

ANNEX 12

ENVIRONMENTAL AND SOCIAL ACTION PLAN

Sustainable Communities for Climate Action in the Yucatán Peninsula (ACCIÓN)

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1. Introduction

The Yucatán Peninsula (YP) is located in the southern region of Mexico, bordered by Guatemala and Belize, and lies between the Gulf of Mexico and the Caribbean Sea. It is an area of high environmental and cultural significance, hosting globally important ecosystems and a rich biodiversity, including the second most important rainforest in the continent and the Mesoamerican Reef System, the world's second-largest barrier reef. The YP is home to approximately 2,300 species of vascular plants, 543 bird species, 118 reptile species, and more, along with diverse cultural identities, particularly those of the indigenous Mayan populations. However, the region is highly vulnerable to climate change impacts such as increasing temperatures, more frequent storms and hurricanes, droughts, and flooding, all of which threaten both ecosystems and local communities.

The ACCIÓN project focuses on enhancing the climate resilience of the Yucatán Peninsula's coastal and marine ecosystems, which are essential for the livelihoods of the local population. Through Ecosystem-based Adaptation (EbA), the project aims to restore natural resilience and improve the adaptive capacity of Protected Areas (PAs) across the region. These efforts will help mitigate the impacts of climate change while promoting the sustainable management of natural resources. The project also integrates local knowledge from indigenous Mayan communities, leveraging their traditional practices to address climate challenges and ensure the long-term sustainability of both ecosystems and human settlements.

2. Environmental and Social Assessment

2.1. Legal and regulatory framework

Table 1. Regulatory framework at national level

Mexican Constitution	<p>Includes economic, social, and cultural rights of the Mexican people and calls for a federal government that takes an active role in promoting those rights.</p> <p>Article 4. The Mexican State has the obligation to guarantee to all persons a healthy environment for their development and well-being.</p> <p>Article 25. The Mexican State has to ensure that national development is integrated and sustainable.</p>
<p>At the national level, there are primary and secondary laws, regulations, and standards that establish the fundamental principles for the sustainable use of natural resources, rural development, biodiversity conservation, land use regulation, and pollution control, as well as provisions to integrate climate change into the legal framework and public policies of the country. For the issues covered by the ACCIÓN project, the following four laws are specifically relevant.</p>	

<p>General Law of Ecological Balance and Environmental Protection (LGEEPA)</p>	<p>The aim is to maintain the balance between humans and nature, ensuring that human activities do not negatively affect ecosystems and biodiversity. It regulates actions that may impact the environment, establishing guidelines to prevent, mitigate, and remediate negative impacts. The law stipulates that any project, work, or activity that may cause a significant environmental impact must undergo an environmental impact assessment. This includes conducting technical studies to identify, prevent, and mitigate potential adverse effects.</p> <p>LGEEPA establishes that certain works and activities that may cause ecological imbalances or exceed the established limits and conditions require an Environmental Impact Assessment (EIA) before their execution. Specifically, Article 28 of the LGEEPA details the works and activities subject to this procedure, including:</p> <p>Hydraulic works.</p> <p>General communication routes.</p> <p>Oil, gas, coal, and multi-purpose pipelines.</p> <p>The petroleum, petrochemical, chemical, steel, paper, sugar, cement, and electric industries.</p> <p>Exploration, exploitation, and beneficiation of minerals and substances reserved for the Federation.</p> <p>Facilities for the treatment, confinement, or disposal of hazardous and radioactive waste.</p> <p>Forest exploitation in tropical rainforests and species with difficult regeneration.</p> <p>Changes in land use in forested areas, rainforests, and arid zones.</p> <p>Industrial parks where high-risk activities are planned.</p> <p>Real estate developments that affect coastal ecosystems.</p> <p>Works and activities in wetlands, mangroves, lagoons, rivers, lakes, and estuaries connected to the sea, as well as in their shorelines or federal zones.</p> <p>Works and activities in protected natural areas.</p> <p>Fishing, aquaculture, or agricultural activities that may endanger the preservation of one or more species or cause damage to ecosystems.</p> <p>In the case of ACCIÓN, the activities funded do not require an EIA because they are considered low-impact or because there are existing regulations that govern them, such as the Management Programs for Protected Natural Areas. ACCIÓN will not involve any infrastructure or construction with potential environmental impacts. However, subprojects involving small infrastructure construction actions must, as specified by this law, comply with a simplified Environmental Impact Statement. This modality applies to activities that, while they may have certain environmental effects, are not significant or do not pose major risks..</p>
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General Law for Sustainable Forest Development	<p>Seeks to regulate and promote the conservation, protection, restoration, production, organization, and management of Mexico's forests to secure sustainable forest development.</p> <p>Article 2. To promote actions to comply with international treaties on climate change, biological diversity, and others.</p> <p>Article 3. Among its specific objectives are:</p> <ul style="list-style-type: none"> – To promote the design and application of measures of prevention, mitigation, and adaptation to climate change. – To promote sustainable forest management to maintain and increase the gains of carbon, reduce emissions from deforestation and forest degradation, as well as reduce vulnerability, and strengthen resilience and adaptation to climate change. – To establish, regulate and implement the actions for mitigation and adaptation to climate change, following the General Law on Climate Change, the international treaties to which the Mexican State is a party and other applicable legal provision. – To design strategies, policies, measures and actions to achieve a zero percent loss of carbon, according to the General Law on Climate Change and the National Climate Change Strategy, and its incorporation into the planning instruments of forest policy, considering sustainable economic development of forested regions and community forest management. <p>Articles 10, 11, and 13. The federal, state, and municipal authorities are responsible for developing actions that contribute to climate change adaptation and mitigation, as well as to combating desertification and degradation of forest land.</p> <p>Article 47. The data included in the National Inventory of Forestry and Soils (INFyS) will be the basis for the development of programs and climate change adaptation and mitigation strategies.</p> <p>It facilitates the implementation of the REDD+ mechanism, taking a critical step towards ensuring that local communities who sustainably manage their forests receive economic benefits derived from any future carbon payment scheme.</p>
General Law on Climate Change	<p>Establishes key elements to encourage adaptation of Mexico's natural and human systems to climate change. It lays the general foundations for regulating greenhouse gases emissions and compounds; regulating climate change mitigation and adaptation actions; reducing the vulnerability of the population and ecosystems to the adverse effects of climate change; conserving forest land uses and preventing its degradation and deforestation; promoting the efficient and sustainable use of energy resources; and in general, transitioning to a green economy.</p> <p>Federal, state, and municipal authorities will all be responsible for meeting concrete goals, such as the development of risk maps, urban development programs that consider climate change, and a subprogram for the protection and sustainable management of biodiversity to face climate change.</p>

Law on Sustainable Rural Development	<p>Promotes the sustainable rural development in the country, ensuring an adequate environment and the rectory of the State and its role in the promotion of equity, including planning and organization of agricultural production, industrialization and commercialization, and the other goods and services, and all those actions aimed at raising the quality of life of the rural population.</p> <p>Article 116. To establish a financial system for sustainable rural development with multiple modalities, instruments, institutions, and agents, which allows producers in all strata and their productive organizations and social enterprises to adapted, sufficient, timely, and accessible financial resources to successfully develop their economic activities. Preference will be given to small producers and economic agents with a low income, within areas of the country with lower economic and social development, with profitable productive projects or that are highly generators of employment, those who employ technologies for mitigation and adaptation of climate change, as well as the integration and strengthening of social banking.</p>
Other laws related to the ACCIÓN project	
General Law of National Assets (LGBN)	<p>It regulates the State's ownership of property and its use and exploitation.</p> <p>Article 6. The following are subject to the regime of public domain of the Federation:</p> <p>[..]</p> <p>III. The insular platforms under the terms of the Federal Law of the Sea and, as the case may be, of the international treaties and agreements to which Mexico is a party.</p> <p>IV. The bed and subsoil of the territorial sea and inland marine waters.</p> <p>V. The federal maritime-terrestrial zone.</p> <p>[..]</p> <p>IX. Land naturally or artificially reclaimed from the sea, rivers, streams, lakes, lagoons, or estuaries of national property;</p>

Federal Law of the Sea (LFM)	<p>Establishes the jurisdiction of the States over marine areas.</p> <p>Article 3o. The Mexican marine zones are:</p> <ul style="list-style-type: none"> a) The Territorial Sea b) Inland Marine Waters c) The Contiguous Zone d) The Exclusive Economic Zone e) The Continental Shelf and the Insular Platforms; and f) Any other area permitted by international law. <p>In the zones enumerated in the preceding Article, the Nation shall exercise the powers, rights, jurisdictions, and competencies established by this same Law, in accordance with the Political Constitution of the United Mexican States and international law.</p> <p>[..]</p> <p>Article 25. The width of the Mexican Territorial Sea is 12 nautical miles (22,224 meters), measured in accordance with the provisions of this Law and its Regulations.</p>
General Wildlife Law (LGVS)	<p>It establishes that the sustainable use of timber and non-timber forest resources and of species whose total livelihood is water, will be regulated by the forestry and fishing laws, respectively, except in the case of species or populations at risk.</p> <p>Article 60 TER. The removal, filling, transplanting, pruning, or any work or activity that affects the integrality of the hydrological flow of the mangrove; of the ecosystem and its zone of influence; of its natural productivity; of the natural carrying capacity of the ecosystem for tourism projects; of the nesting, reproduction, refuge, feeding and frying areas; or of the interactions between the mangrove, rivers, dune, adjacent maritime zone and corals, or that causes changes in the ecological characteristics and services, is prohibited.</p> <p>Exceptions to the prohibition referred to in the preceding paragraph shall be made for works or activities intended to protect, restore, research or conserve mangrove areas.</p>

