



GREPALMA

GREMIAL DE PALMICULTORES DE GUATEMALA

Sustainable palm oil agroindustry of Guatemala



Sustainability is one of the strategic pillars of the palm oil agroindustry and a cross-cutting pillar in the business model of companies represented in **GREPALMA**.



PRODUCTIVITY AND SUSTAINABILITY, THE LINK IN EFFICIENT AGROINDUSTRIAL PRACTICES



Guatemala's production yielded 5.05 tons of crude palm oil per hectare (tACP/ha) in 2023, while the world average is estimated at 3.8 tACP/ha. This makes the country a

W O R L D L E A D E R I N P R O D U C T I V I T Y

Maintaining this level of productivity requires strict production standards in both plantations and processing plants, adapting new technologies to make palm oil production processes more efficient, establishing rigorous process controls, maintaining raw material quality levels, in addition to hoping for favorable climatic factors for cultivation.

Some of the practices that companies have mainstreamed to ensure efficiency and sustainability include:

EFFICIENT USE OF WATER

- Companies have implemented reservoir systems to capture rainwater for use in operations that require irrigation; 20% of all plantations nationwide (located mainly on the southern coast of the country) require irrigation, the remaining 80% rely on rainwater.
- Companies have invested in the acquisition of equipment and meters such as: phreatometers, rain gauges, tensiometers and micro-sprinkler systems to ensure the efficient use of water in irrigation systems.
- To ensure responsible and rational consumption of water resources, companies keep water consumption indicators in the industrial process of palm oil extraction and implement standard procedures for efficient equipment operation and technologies installed in palm oil processing plants, seeking its optimal use and reduction.
- Training programs in the care of water resources are taught to achieve increasingly efficient processes in the optimization of this resource.

CLEAN ENERGY GENERATION

GREPALMA member companies have implemented clean technologies to generate energy from renewable sources. Projects in place meet their energy demand directly through hydro generation, generation from solar, thermal and photovoltaic sources, biomass and by capturing methane generated by wastewater.

VALUING SOLID AND LIQUID WASTE

Production processes of the palm oil agroindustry respond to a closed-loop production strategy and, in a certain way, to the principles of a Circular Economy. From the conception of the processes, interactions of each activity with the environment are considered, to manage them under an impact prevention approach. For example, the waste generated by agricultural and industrial processes is useful and returned to production processes to close the cycle and emulate natural processes, seeking to prevent pollution and, therefore, achieve cleaner production.

This business model utilizes by-products and waste obtained from the palm oil extraction process to produce: 1) Organic fertilizer that is incorporated into palm plantations; 2) Fertigation to provide nutritional elements to the plantations; 3) Generation of clean energy (biogas), mainly for internal consumption; 4) Generation of thermal energy using husk and fiber in boilers for internal consumption and for other industries.



Residues become resources

The organic matter generated in plantations and processing plants is returned to the soil as organic fertilizer, while inorganic matter is reused or recycled.



Recycle

Materials that can be converted into a different product are selected and used by authorized recycling agents.



Reuse

Resources or materials that can still function are reused, increasing their useful life and reducing waste generation.



Utilization

Waste that cannot be recycled or which can be used to generate energy in processing plant systems is used in boilers. A second way to generate electricity for self-consumption and for the national electrical system is through responsible wastewater management. This water is also used as fertigation in the plantation.

The following data has been collected

M O R E T H A N

122,300 metric tons of compost

are distributed in **GREPALMA** member plantations, thereby reducing the use of around **11,000** metric tons of chemical fertilizers per year.

