings are accepted by the grower company and will be responsible for its ownership and development process for as long as it is within their control

It was possible to demonstrate that they have a declaration and acceptance of responsibilities accepted and signed by the General Director of the company and by the consultants who carried out the study, in addition the area that oversees the control, monitoring and implementation is the Sustainability Management.

OLEOPALMA

México, 31 de marzo de 2023

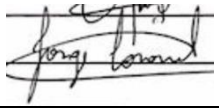
RSPO
A quien le interese

El objetivo de esta carta es expresar que la empresa Industrias Oleopalma S.A. de C.V. manifiesta su acuerdo con los resultados de todos los estudios que se han realizado para cumplir con los requisitos del Procedimiento de Nuevas Plantaciones de RSPO (EIS, EIA, AVC-HCSA, LUCA, GEI y suelos frágiles) y que la administración general está completamente comprometida con monitorear y ejecutar el plan de acción propuesto, proporcionando recursos financieros y humanos para cumplirlo.

ING. JOSÉ LUIS PÉREZ MORETT
Director General
joseluis.perez@oleopalma.com.mx

Por lo tanto, la empresa cuenta con un grupo de profesionales especializados en cada tema:

Jorge Esteban Coronel Arias Cargo: Gerente de Sustentabilidad e-mail: Jorge.coronel@oleopalma.com.mx	Eder Hernández Valadez Cargo: Jefe Ambiental Plantaciones e-mail: Eder.hernandez@oleopalma.com.mx
Ana Laura Cabrera Camacho Cargo: Jefe de Responsabilidad Social e-mail: ana.cabrera@oleopalma.com.mx	Juan Pablo Zorro Asesor Líder BioAp S.A.S.

Date of Completion	July, 2023
Signature	
Name	Jorge Esteban Coronel
Position	Sustainability Manager