Sustainable Fisheries and Aquaculture Law(LGPAS)	<p>It establishes the framework for the regulation, promotion, and management of fishing and aquaculture resources in Mexico. It aims to ensure the sustainable use of these resources, considering social, technological, and environmental aspects. The law includes provisions for the creation of protected areas to conserve marine biodiversity and sustain fish populations, emphasizing research and sustainable practices.</p> <p>The law defines Fishing Refuge Zones as "areas within federal waters designated to conserve and support the natural or artificial development of fishery resources for purposes such as reproduction, growth, or recruitment, and to protect the surrounding environment".</p> <p>This legal framework aligns with Mexico's broader national strategies and international commitments, such as the Convention on Biological Diversity (CBD), reinforcing community-led conservation initiatives.</p>
NOM-022-SEMARNAT-2003	Establishes the specifications for the preservation, conservation, sustainable use, and restoration of coastal wetlands in mangrove zones.
Federal Law to Prevent and Eliminate Discrimination	<p>This law is dedicated to combating all forms of discrimination that hinder equality among individuals in Mexico. It establishes a legal framework to guarantee equal treatment, regardless of race, gender, age, religion, social status, physical condition, or other distinctions. The law aims to foster a culture of respect and inclusion through policies and actions that address discriminatory practices, provide recourse for victims, and implement preventive measures. It also defines the responsibilities of federal, state, and municipal governments in promoting equality.</p>
General Law on Equality of Opportunities	Aims to reduce social inequalities and promote equal opportunities across Mexico. The law targets structural issues that lead to social and economic disparities, particularly affecting vulnerable groups such as women, indigenous populations, and those with disabilities. It sets forth policies to ensure access to education, health care, employment, and public resources, with an emphasis on affirmative actions to balance social conditions. The law mandates the creation of programs that address discrimination and provide pathways for social and economic inclusion
Law on the Elimination of Violence Against Women	Provides a comprehensive approach to prevent, address, and eliminate violence against women in Mexico. It recognizes different forms of violence—physical, psychological, sexual, and economic—and establishes legal mechanisms for their prevention and punishment. The law includes protective measures for victims, protocols for law enforcement, and mandates public awareness campaigns. It also enforces the creation of specialized agencies and services to support victims, ensuring their access to justice, safety, and rehabilitation.
General Law on Civil Protection	A foundational law that outlines Mexico's approach to disaster prevention, mitigation, and response. It establishes a coordinated national system for civil protection involving federal, state, and local authorities, as well as private sector and civil society. The law emphasizes the importance of disaster risk reduction, preparedness, emergency response, and recovery efforts. It mandates the development of disaster response plans, early warning systems, and the promotion of a culture of safety among citizens.

General Health Law	Governs the health system in Mexico, setting standards for public health, medical services, and healthcare regulations. The law focuses on preventive health care, disease control, and health promotion, aiming to improve the quality of life for all Mexicans. It regulates the provision of health services by both public and private entities, ensures the safety of pharmaceuticals, and establishes guidelines for health-related research. The law also outlines rights and responsibilities regarding public health, including vaccination and epidemic control.
General Law on Human Settlements	This law oversees the organization and regulation of urban and rural development in Mexico. Its goal is to create sustainable and orderly human settlements, ensuring adequate housing, infrastructure, and environmental protection. It defines land use policies, urban planning requirements, and zoning regulations to guide the development of cities and towns. The law also emphasizes the importance of community participation and the integration of social and economic considerations in urban development.
Federal Labor Law	The core legislation governing labor relations in Mexico. It sets the framework for workers' rights, such as the right to fair wages, reasonable working hours, and safe working conditions. The law covers employment contracts, collective bargaining, union rights, and mechanisms for resolving labor disputes. It also stipulates the obligations of employers regarding salaries, social benefits, and workplace safety, aiming to foster fair and equitable labor practices.
Social Security Law	Establishes the framework for Mexico's social security system, which provides healthcare, pensions, disability benefits, and other social services. It is designed to protect workers and their families by ensuring access to medical care, income support in case of disability or retirement, and maternity benefits. The law defines the contributions required from both employees and employers and specifies the benefits to be provided, including old-age pensions, disability insurance, and health coverage.
General Law on the Rights of Children and Adolescents	Protects and promotes the rights of children and adolescents, emphasizing their right to a safe, healthy, and nurturing environment. The law focuses on access to education, healthcare, social inclusion, and protection from exploitation or abuse. It establishes a framework for governmental and non-governmental entities to monitor and ensure the well-being of minors, advocating for policies that support their development and participation in society.
Law of the National Housing Fund Institute for Workers	This law regulates the National Housing Fund (INFONAVIT), which is responsible for providing housing finance for Mexican workers. The law's objective is to facilitate access to decent and affordable housing through mortgage loans and savings programs. It outlines the eligibility criteria for workers, sets the obligations of employers to contribute to the fund, and describes the processes for acquiring, financing, and building homes. The law also aims to improve the quality of life for workers by ensuring housing stability.

Table 2. Regulatory framework at subnational level

<p>Campeche:</p> <p>Ecological Equilibrium and Environmental Protection Law of the State of Campeche</p>

Quintana Roo:

Law of Ecological Equilibrium and Environmental Protection of the State of Quintana Roo

Yucatan:

Environmental Protection Law of the State of Yucatan.

Law of Climate Change of the State of Yucatan

2.2. International agreements

ACCIÓN is also framed within the international agreements that Mexico has concerning the environment and human rights, where the country has reaffirmed its commitment to these sectors. Below are some of these commitments:

Table 3. International agreements

Agreement	Main objective
Paris agreement (2015)	Limit global temperature rise to well below 2°C above pre-industrial levels, and pursue efforts to limit the increase to 1.5°C. Ecosystem-Based Adaptation (EbA), promoted by ACCIÓN, is considered a key strategy to address climate change in vulnerable ecosystems
Convention on Biological Diversity (CBD) - Nagoya Protocol (2010)	Promote the conservation of biodiversity, the sustainable use of natural resources, and the fair and equitable sharing of benefits arising from the use of genetic resources. ACCIÓN seeks to restore the resilience of coastal and marine ecosystems, which is closely related to the CBD's objectives of conserving biodiversity. Furthermore, by integrating traditional knowledge from the Maya communities, the project promotes the sustainable use of natural resources, aligning with the principles of access and participation in the sharing of benefits.
Ramsar Convention (1971)	Conservation and rational use of wetlands, which are vital for biodiversity and human well-being. While the Ramsar Convention primarily focuses on wetlands, many of the coastal and marine areas that are part of the ecosystems in the Yucatán Peninsula, such as mangroves and marshes, are related to wetlands and are crucial for protecting biodiversity, climate resilience, and the well-being of local communities.
2030 Agenda for Sustainable Development - Sustainable Development Goals (SDGs)	Achieve sustainable economic, social, and environmental development for all, with an emphasis on eradicating poverty and protecting the planet. The ACCIÓN project directly contributes to several SDGs, particularly: <ul style="list-style-type: none"> ○ SDG 13: Climate Action (adaptation to climate change) ○ SDG 14: Life Below Water (protection of marine ecosystems) ○ SDG 15: Life on Land (restoration and conservation of coastal and marine ecosystems) ○ SDG 10: Reduced Inequalities and SDG 16: Peace, Justice, and Strong Institutions, as it includes Indigenous communities in the environmental and social management of the project.
United Nations Declaration on the Rights of Indigenous Peoples (2007)	Ensure the respect and protection of the rights of Indigenous peoples, including rights to land, territory, and access to natural resources. The project aims to integrate traditional knowledge from Maya Indigenous communities, respecting and promoting their rights and actively involving them in decision-making processes regarding natural resources and ecosystem management. This aligns with the principles of the Declaration, which promotes self-determination and the participation of Indigenous peoples in processes that affect their territories
United Nations Framework Convention on Climate Change (UNFCCC)	Establish international cooperation to reduce greenhouse gas emissions and adapt to climate change, the latter being one of the main pillars of the ACCIÓN project, which has a clear focus on ecosystem-based adaptation (EbA).
Escazú Agreement (2018) Main Objective	Ensure access to information, public participation, and justice in environmental matters in Latin America and the Caribbean. The ACCIÓN project aligns with the principles of the Escazú Agreement by fostering the active participation of local communities, including Maya Indigenous communities, in decision-making processes related to climate adaptation and ecosystem conservation.

2.2. Environmental and socioeconomic assessments

2.2.1. Environmental context

The coastline of Mexico is highly vulnerable to the impacts of climate change. The effects of rising sea levels pose a severe threat to infrastructure and investments, while tropical cyclones and extreme weather threaten the lives and livelihoods of local communities that depend on coastal zones for their survival (NDC Partnership, 2018). For the YP coastal communities, natural systems like coral reefs, beaches and wetlands provide the first line of defense against climate change effects. A healthy coral reef effectively serves as a natural breakwater, protecting coasts from erosion and flooding. In fact, coral reefs can reduce up to 97% of total wave energy, before it hits the shore, reducing both the effects of storm surge and daily erosion (Ferrario, et al., 2014).

The coastal ecosystems that will most strongly be impacted by future climate change will be wetlands (91% of the total), followed by mangroves, beaches, and dunes. As coastal ecosystems continue to be affected by climate change, projections indicate that an overall negative impact can be expected on Mexico's fisheries (Cisneros-Mata et al., 2019). While some species will experience productivity increases, approximately 84% of species studied in one analysis showed potential negative impacts in terms of catch potential under future climate change. Under low and high emissions scenarios, fish catch potential will decrease by 6.8% and 17%, respectively by 2050 (CMCC, 2021).

Along the coastline of the YP, climate change is already causing numerous impacts. These include the spread of invasive aquatic plants such as sargassum which reduces the tourism value of the beaches as well as coastal erosion caused by SLR and storm surges.

The coastal-marine region of the YP comprises the transition zone between flooded forests, mangroves, marshes, coastal dunes, beaches, islands, and the marine ecosystems of coral reefs and seagrass meadows.