100% of treated wastewater

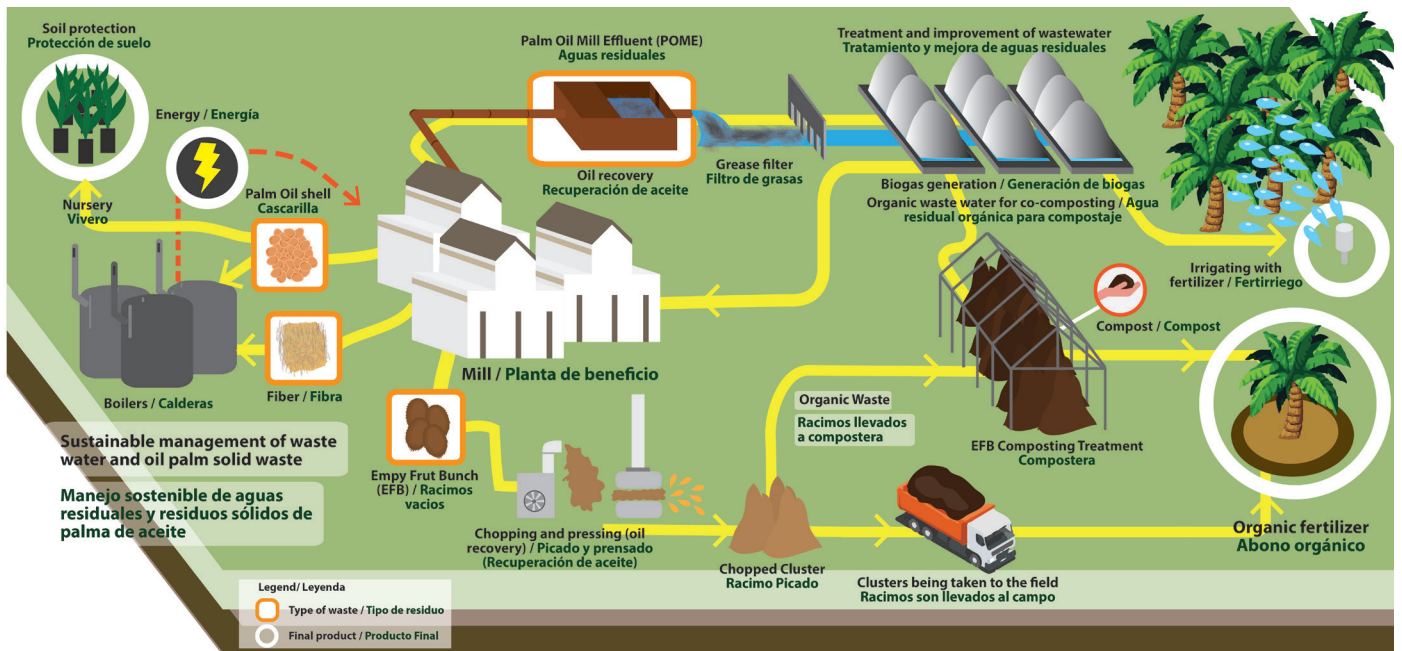
I S U S E D

for the nutritional management of palm plantations, estimating **60%** for compost production and **40%** for fertigation.

T H E R E I S I N S T A L L E D C A P A C I T Y T O P R O D U C E

more than 9,090 megawatts

of biogas annually. **100%** of the energy produced is used for the internal operations of companies using this technology. In Guatemala, there is a company that sells and supplies the energy generated with biogas to the national electrification system.





ADOPTION OF VOLUNTARY CERTIFICATION STANDARDS

GREPALMA member companies have voluntarily advanced in international certification processes under the following standards:

1. Principles and Criteria of the Roundtable for Sustainable Palm Oil, RSPO
2. International Sustainability and Carbon Certification, ISCC
3. SMETA, which consists of an audit procedure that brings together good practices with an ethical auditing technique
4. ISO 14001:2015, Environmental Management Systems
5. Anti-Bribery Management Systems, ISO 37001
6. FSCC 22000, which ensures safety in the production of refined oil for food use
7. KOSHER, a certification that guarantees consumers that the production of products and ingredients they contain comply with the Kosher food policy. In addition, it is an indicator that the product complies with strict standards of cleanliness, purity and quality.
8. Other