Topography

The topography of the YP is characterized by being an extensive plain, with an average altitude of around 30 meters above sea level. In general, the peninsula has a relatively flat surface, with some reliefs and slight elevations in its terrain, which occur due to the geological formation of the region. In some areas of the state of Yucatán, you can find small hills and plateaus, such as the Sierra de Ticul, the Sierra de Chenes, Cerro Benito Juárez with 210 meters above sea level (masl), it is the highest altitude between the plain and the hills. In the north of the state of Campeche, there are small hills and elevations, such as the Sierra de Balam-Tok, the Sierra de los Tuxtlas and the Sierra de las Flores. In the northern region of the state of Quintana Roo, there are some elevations and hills, such as the Sierra de Cozumel and the Sierra de Akumal, while in the southern region you can find the Sierra de Sian Ka'an. These small elevations do not exceed 150 meters above sea level.

The peninsula also has an extensive network of underground rivers, cenotes and caverns, which are the product of the dissolution of the limestone that makes up much of the region's soil. These geological formations are important for water recharge and tourism.

Hydrography

The YP is classified as a regional unit called "Yucatan Peninsula Aquifer". And it includes four hydrogeological units: Cerros y Valles, Yucatán Peninsula, X'pujil and Cozumel Island (CONAGUA, 2012).

In the administrative sense, the three states: Campeche, Quintana Roo and Yucatán make up the Hydrological-Administrative Region XII Yucatán Peninsula (CONAGUA, 2018), with a total territorial extension of 144,220.59 km², and which contains the hydrological regions 31, 32, 33 and a part of the region 30 (CONAGUA, 2020).

The YP has edaphic and geological characteristics that, in conjunction with conditions of high rainfall and low topographic slope, favor infiltration and make the YP an area of groundwater recharge almost in its entirety (except in the southern and coastal parts). This is akin to imagining its territory as a kind of sponge.

This can help us understand the dynamics of flow in the aquifer: Rainwater infiltrates the subsoil in large volumes that move at very low speeds radially from the areas of highest precipitation, located south of Xpujil, towards the coasts, dispersing towards the northwest, northeast, and north where the natural discharge of the aquifer occurs, feeding the estuaries and coastal lagoons.

A key part of the groundwater, characteristic of the YP and with a strong cultural and spiritual connection dating back to pre-Hispanic times, are the numerous cenotes (dzoonot, from the Maya, hole in the ground), poljes, uvalas, and cave systems. The highest concentration of cenotes is found in Yucatán, and one of the most important is Xtacumbilxunaán, in Campeche.

In the region, four aquifers have been identified with a total volume of 3,008.9 hm³. The degree of pressure between recharge and exploitation is less than 40%, so it is considered low. The "Península de Yucatán" aquifer has the highest water availability (CONAGUA, 2021). The highest aquifer recharge is recorded in the CONAGUA Planning Units: Oriente Yucatán and Candelaria Campeche.

Coral reefs

Coral reefs are a diverse, fragile, and indispensable ecosystem for coastal zones and for global climate regulation. Among their main characteristics of socio-environmental importance are: they are a fundamental shelter for biodiversity, areas of food generation for humans, sites of high recreational and spiritual value, and their potential to mitigate climate change. The Healthy Reefs for Healthy People Initiative conducted a 2022 assessment of the Reef Health Index and identified 60 sites in the YP. Of these, 33% have critical health, poor in 38%, fair in 20%, good in 7% and

very good in only 2% (Healthy Reefs, 2022). This system is part of the Caribbean reefs that have more than 70 species of corals and nearly 500 species of fish (Arrivillaga and Windevoxhel, 2008).

These reefs provide essential ecosystem services: on the one hand, they are necessary for sustaining significant fishery resources that are exploited in the region, such as the queen conch, lobster, and octopus; additionally, the reefs are one of the main tourist attractions in the region and are the predominant economic activity.

Healthy and functional coral reefs make an important contribution to both climate change mitigation and adaptation. Hurricanes comprise an important component of coral reef ecology. Depending on their intensity, they can contribute to reef dynamics by means of fragmenting coral colonies and favoring recruitment. However, in some cases, the damage can be so severe that complete reef regeneration will not be possible (Perez-Cervantes, 2021).

The resilience of coastal communities is indisputably related to the quality of coral reef ecosystems, whether for the habitat that hosts different species of commercial importance, for the landscape functions that attract tourism, or for the climate benefits it provides as an important carbon sink (RRN, n.d.; UN, n.d.).

In the case of the geographic analysis proposed for ACCIÓN, reefs in a better state of conservation are of special interest, as well as those in a deteriorating state. In this way, the strongest poles of the livelihood activities and EbA measures proposed by the project are addressed. As a result of the work conducted by Barco AC (2023) as part of the PPF, the vulnerability of coral reef ecosystems in the project's area of interest was assessed based on four coral health indicators: coral cover, fleshy macroalgae cover, biomass of herbivorous fish, and commercial fish. The study results, which collected data from 205 sites (Figure 15), conclude that, in general, the Banco de Campeche presents a better condition, although some areas such as Cozumel also stand out for their reef health.

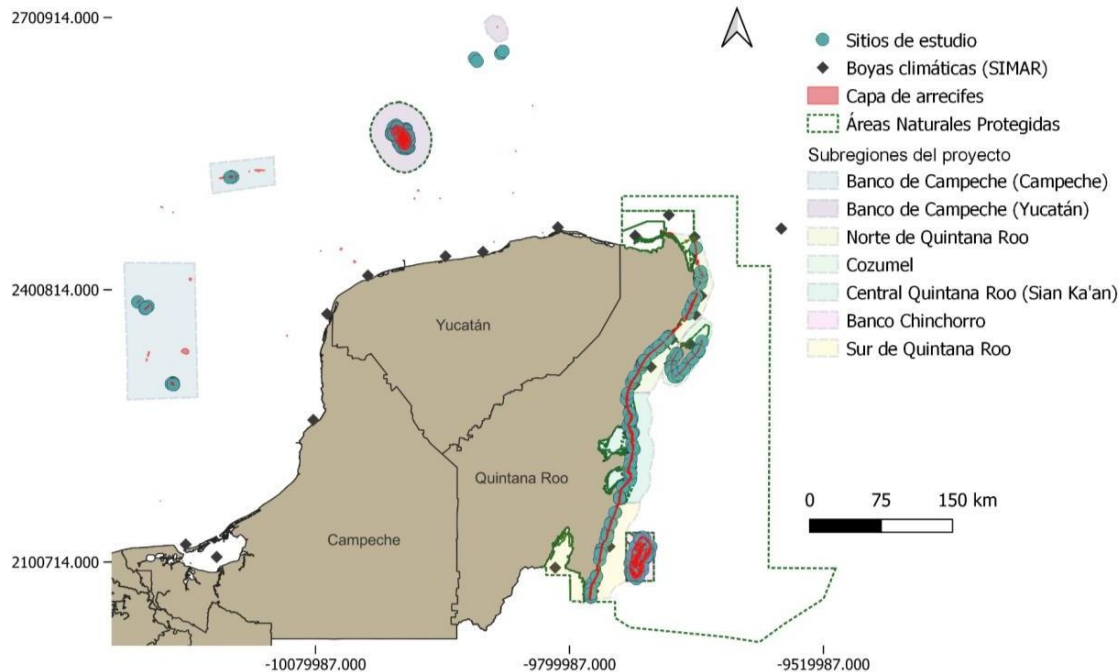


Figure 1. Study area with coral reef ecosystems. Source: Barco AC, 2023.

Regarding coral cover, statistical analyses showed an increase up to 2018 and a significant decrease in 2021. Fleishy macroalgae showed a notable increase starting from 2006. Herbivorous fish biomass experienced a significant decrease starting in 2006 and 2009, while commercial fish biomass did not show significant differences.

Seagrasses

Seagrasses can be found in coastal lagoons, estuaries, estuaries, estuaries, and the coastal zone. It has been demonstrated that these ecosystems, in addition to storing carbon in the sediments in which they are found, also connect with a flow between other communities, such as coral reefs or the deep sea. They counteract erosion, reduce the impact of hurricanes and storms, are habitat for charismatic species for tourism (e.g., seahorses, manatees, and sea turtles). In the context of climate change, they are a key community for carbon sequestration.

Seagrasses are important areas for the reproduction and feeding of fish and invertebrates that are key to fisheries (McArthur and Boland, 2006; Herrera et al., 2019). Some studies indicate that seagrasses constitute the third ecosystem with the highest economic value per hectare, estimating an annual value of up to US\$34,000 per hectare, higher than other emblematic ecosystems such as corals (Short et al., 2011; Constanza et al., 2014; Herrera et al., 2019).

Among their main threats in the region are dredging and construction of docks and piers, oil infrastructure, human settlements, tourism, unregulated fishing, and aquaculture practices

(changes in nutrient loads and increased turbidity), as well as hurricanes and extreme weather events (SIMAR, 2023).

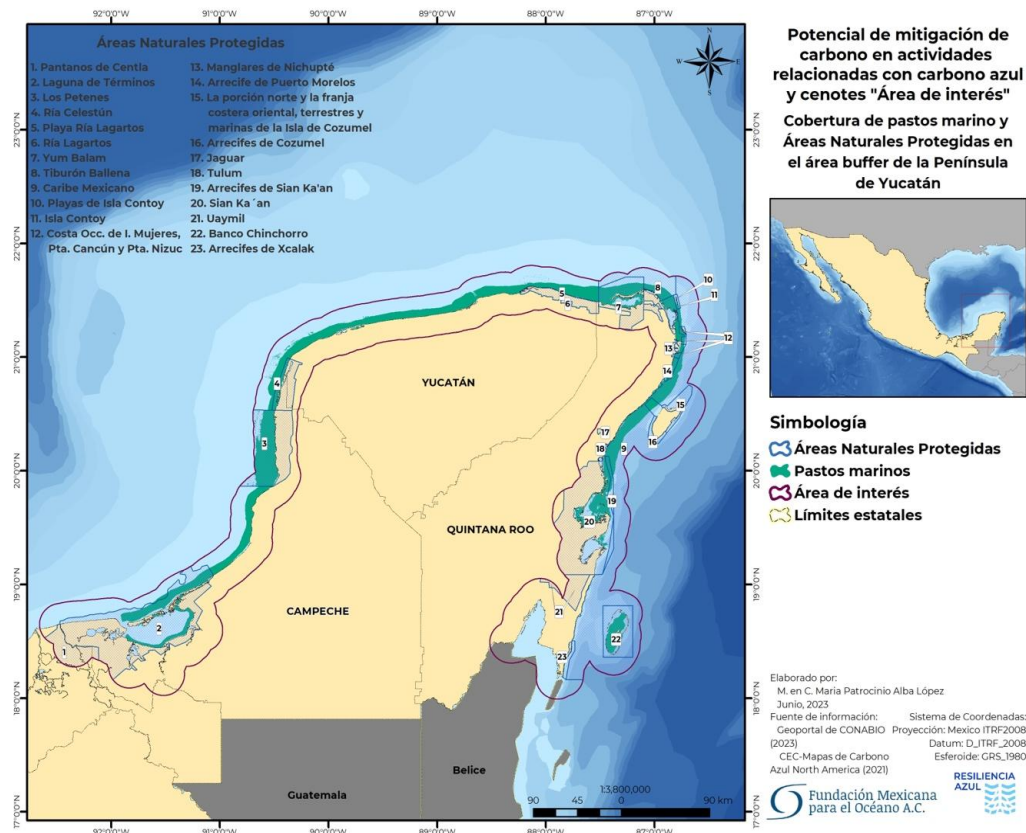


Figure 2 Seagrasses: distribution and areas in Protected Natural Areas. Source: Resiliencia Azul A.C. 2023.

Based on the analysis conducted (CEC, 2021), within the ACCIÓN area, a seagrass area of approximately 1,086,120.43 hectares is reported. Of this, 635,758.03 hectares are distributed within the marine area of 15 Protected Natural Areas (ANP), primarily in the Mexican Caribbean, Los Petenes, and Laguna de Términos (Figure 16).

Coastal dunes

Dunes have a habitat-forming and topographic diversity function that helps coastal zones increase their resilience to erosion. Coastal dunes are among the ecosystems most at risk of disappearing in the region due to climate change. Coastal erosion processes constitute a severe threat. Sea level rise will cause a decrease in the extent (and eventual loss) of beach and dune ecosystems; affect nesting sites for reptiles and birds and change the composition and structure of flora and fauna populations. The increase in the intensity and frequency of extreme meteorological events will

alter the dynamics of beaches and dunes, including the destruction of the physical structure, which will be reflected in changes in the population dynamics of species and an increase in genetic erosion.

In the YP, Ovando et al. (2020) identify that "coastal dune vegetation is present in 81% of the Peninsula's beach coastline, except in some natural areas occupied by mangrove and lagoon systems, as well as by urban settlements due to the establishment of ports and summer developments (Flores and Espejel, 1994), they are considered a system of fixed dunes in which sedimentation is controlled by vegetation (Eskuche, 1992; Rust and Illenberg, 1996; Torres et al, 2010). The dune communities of this region present functional characters of plant species that allow them to withstand conditions of high temperature, low water availability and high salt exposure (Martínez et al., 2014, Munguía-Rosas et al., 2019).

Among their main threats are urban expansion, particularly the development of hotel infrastructure (UNDP, 2023). Ovando et al. (2020) evaluated climate scenarios of impact, vulnerability, and adaptation for five dune vegetation species (*Cakile edentula*, *Ernodea littoralis*, *Scaevola plumieri*, *Suriana maritima*, *Tournefortia gnaphalodes*) by 2080. All of them substrate fixers, with high dominance values. They found that *E. littoralis* and *T. gnaphalodes*, would be the species with the least potential impact from climate change. *S. maritima* is the species that would lose the most cover (part of the few shrub species in the pioneer zone that fix substrate and are a refuge for birds).

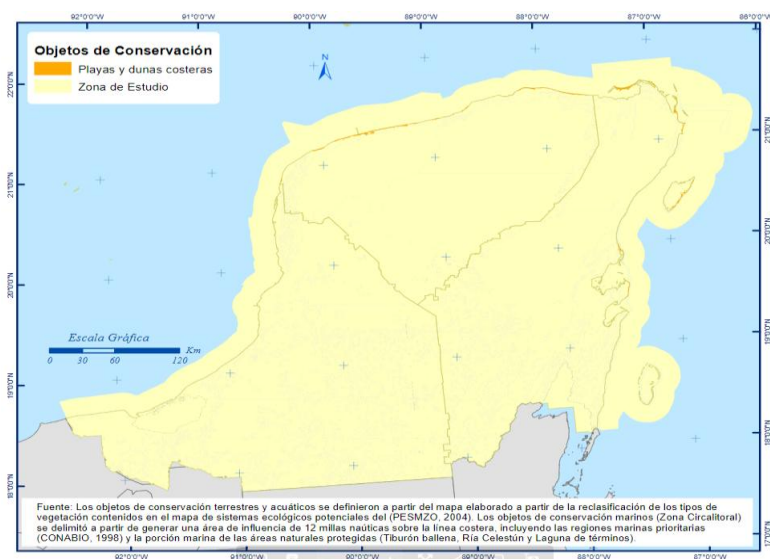


Figure 3 Distribution of beaches and dunes in the YP as of 2018. Source: Alianza de la Península de Yucatán, 2023 using data from CONABIO 1998; PESMZO, 2004.

Mangroves

Mangroves function as carbon sinks, protection against storms or storm surges, provide sedimentation services and detention of mean sea level rise and breeding grounds for fish, refuge

for biodiversity (Blue Resilience, 2023). These ecosystems also provide multiple services to local communities, including coastal protection, a breeding ground for species of commercial interest, and scenic beauty for tourism.

Mangroves are extremely productive forest characterized by high carbon storage especially below ground, with total carbon stocks three to five times higher than other ecosystems such as boreal and tropical forest (Donato, et al., 2011; Fourqurean et al., 2012). The average carbon stock reported for the YP mangrove is 348.90 ± 21 Mg Corg Ha⁻¹; the average in the region shows the highest reservoir of organic carbon for Mexico with an estimation of 148.2 Tg (Herrera-Silveira et al., 2020). Regardless of the multiple valuable environmental services provided by this ecosystem there is a sustained deforestation.

Mexico is the fourth country with the largest extension of mangroves in the world. According to the most recent information from the National Commission for the Use and Knowledge of Biodiversity (CONABIO), 905,086 ha were registered in 2020. Of this extension, 60% is located in the YP (Campeche, Quintana Roo, and Yucatan), and of this percentage, 90% corresponds to territories zoned within NPAs. This is why this region is a hot spot of carbon storage and sequestration covered by 544,169 hectares of mangrove (CONABIO, 2020).

It is estimated that for the area of interest of the ACCIÓN project in YP, the mangrove cover has an approximate area of 528,619.83 ha, of which 3,161.99 ha correspond to disturbed mangrove, while for other wetlands 412,040.58 ha are registered (CONABIO, 2020). According to the integral connectivity index of the Mexican Mangrove Monitoring System (SMMM) within the site of interest, 54% of the surface area has a "very high" connectivity value, the largest surface area is in the "very high" connectivity value (CONABIO, 2020); "high" connectivity, the largest area, with 285,024.83 ha, "very low" connectivity with 91,995.07 ha, with 17% and 14% (71,220.52 ha) with "medium" connectivity.

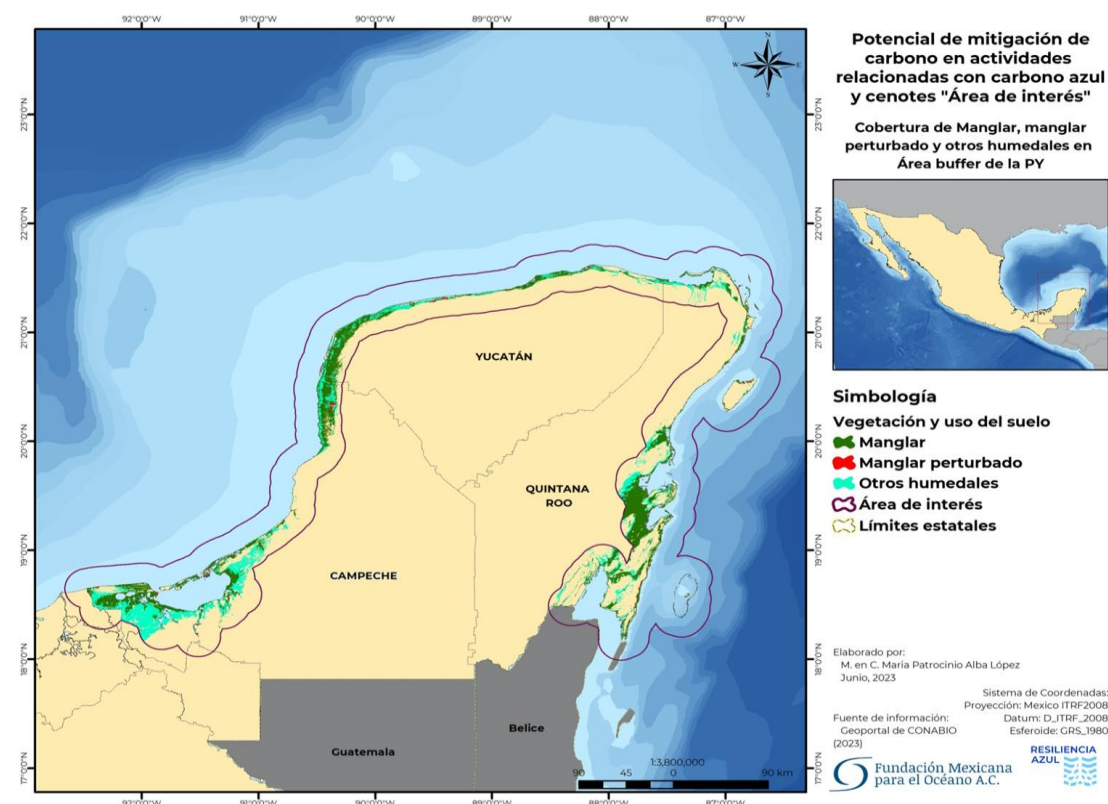


Figure 4 Mangrove cover, disturbed mangrove, and other wetlands in the ACCIÓN area. Source: Resiliencia Azul A.C. 2023

Cenotes

Cenote is the name used to designate any underground space with water and a connection to the outside. Cenotes are complex aquatic systems generated by the dissolution of carbonates and other minerals in the rock, so geologically they are also called dissolution lakes (Monroy-Ríos, 2016). Beddows et al. (2007) estimate that there are more than 7000 cenotes in the YP. Cenotes are important for conservation of resources, climate, and local tourism.