FIRM COMMITMENT WITH ENVIRONMENTAL CONSERVATION

Since 2018, the palm oil industry, through **GREPALMA**, has voluntarily joined and adopted several environmental commitments to advance the path of responsible and sustainable palm oil production in Guatemala. This has led to preserving and promoting the conservation of natural resources based on national Laws in place in the country on environmental matters and with the inclusion of international sustainability standards that directly impact environmental preservation. These commitments are part of the sustainability strategy drawn up by **GREPALMA** and its members, including:

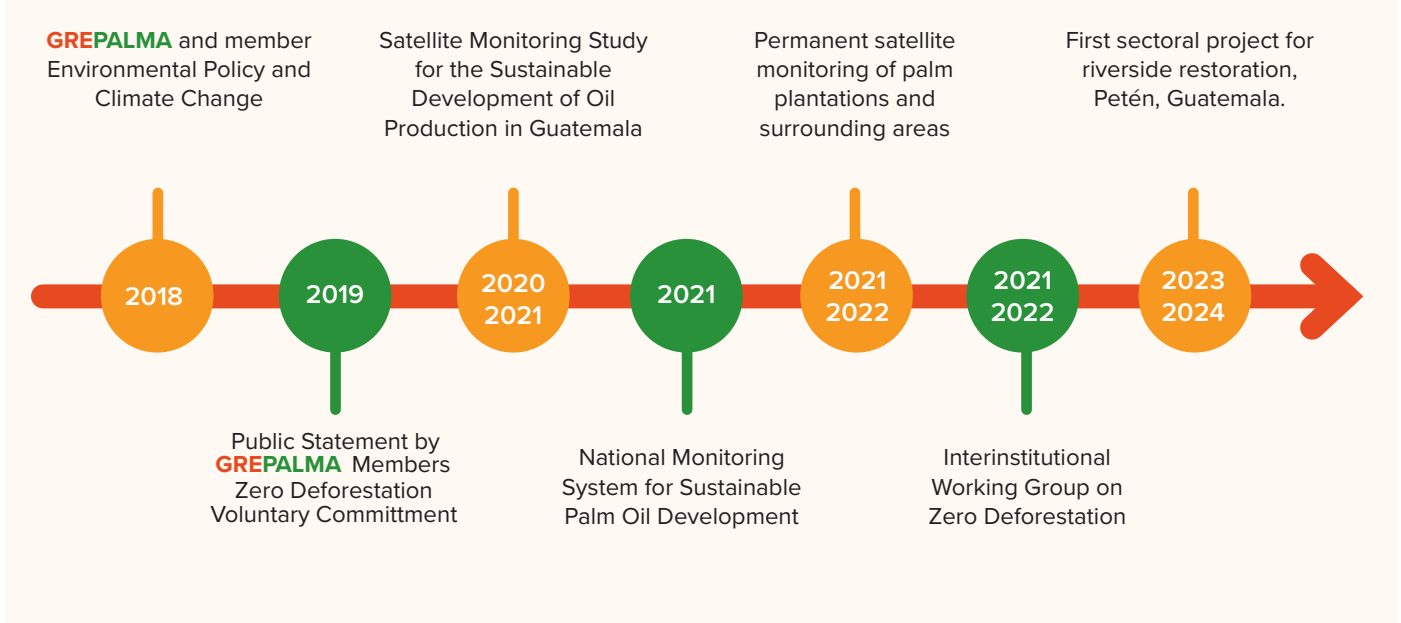
- **GREPALMA** and members' Environmental and Climate Change Policy
- Estimation of GHG Emissions in Palm Oil Production in Guatemala
- Environmental Guide for the Palm Oil Agroindustry in Guatemala
- Public Declaration of Voluntary Commitment to Zero Deforestation
- National Monitoring System for the Sustainable Development of Palm Oil

In this way, the actions of Guatemala's palm growers' association work to find solutions that prevent and control adverse environmental impacts and contribute to climate change adaptation to respond to the eight strategic pillars of the Environmental and Climate Change Policy of **GREPALMA** and its members include:

- Water management in plantations and processing plants
- Actions to mitigate and adapt to climate change
- Management of organic and inorganic solid waste
- Soil management and conservation
- Conservation and restoration of biological diversity
- Social relations
- Systematization of information and climate change to determine the baseline and progress in policy implementation
- Capacity building



Advancing with the Voluntary Commitment to Zero Deforestation: GREPALMA and member actions between 2018 and 2024



In 2018, **GREPALMA** published **GREPALMA and Members' Environmental and Climate Change Policy**, whose objective is to provide strategic guidelines for improving environmental management, adaptation and mitigation of climate change throughout the palm oil production chain, including actions for monitoring and evaluating progress. The Policy was built within the framework of the cooperation agreement between the Low Emissions Development project of the United States Agency for International Development (USAID) and the Chamber of Agriculture (CAMAGRO).

To respond to Strategic Pillar 5, **Conservation and restoration of biological diversity** and its lines of action, **GREPALMA** and its members signed, in 2019, the **Public Declaration of Voluntary Commitment to Zero Deforestation**.

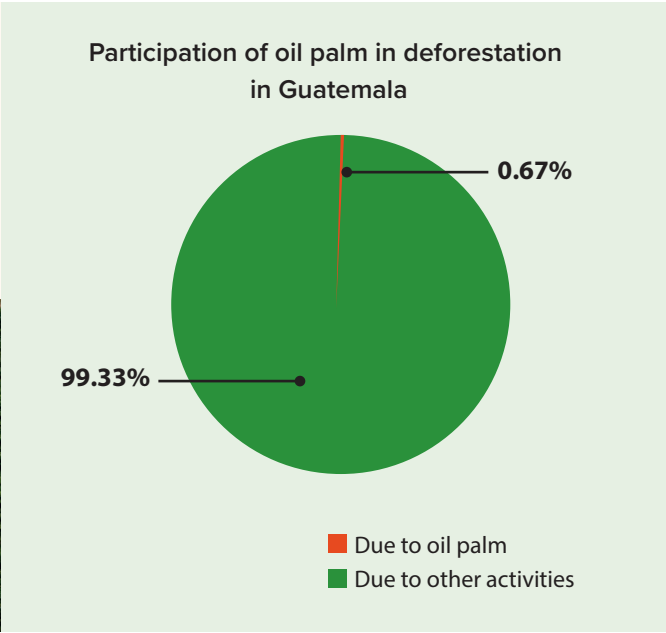
Through the public commitment to zero deforestation, **GREPALMA** and its signatory members declare:

- 01 To not deforest natural forests for palm oil cultivation
- 02 To contribute to environmental conservation and restoration in favor of sustainable development
- 03 To ensure that their palm oil production is free of deforestation
- 04 To act under principles of extended responsibility, influencing the practices of actors in its value chain
- 05 To collaborate at national level with the creation and promotion of a voluntary Agreement for Zero Deforestation in the palm oil chain in Guatemala that comes into force in 2020. To participate in dialogue to promote the commitments acquired through this public statement and to encourage other actors in the chain to join.

GREPALMA has promoted specific initiatives to advance the fulfillment of this commitment, including: 1) Carrying out the satellite study between 2020 and 2021 by Satelligence for the sustainable development of palm oil production in Guatemala; 2) National Monitoring System for the Sustainable Development of Palm Oil implemented from 2021. The study, presented in May 2021, showed that more than 90% of oil palm plantations have been established on low-carbon land and are not linked to deforestation.

According to data from the Guatemalan Forest Information System, around 2,455,617 hectares of forest were lost in the country between 1989 and 2020. Considering this information and Satelligence’s findings, it is estimated that oil palm cultivation accounts for 0.67% of total deforestation nationwide.

“Unlike most oil palm producing countries, in Guatemala, more than 90% of plantations are in low-carbon land and are not linked to deforestation,” explains Niels Wielaard, founder and director of Satelligence.