The term cenote is of Mayan origin "Tso'ono'ot or d'zonot", meaning "cavern with water". Currently the term cenote is used to designate any underground space with water and a connection to the outside. Cenotes are complex aquatic systems generated by the dissolution of carbonates and other minerals in the rock, so geologically they are also called dissolution lakes (Monroy-Ríos, 2016).

Karstification process (dissolution of carbonate rocks) in cenotes can capture large amounts of CO₂ and transform it into dissolved inorganic carbon (DIC), regulating atmospheric CO₂ on short time scales. The measurement of both processes, 1) atmospheric CO₂ capture by DIC generation and 2) CO₂ release into the atmosphere by accelerated karstification by anthropogenic compounds, is essential to characterize the areas in which it is happening and thus be able to apply measures to conserve the first process and to mitigate the second.

Samples analysis demonstrate the fact that the discharge of anthropogenic nitrogen and sulfur from agriculture, livestock and urban wastewater in Yucatan could have a great impact on the chemical compositions of karst groundwater.

The results show affectation on acceleration and decrease to the karstification process related to the CO₂ sink capacity for cenote's sites evaluated. Sites conditions: with a full accelerated karstification and a significant decrease of the CO₂ sinking capacity are linked to the discharge of anthropogenic nitrogen and sulfur from agriculture, livestock and urban wastewater in Yucatan having a pronounced impact on the chemical compositions of karst groundwater.

Anthropogenic sulfuric acid and/or nitric acid involved in carbonate weathering in karst systems could affect the global carbon cycle since karst areas. Role of anthropogenic sulfuric acid and/or nitric acid in carbonate weathering should not be ignored in the global carbon cycle, especially where fertilizers are heavily used, or in areas with sewage discharges, or even zones that have reported acid rain presence.

There are records of 101 cenotes in the ACCIÓN implementation area, which represent only 1.5% of the total number of cenotes in the Yucatán Peninsula (Figure 19). However, to date, there are few or no studies available on most of them (PHR 2020 - 2024). The estimated annual mitigation potential for these 101 cenotes is 12,000 tC/year (Resiliencia Azul A.C., 2023).

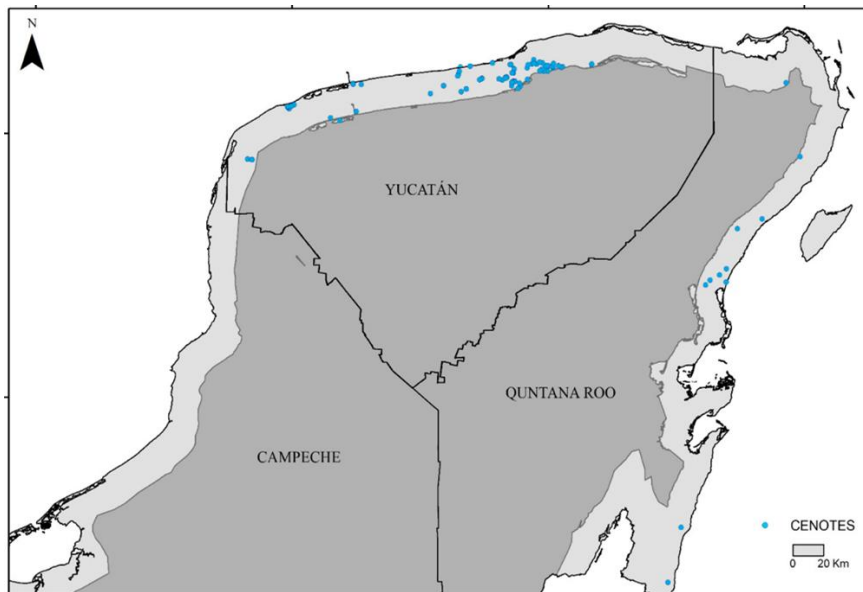


Figure 5 Cenotes in the ACCIÓN area. Source: Resiliencia Azul A.C. 2023

Forests

The forests in the project's area of interest consist of tulares, savannas, and coastal wetlands and are a barrier to extreme weather events. These forests, as ecosystems, have a certain adaptation to the continuous onslaught of hurricanes and tropical storms. Since 1990, fire has posed a serious

threat to the forests of the eastern portion of the YP. Due to the increase in temperature, alterations in rainfall distribution, and the general tendency for rainfall to decrease, flora and fauna populations may be directly and indirectly affected in their phenology and biotic interactions. Population changes will impact the structure and functioning of biotic communities, ecological integrity, and ecosystems' material and energy cycles; this could favor the expansion of invasive species. The increase in CO₂ concentration will cause changes in the photosynthetic capacity of plants, favoring the productivity of some species and limiting that of others. The increase in the frequency of extreme hydro-meteorological events favors the accumulation of combustible material and, therefore, a greater probability of fires that reduce ecosystem connectivity.

Forested areas are an important source of resources for coastal communities, whether for the production of furniture, firewood or handicrafts. Their importance for increasing the resilience of coastal populations is related to their potential to mitigate carbon dioxide emissions, as well as their ecological functions of water purification. They also play an important role as areas that make possible the development of beekeeping.

The distribution of forests in the intervention area of the ACCIÓN project is as follows: in Campeche, wetlands account for 31% of the territory, while 54% corresponds to forest lands. ; in Quintana Roo, 25% corresponds to wetland areas and 69% is made up of forest land; and in Yucatan 21% corresponds to wetlands and 61% forest land (CONAFOR,2024).

It is possible to assess the vulnerability of forests by identifying the impact of urban expansion, interactions related to local demographics, ecological integrity of ecosystems and the impact of invasive species. On the other hand, an increase in the frequency of extreme hydrometeorological events favors the accumulation of combustible material and, therefore, a greater probability of fires that reduce ecosystem connectivity (FMCN,2022).

2.2.2. Regionalization and key conservation areas

It is key to identify areas that have already made significant progress in ecosystem conservation and restoration, local governance, territorial planning, and sustainable production (Arriaga, L., 2009). For this reason, data related to sustainable production activities and EbA measures projected by ACCIÓN are analyzed: Priority Regions (terrestrial, marine, hydrological, and important for bird conservation), Protected Natural Areas, RAMSAR Sites, and Fishing Refuge Zones.

Natural Protected Areas

The YP has 59 Protected Natural Areas (PAs) that total 12,867,194.32 hectares. Of these, 3,710,954 ha are in the ACCIÓN target area, with 27 federal and 12 state areas, that represents 66% of the marine ha and 34% of the terrestrial ha.

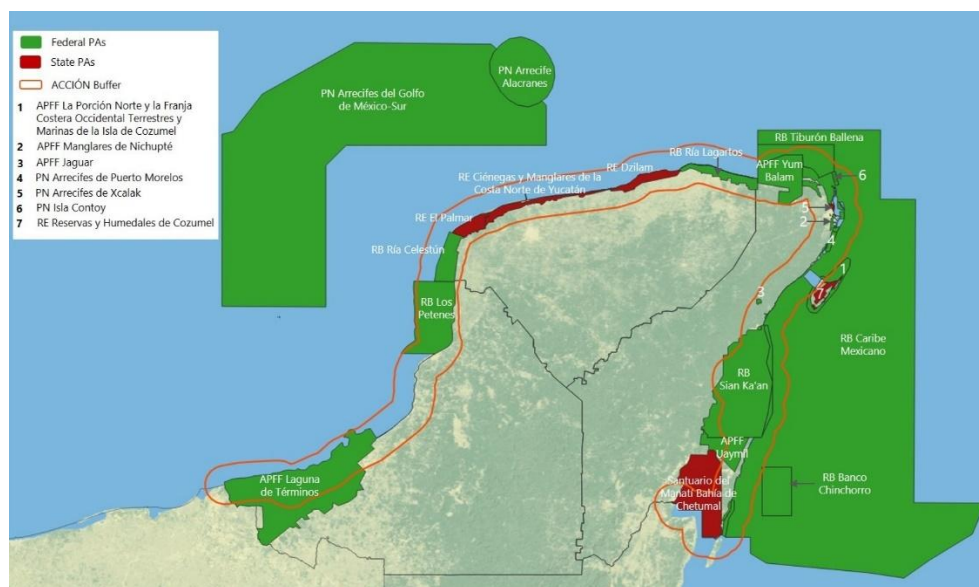


Figure 6 Natural Protected Areas in the ACCIÓN zone. Source: INEGI, 2020 and CONANP, 2024.

The federal Protected Natural Areas with the largest extent are the Mexican Caribbean, Laguna de Términos, Sian Ka'an, and Los Petenes. In the case of state-protected areas, the Manatee Sanctuary of Bahía de Chetumal stands out above the rest.

Table 4 Protected Areas of the Yucatan Peninsula ACCIÓN project

NAME	STATES	YEAR OF DECREE	AREA	LAND AREA	MARINE AREA
Arrecife Alacranes	Yucatán	06/06/94	333,768.51	53.00	333,715.50
Arrecife de Puerto Morelos	Quintana Roo	02/02/98	9,066.63	37.74	9,028.89
Arrecifes de Sian Ka'an	Quintana Roo	02/02/98	34,927.16	1,361.00	33,566.16
Cenote Aerolito	Quintana Roo	15/08/23	10.20	10.20	0
Costa Occ. de l. Mujeres, Pta. Cancún y Pta. Nizuc	Quintana Roo	19/07/96	8,673.06	0.61	8,672.45
Isla Contoy	Quintana Roo	02/02/98	5,126.26	230.00	4,896.26
Jacinto Pat	Quintana Roo	15/08/23	16.65	16.65	0

Jaguar	Quintana Roo	27/07/22	2,249.71	2,249.71	0
Manglares de Puerto Morelos	Quintana Roo	08/01/24	1,103.00	1,103.00	0
Playa Chenkan	Campeche	08/01/24	39.56	39.56	0
Playa Delfines	Quintana Roo	15/08/23	4.88	4.88	0
Playa Ría Lagartos	Yucatán	29/10/86	827.36	827.36	0
Playas de Isla Contoy	Quintana Roo	29/10/86	10.75	10.75	0
Ría Celestún	Campeche y Yucatán	27/11/00	81,482.33	61,926.57	19,555.76
San Buenaventura	Quintana Roo	15/08/23	37.91	37.91	0.00
Tiburón Ballena	Quintana Roo	05/06/09	145,988.14	0	145,988.14
Tulum	Quintana Roo	23/04/81	664.32	664.32	0
Uaymil	Quintana Roo	17/11/94	89,118.15	89,118.15	0
Yum Balam	Quintana Roo	06/06/94	154,052.25	52,307.62	101,744.63
Arrecifes del Golfo de México-Sur	Golfo de México	26/09/24	4109731.426	0	4109731.426

Important Bird and Biodiversity Area (IBA)

Important Bird and Biodiversity Area (IBA) are spaces evaluated by experts with the goal of serving as a tool for decision-making sectors by establishing prioritization criteria and resource allocation for conservation. In the YP, there are 16 IBAs, 2 of which are located only in the central part of the Peninsula and not in the coastal area. In total, there are 7 endemic species in the YP: Cozumel Thrasher (*Toxostoma guttatum*), Cozumel Emerald (*Cyanthus forficatus*), Cozumel Vireo (*Vireo bairdi*), Mexican Scissor-tailed Hummingbird (*Doricha eliza*), Yucatan Wren (*Polioptila albiventris*), Yucatan Wren (*Campylorhynchus yucatanicus*), and Cinnamon-rumped Seed-eater (*Sporophila torqueola*) (CONABIO, 2015).

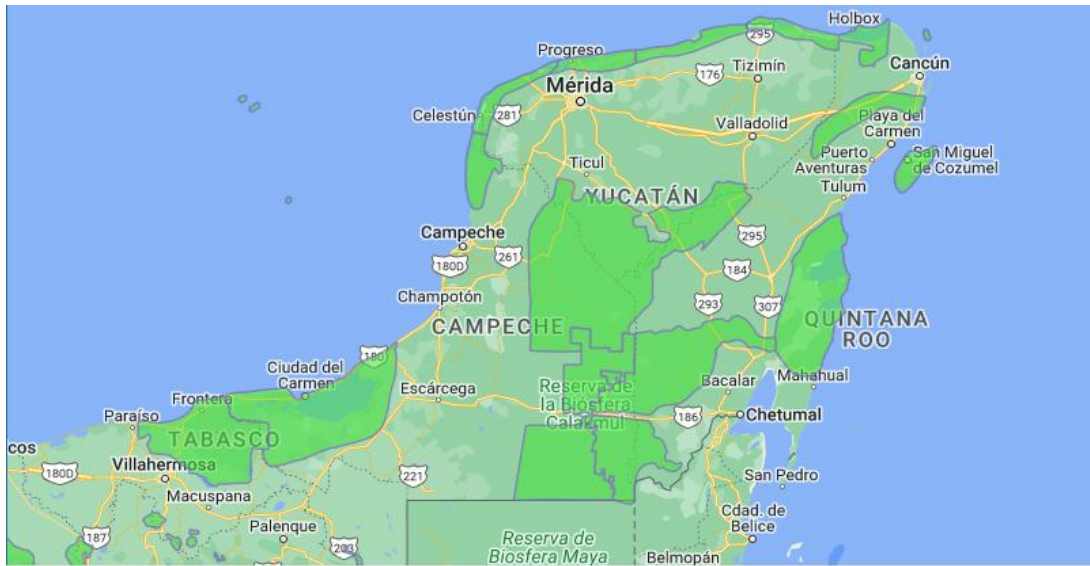


Figure 7 Regionalization of IBAs in the Yucatan Peninsula. Source: CONABIO, 2022

Table 5 Table IBA and the species inhabiting them by state (CONABIO, 2015)

State	IBA	Number of Bird Species	Endemic Species
Campeche	Laguna de Términos Calakmul Islas de la Sonda de Campeche Los Petenes Sierra de Ticúl-Punto Put Humedales Costeros del Norte de la Pen. de Yucatán	452	4 species Mexican Scissor-tailed Hummingbird (<i>Doricha eliza</i>) Yucatan Wren (<i>Poliophtila albiventris</i>) Yucatan Wren (<i>Campylorhynchus yucatanicus</i>) Cinnamon-rumped Seed-eater (<i>Sporophila torqueola</i>)
Quintana Roo	Sierra de Ticúl-Punto Put Isla Contoy Corredor Central Vallarta-Punta Laguna Isla Cozumel Sian Ka'an Sur de Quintana Roo Yum-balam Humedales Costeros del Norte de la Pen. de Yucatán Corredor Calakmul-Sian Ka'an Uyumil C'eh	473	7 species Cozumel Thrasher (<i>Toxostoma guttatum</i>) Cozumel Emerald (<i>Cyanthus forficatus</i>) Cozumel Vireo (<i>Vireo bairdi</i>) Mexican Scissor-tailed Hummingbird (<i>Doricha eliza</i>) Yucatan Wren (<i>Poliophtila albiventris</i>) Yucatan Wren (<i>Campylorhynchus yucatanicus</i>) Cinnamon-rumped Seed-eater (<i>Sporophila torqueola</i>)
Yucatán	Sierra de Ticúl-Punto Put Arrecife Alacranes Ría Celestún Ichka' Ansijo Reserva Estatal de Dzilám Ría Lagartos Humedales Costeros del Norte de la Pen. de Yucatán	366	4 species Mexican Scissor-tailed Hummingbird (<i>Doricha eliza</i>) Yucatan Wren (<i>Poliophtila albiventris</i>) Yucatan Wren (<i>Campylorhynchus yucatanicus</i>) Cinnamon-rumped Seed-eater (<i>Sporophila torqueola</i>)

Ramsar Sites

Ramsar Sites are areas designated under the Ramsar Convention, an international treaty aimed at the conservation and sustainable use of wetlands worldwide. In the YP, 24 sites have been declared.

Ramsar Sites	
1.	APFF Yum Balam
2.	Parque Nacional Isla Contoy
3.	Manglares de Nichupté
4.	Parque Nacional Arrecife de Puerto Morelos
5.	Manglares y Humedales de la Costa Norte de Isla Cozumel
6.	Parque Nacional Arrecifes de Cozumel
7.	Playa Tortuguera: X'cacel X'Cacelito
8.	Reserva de la Biósfera de Sian Ka'an
9.	Parque Nacional Arrecife Alacranes
10.	Reserva Estatal El Palmar
11.	Reserva de la Biósfera Ría Celestún
12.	Reserva de la Biósfera Los Petenes
13.	Playa Tortuguera Chenkán
14.	APFF Laguna de Términos
15.	RB Pantanos de Centla
16.	PN Arrecifes de Xcalak
17.	RB Banco Chinchorro
18.	Humedal de Importancia Especialmente para la Conservación de Aves Acuáticas Reserva Ría Lagartos
19.	Dzilam
20.	Reserva Estatal Ciénagas y Manglares de la Costa Norte de Yucatán
21.	Anillo de Cenotes
22.	Otoch Ma'ax Yetel Kooh
23.	Laguna de Chihankanab
24.	Parque Estatal Lagunas de Yalahau

Fishing Refuge Zones (ZRP)

The **Fishing Refuge Zones (ZRP)**, managed by CONAPESCA (2019), are defined as "delimited areas with the purpose of conserving and contributing, naturally or artificially, to the development of

fishery resources through their reproduction, growth, or recruitment, as well as preserving and protecting the surrounding environment."