Source: Prepared by GREPALMA with information from the Forest Information System of Guatemala and Satelligence

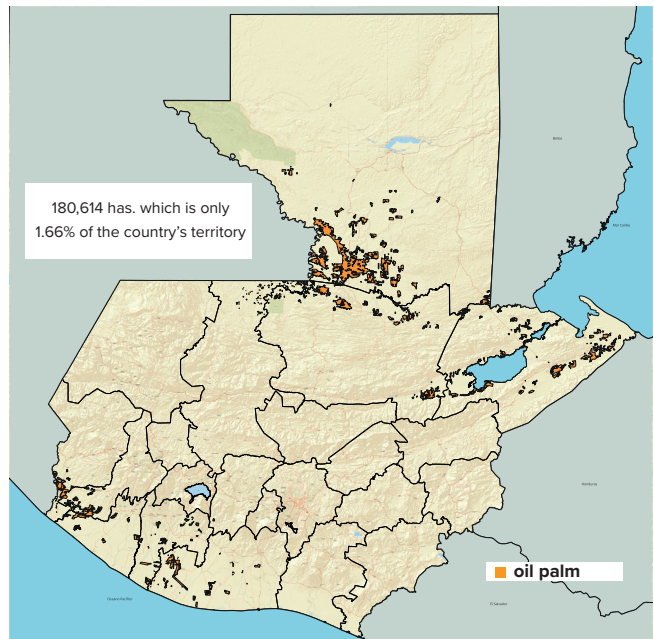
The results of the satellite study for the sustainable development of palm oil production in Guatemala became the starting point for the National Monitoring System for the Sustainable Development of Palm Oil in Guatemala, which defines three lines of action:

- 01 Permanent satellite monitoring of GREPALMA member oil palm plantations to ensure a deforestation-free supply chain:

- 02 Creation of the Zero Deforestation cross-agency working group with public and private stakeholders, academia and international organizations to follow up on and further pursue commitments made and

- 03 Promotion of environmental conservation programs, projects and initiatives.

Área cultivada with oil palm in Guatemala as of 2023



Based on the results of this study, satellite monitoring was established to verify compliance with the Zero Deforestation commitment assumed by **GREPALMA** and its members. With the technical support of Satelligence, monitoring is in effect for the period 2021-2024.

2020-2023 Satelligence records/reports

Monitoring period reported by Satelligence	Deforested areas to plant palm (GREPALMA member farms)
October – December 2020	0 hectares
January – December 2021	0 hectares
January – December 2022	0 hectares
January – December 2023	0 hectares

Fuente: **GREPALMA**, produced in 2024, with member information, as of 2023.

About Satelligence: Satelligence is a Dutch organization with international backing specializing globally in scalable processing of radar and optical satellite images; it currently works with public and private organizations with an environmental and social emphasis, as well as with major palm oil clients and buyers interested in demonstrating a deforestation-free supply chain.

More information available here:



RECOGNITION OF GREPALMA'S SATELLITE MONITORING SYSTEM

EU



ILO



Satellite images are accessible to everyone, but their correct interpretation and adequate resolution are essential for their effective use.

CONTRIBUTIONS TO BIODIVERSITY AND ECOSYSTEM SERVICES IN SUSTAINABLE OIL PALM PLANTATIONS IN GUATEMALA

In May 2023, the Center for Environmental and Biodiversity Studies of del Valle de Guatemala University (CEAB-UVG), presented the results of the study: **Evaluation of existing biodiversity in the oil palm plantation system in Guatemala**, developed in coordination with **GREPALMA** over the last year.

The main objective of the research was to characterize biodiversity and evaluate the contribution of oil palm plantations to the provision of regulatory ecosystem services (pollination, pest and disease control, seed dispersal) in the main producing regions of the country: North (Petén), Northeast Verapaces, Northeast Caribbean and the South.