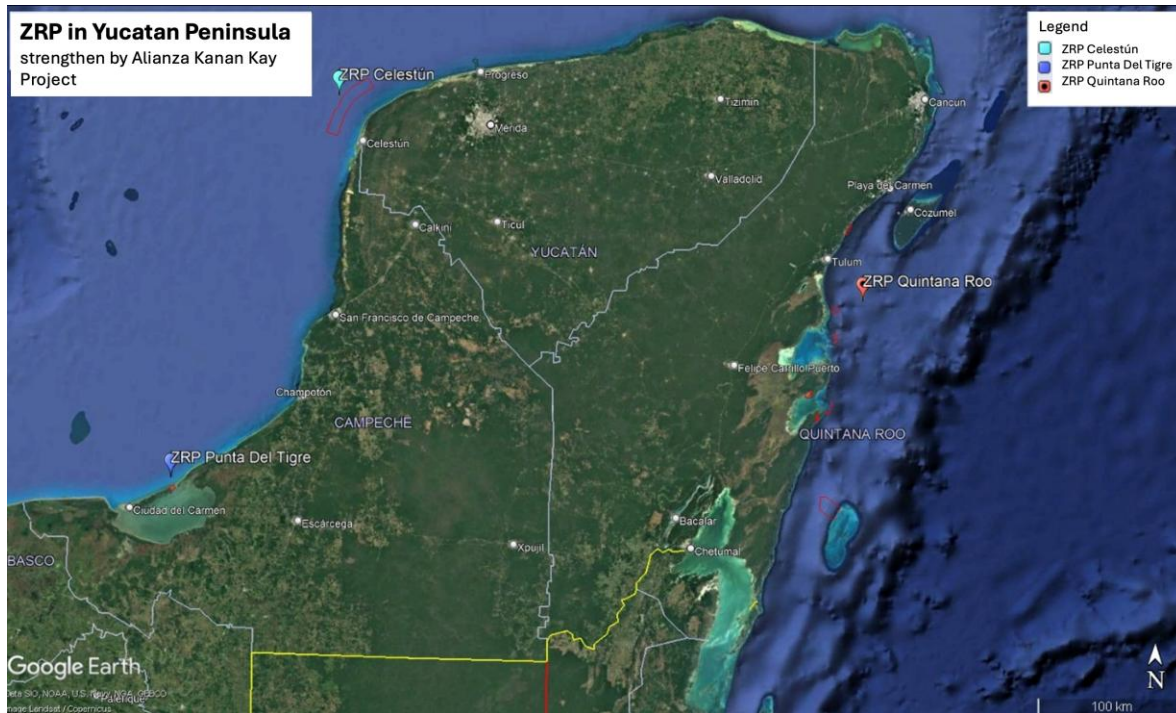


Figure 8 ZRP in the YP supported by Alianza Kanan Kay

The most recent update, published in the DOF on December 11, 2019, lists:

Seven ZRPs in the YP, 6 in Quintana Roo and 1 in Yucatan. In total, they protect 56,815 hectares; however, 4 of them have since expired, leaving 3 active ZRPs (2 in Quintana Roo and 1 in Yucatan), covering 46,620 hectares and protecting 23 different species:

1. Queen conch (*Lobatus gigas*)
2. Caribbean spiny lobster (*Panulirus argus*)
3. Spotted spiny lobster (*P. guttatus*)
4. White grunt (*Haemulon album*)
5. Dog snapper (*Lutjanus jocu*)
6. Great barracuda (*Sphyrna barracuda*)
7. Mutton snapper (*Lutjanus analis*)
8. Hogfish (*Lachnolaimus maximus*)
9. Nassau grouper (*Epinephelus striatus*)
10. Black grouper (*Mycteroperca bonaci*)

11. Grouper (*Cephalopholis spp.*)
12. Snook (*Centropomus undecimalis*)
13. Bonefish (*Albula vulpes*)
14. Dog snapper (*Lutjanus jocu*)
15. Crevalle jack (*Caranx hippos*)
16. French grunt (*Haemulon flavolineatum*)
17. Atlantic Spanish mackerel (*Scomberomorus maculatus*)
18. Red grouper (*Epinephelus morio*)
19. Red octopus (*Octopus maya*)
20. Caribbean spiny lobster (*Panulirus argus*)
21. Sea cucumber (*Isostichopus badionotus*)
22. King mackerel (*Scomberomorus cavalla*)
23. Great barracuda (*Sphyraena barracuda*)

Table 6 Fishing Refuge Zones (DOF, 2019)

Satate	Sites	Zones	Ha	Validity
Quintana Roo	Canal Nizuc	1 (Permanent total)	8.158	April 25, 2023
	Banco Chinchorro	1 (Permanent total)	12257	June 1, 2024
	Punta Herrero	1 (Permanent total)	163.34	August 28, 2024
Yucatán	Celestún	1 (Permanent total)	34200	October 3, 2024

2.2.3. Socio-economic context

The project's intervention area covers three states: Campeche, Yucatan, and Quintana Roo. The area of influence includes 58.3% of the municipalities in the state of Campeche, 90.9% in Quintana Roo, and 22.6% in Yucatan. The coverage area is 1,703 localities in 41 municipalities that have a coastal zone throughout the YP; 27% of the localities are in Campeche, 53% in Quintana Roo and 20% in Yucatan. According to the National Institute of Statistics and Geography (INEGI), a locality is an occupied place with one or more inhabited or uninhabited houses, recognized by a name given by law or custom. By population size, they are divided into urban (more than 2 500 inhabitants) and rural (less than 2 500 inhabitants). On the other hand, a municipality is a political-administrative territorial division of a federative entity.

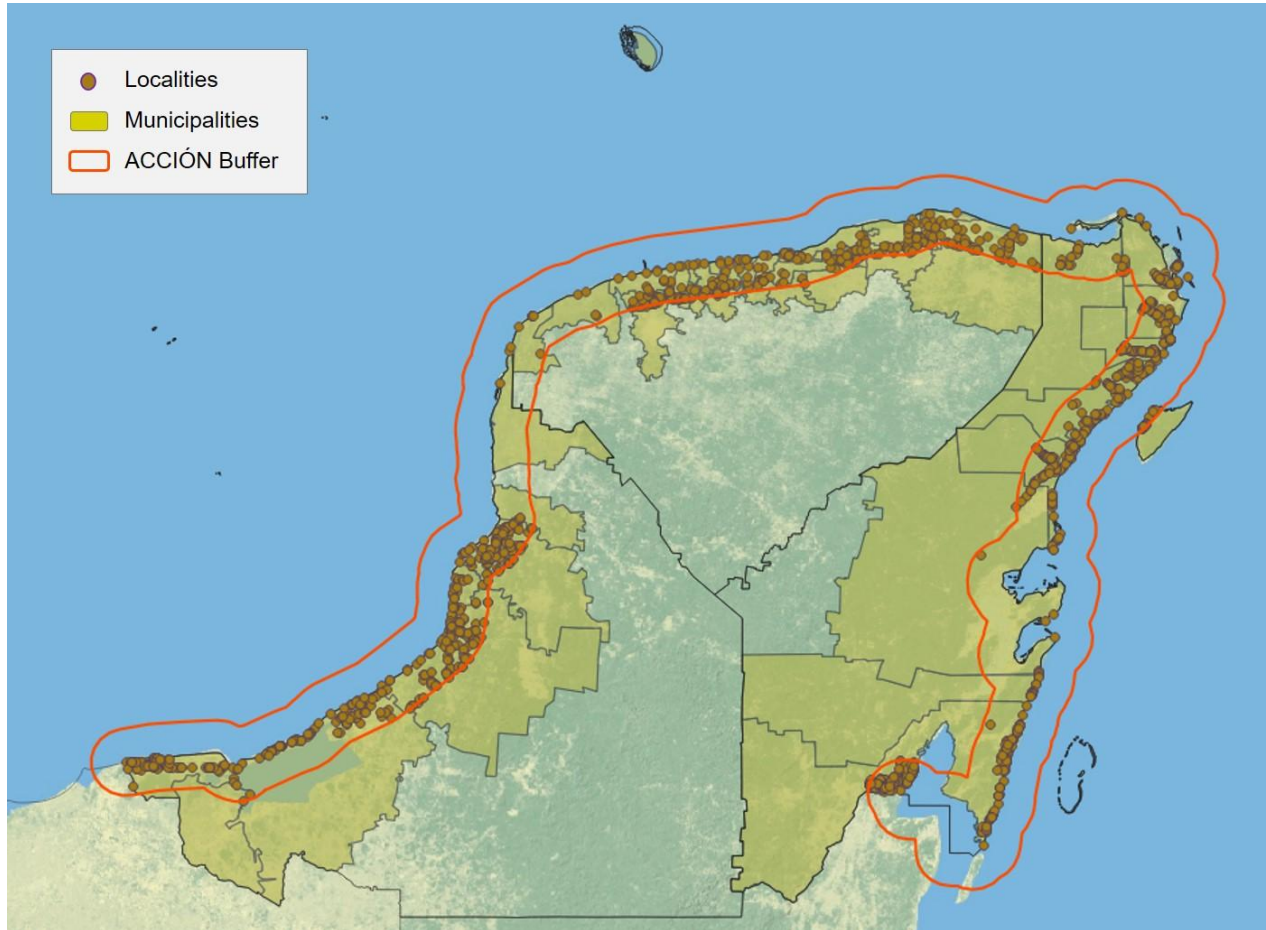


Figure 9 Municipalities and Localities of ACCIÓN. Source: INEGI, 2020

Table 7 Coverage by municipality and localities

	State Total		Coverage of the project		% Coverage	
State	Municipalities	Localities	Municipalities	Localities	Municipalities	Localities
Campeche	13	2,762	7	462	54%	17%
Quintana Roo	11	2,207	10	907	91%	41%
Yucatan	106	2,434	24	334	23%	14%
Total	130	7,403	41	1,703	32%	23%

Demographics

The total population of the three states of the YP is approximately 5.1 million (2020)¹.

The state of Campeche has a population of 928,363 inhabitants, which is equivalent to 0.7% of the country's total population. Considered by gender, 50.8% are women and 49.2% are men. According to place of residence, 75% of the population lives in urban areas, and 25% resides in rural areas.

The state of Quintana Roo has a population of 1,857,985 inhabitants, which is equivalent to 1.5% of the country's total population. Considered by gender, 50.4% are women and 49.6% are men. According to place of residence, 90% of the population lives in urban areas, and 10% resides in rural areas.