Indicator groups that were characterized within palm plantations were diurnal butterflies, amphibians, reptiles and birds. 232 species of insects – butterflies, 48 species of amphibians and reptiles, as well as 163 species of birds were documented. Within these species, **the so-called “flagship species” were identified, that is, species that indicate the presence of good agricultural practices and that support sustainable resource management in operations.**

In the northern region alone, a total of 133 insect species were found, of which a significant percentage (47%) act as pollinators, including diurnal butterflies. This finding highlights the importance of preserving and conserving habitats to ensure pollination and reproduction of plants in the area. The abundance of beetles and butterflies, as well as the presence of amphibians such as caecilians and salamanders indicate responsible use of agrochemicals within plantations.

As for amphibians and reptiles, 25 species play an important role as pest control, thus contributing to regulate insect populations and other organisms considered pests in the region.

The palm-growing regions of the Northeast Caribbean and Verapaces presented the best conditions to host threatened fauna in the long term and maintain the provision of ecosystem services to the surrounding landscape. The preservation of riparian forests within oil palm plantations, the conservation of forest remnants within or near them, as well as a lower intensity of lane clearing in plantations and a focused use of agrochemicals, are sustainable practices implemented by companies in the sector and that contribute to maintaining the richness of species and the provision of ecosystem services.

Some highly important species, such as turtles of the genus Kinosternon or the salamander Bolitoglossa nympha, are important for ecosystem services they provide or for their restricted distribution. Agalychnis callidryas and Coleonyx elegans can be flagship species, that is, they are species that are sufficiently attractive and striking that they can help promote the conservation of the remaining forests in the region.

The presence of the species Agalychnis callidryas is an indicator of conservation and cannot live in agroecosystems where agrochemicals are used, therefore, it is an indicator of the absence of agrochemicals.



This information was digitized and added to the National Information System on Biological Diversity of Guatemala (SNIDBgt), including its entry into the databases of the Biological Collections of del Valle de Guatemala University. “This study is the starting point for both private sector and academia to work together to generate solid data to guide management actions based on production and sustainability issues. All data is available on the platform and the photo catalogs,” explains Daniel Ariano Sánchez, researcher in charge of del Valle de Guatemala University.



Species: *Heliconius sapho*

Information about the species: This butterfly feeds on the *Passiflora* sp. plant, therefore, it lives in places with good coverage and diversity of undergrowth and with controlled or minimal use of herbicides.



Species: *Eumaeus toxea*

Information about the species: This butterfly feeds on the plant *Zamia* sp., therefore, it lives in places with good coverage and diversity of undergrowth and with controlled or minimal use of herbicides.



Species: *Megasoma elephas*

Dato de la especie: This species lives in “mature” forests because both in its larval stage and in its adult stage it depends on decomposing wood, the sap of some trees and ripe fruits.



Species: *Bolitoglossa mexicana*

Information about the species: Salamanders are very sensitive to contaminated environments, so their presence is an indicator of good agrochemical use within the plantation.



Species: *Craugastor loki*

Information about the species: This species requires mulch or good ground cover to survive, so it is an indicator of good management of the undergrowth within the plantation.



Species: *Tretanorhinus nigroluteus*

Information about the species: The orange-bellied swamp snake is an aquatic species that feeds primarily on small fish, tadpoles and shrimp. Its presence indicates that the water quality is good enough to support sizable populations of its prey, which are quite sensitive to pollution.



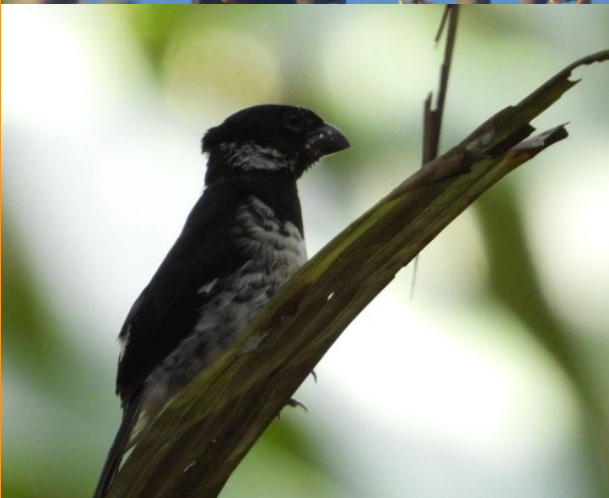
Species: *Micrurus apiatus*

Information about the species: Coral snakes feed almost exclusively on other snakes, so their presence indicates that there is a healthy population of these snakes and their prey within the plantations.



Species: *Ramphastos sulfuratus*

Information about the species: A decline in the Royal Toucan's population has been observed in recent years, which is why it is listed as Near Threatened. This species lives in forests, as it has a high preference for nesting and living in treetops, so its presence could indicate well-preserved forest remnants in the area of influence of the observation site.



Species: *Sporophila morelleti*

Information about the species: This bird is a granivorous species. Its presence is common in sites with dense soil cover that provides enough seeds to sustain its diet. Therefore, it benefits from sites with no or minimal use of herbicides and with the growth of a diversity of herbaceous plants.

More information
available here:



ENVIRONMENTAL CONSERVATION, A PILLAR OF THE PALM OIL INDUSTRY

The motivations of the Guatemalan palm oil agroindustry to contribute to the preservation of natural resources and minimize environmental impacts are varied, but they have social benefits at their core, especially for the populations living in areas adjacent to oil palm cultivation and processing plants.

In addition to social benefits, numerous actions that help reduce impacts also imply an increase in efficiency, which builds a more competitive sector. Therefore, the goals set in environmental matters consider realism and economic feasibility to achieve and maintain the balance between the three pillars of sustainability (economic, social and environmental) in the production of palm oil in Guatemala.

Some of the main actions for environmental conservation that the palm growers' association is implementing in Guatemala include:

- By 2022, 64% of the oil produced in Guatemala was certified as sustainable oil by international standards such as RSPO and ISCC.
- All the processing plants of **GREPALMA** members reuse water from the industrial process of palm oil extraction for fertigation, providing nutrients to palm plantations and avoiding disposal into receiving bodies.
- The reutilization of waste from palm oil extraction is done with the use of treatment or final disposal technologies, including septic tanks, biodep, treatment plants, composter, fertigation and biodigester.
- It contributes to the physical, chemical and biological improvement of the soil through nutrients provided by the organic fertilizer applied to oil palm plantations.
- 11,904 hectares of forests conserved within palm farms of **GREPALMA** members contribute to preserve biodiversity.
- Riparian zones located within palm farms have multiple benefits for the ecosystem of the area where they are planted, including regulation of the hydrology of the area, soil and riverbank conservation, and habitat for terrestrial and aquatic animals.
- 50% of **GREPALMA** members use biodiversity studies or monitoring to understand the richness of the biotic resources of the areas studied; their results have been key to implementing actions aimed at ecosystem balance where oil palm is part of the elements that make it up.
- Protection and conservation projects have been implemented for mangroves and species within the mangrove ecosystem in the palm region in the south of the country.
- High Conservation Value studies have identified ecosystems, areas and protected species, conserved by companies certified under international sustainability standards.
- To promote environmental protection, conservation projects have been implemented in the Maya Biosphere, Laguna del Tigre Park and El Rosario National Reserve. An estimated 28,400 hectares of forest are currently preserved in the Maya Biosphere Reserve and Laguna del Tigre Park.
- 50% of **GREPALMA** members develop renewable energy projects, including hydro generation, solar, biomass, methane gas, all of which contribute to mitigate greenhouse gas emissions.
- 52% of **GREPALMA** members have assigned human resources to address environmental issues to ensure compliance with national legislation applicable to palm oil operations, as well as to international certification processes and environmental conservation commitments.
- Measuring the carbon footprint of the sector shows that emissions from palm oil production in Guatemala are 0.45% of total national emissions. Still, actions are prioritized to reduce greenhouse gas production.

GUATEMALAN PALM CULTURE CONTRIBUTING TO THE SUSTAINABLE DEVELOPMENT GOALS



OUR MEMBERS



GREPALMA IS A MEMBER OF



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“Guatemalan palm cultivation, a world benchmark in productivity and sustainability”