The state of Yucatan has a population of 2,320,898 inhabitants, which is equivalent to 1.6% of the country's total population. Considered by gender, 49.1% are women and 50.9% are men. According to place of residence, 86% of the population lives in urban areas, and 14% resides in rural areas.

The targeted coastal landscape has a total population of 2,309,480 inhabitants, of which 49.84% are men and 49.95% women. 90% of the population lives in urban cities with more than 10,000 inhabitants, 96% of the population live in 40 localities of more than 2,500 people, and 4% live in many rural communities with less than 2,500 inhabitants. It is estimated that approximately 17% live in indigenous households, and only 3.5% speak an indigenous language, mostly Mayan (INEGI 2020).

Table 8 Population in the intervention zone

State	Municipality	Localities in the intervention area	Total population	Female population	Male population	Indigenous language-speaking population
Campeche	Calkini	1	968	465	503	105
	Campeche	109	273,650	142,346	130,759	9,406
	Carmen	194	223,110	112,881	109,710	2,480
	Champoton	131	50,014	25,143	24,563	1,716
	Palizada	4	34	10	14	0
	Tenabo	10	160	60	78	14
	Seybaplaya	18	15,297	7,642	7,608	426
Quintana Roo	Cozumel	24	84,795	42,392	42,340	6,101
	Felipe Carrillo Puerto	14	634	256	354	405
	Isla Mujeres	84	22,320	10,889	11,252	1,449
	Othon P. Blanco	365	186,151	94,811	90,497	9,976

¹ DataMexico. Yucatan. < <https://www.economia.gob.mx/datamexico/es/profile/geo/yucatan-yu/>>..

	Benito Juarez	52	910,081	451,474	458,470	59,878
	Lazaro Cardenas	21	5,014	2,409	2,564	299
	Solidaridad	127	333,355	162,970	169,607	25,797
	Tulum	142	38,174	18,008	19,819	6,083
	Bacalar	15	47	7	5	2
	Puerto Morelos	63	19,479	9,470	9,864	1,207
Yucatán	Baca	4	11	0	0	0
	Buctzotz	3	498	234	259	193
	Cansahcab	1	10	0	0	0
	Celestun	8	8,387	4,152	4,228	380
	Chicxulub Pueblo	8	4,490	2,213	2,262	300
	Dzemul	11	3,622	1,820	1,791	676
	Dzidzantún	17	8,345	4,113	4,189	429
	Dzilam de Bravo	19	2,936	1,449	1,452	93
	Dzilam Gonzalez	31	6,240	3,044	3,125	589
	Hunucma	4	2,083	1,019	1,059	106
	Ixil	9	4,186	2,083	2,093	399
	Merida	37	13,844	6,837	6,939	2,695
	Mococha	1	439	211	228	43
	Motul	9	1,778	840	922	408
	Panaba	18	851	400	404	277
	Progreso	20	66,008	33,024	32,966	2,606
	Río Lagartos	29	3,969	1,917	1,975	355
	San Felipe	23	2,118	1,009	1,060	119
	Sinanche	9	3,206	1,552	1,639	597
	Telchac Pueblo	8	3,512	1,794	1,702	347
	Telchac Puerto	2	1,915	961	952	183
	Temax	1	43	21	22	18
	Tizimin	56	5,525	2,664	2,731	1,678
	Yobain	6	2,215	1,105	1,107	360
Total			2,309,480	1,153,685	1,151,098	138,195

The age ranges of the population, across the localities in the coverage area, it is notable that the majority of both the female and male population is characterized by being young. Campeche has the highest number of females in the 30 to 34-year range, Quintana Roo in the 25 to 29-year range, and Yucatán in the 5 to 9-year range. In the case of the male population, it is concentrated in Campeche mostly in the ranges from 5 to 9 years up to 20 to 24 years; in Quintana Roo in the 25 to 29-year range, and in Yucatán in the 15 to 19-year range.

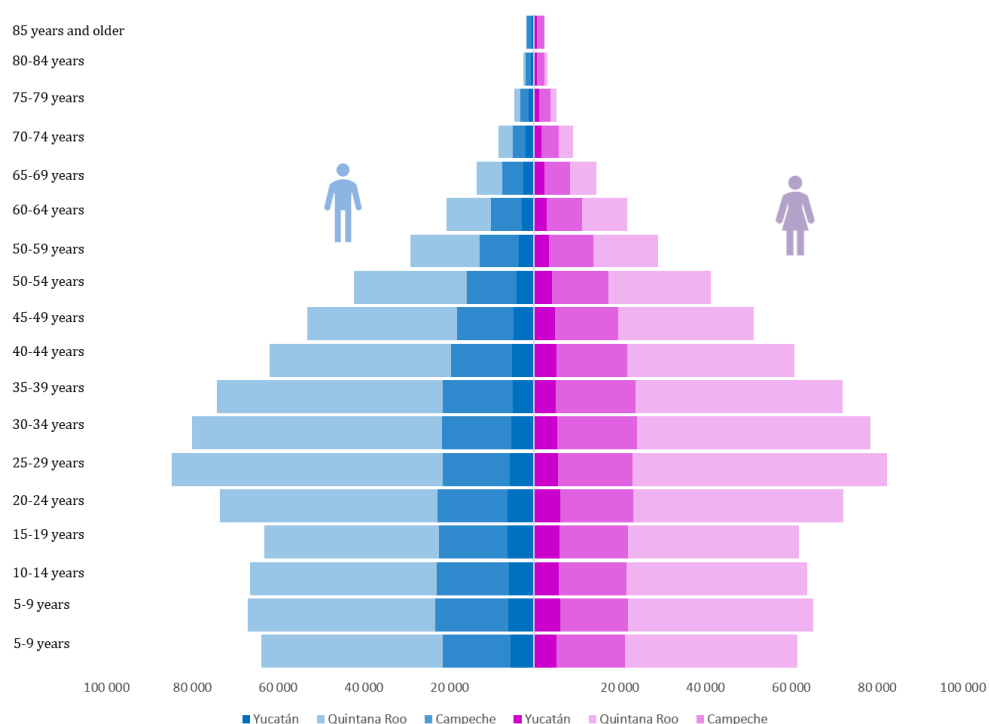


Figure 10 Age
of the
population in
the ACCIÓN
localities.
Source: INEGI,
2020

Land tenure
Information
about
social land
tenure is
available at
the federal
entity level

through the Comprehensive System for Cadastral and Registry Modernization (SIMCR) of the National Agrarian Registry (RAN). There are 753 ejidos in the Yucatán Peninsula: 274 in Campeche, 254 in Quintana Roo, and 225 in Yucatán. It is notable that the percentage of female representatives is very similar across the three states, not exceeding 15% of the positions, which is the maximum limit in Quintana Roo.

Common-use ejidal lands constitute the economic support for communal life within the ejido and consist of those lands not designated by the assembly for the settlement of the population nucleus, nor have they been divided into parcels. Of the three states in the Yucatán Peninsula, Campeche has the most common-use lands within the project intervention zone (RAN, 2023).

Table 9 Communal land

Project intervention zone	
State	Communal land
Campeche	25%
Quintana Roo	14%
Yucatán	17%
Total	8%

Education

In the Campeche State, the average schooling is 9.6 years, approximately the first year of high school, and the literacy rate is 96.1%. In Quintana Roo, the average years of formal education is 10.2, slightly more than the first year of high school, and the literacy rate is 89.9%. In the Yucatan state, the average schooling is 9.6 years, approximately reaching the first year of high school, and the literacy rate is 94.3%.

In terms of education, at the state level, Quintana Roo has the lowest number of illiterate population with 2.27% and Yucatan the highest in the region with 4.55%. When observing these data broken down by gender, it is observed that the male population of the three states presents lower illiteracy percentages than the female population, with Quintana Roo being the entity that has the lowest illiteracy percentage with 1.9%. This represents a gap of about two percentage points higher illiteracy among women in any of the states, which could be a challenge to improve any of the opportunities for women's development.

At the level of the localities in the project intervention zone, educational gaps persist with respect to the national and state averages. In other words, the coastal communities of the three states have lower levels of schooling than other areas in the region (INEGI, 2020).

Table 10 Average years of schooling

National level	State level			Localities of the intervention zone		
	Campeche	Quintana Roo	Yucatán	Campeche	Quintana Roo	Yucatán
9.7	9.6	10.2	9.6	7.5	8.9	8.3

Welfare and health

In terms of health, Campeche is the state with the highest percentage of population affiliated to medical services in the localities of the project intervention zone with 77.78%, followed by Yucatan with 72.63% and Quintana Roo with 72.39%. The information on the availability of services in housing located in the localities that are part of the project's intervention area is presented below in Table 10.

Table 11 Availability of services by state

State	State level	Municipality level	Locality level
-------	-------------	--------------------	----------------

	Water	Energy	Drain	Water	Energy	Drain	Water	Energy	Drain
Campeche	95.36%	98.0%	94.2%	96.11%	98.4%	95.9%	96.4%	98.6%	98.0%
Quintana Roo	96.98%	97.7%	96.7%	97.00%	97.7%	96.9%	97.1%	97.9%	97.8%
Yucatan	98.46%	98.7%	92.0%	98.67%	99.1%	96.5%	97.8%	98.5%	94.0%
Total	97.35%	98.2%	94.2%	97.40%	98.3%	96.6%	97.0%	98.1%	97.6%

Source: INEGI, 2020

It is important to mention that the availability of potable water in the homes recorded in the census refers to the existence of infrastructure, but not the quantity or duration of supply. In many of the communities in the area of influence there is availability of the hydraulic network, but the supply is limited to certain hours per day, although no problems of permanent shortage were perceived. Employment, economic activities and livelihoods.

On the side of the Gulf of Mexico (west coast of YP), the economic activities focus on fishing and oil, while secondary activities include trade, services, transport, communications, and apiculture. On the side of the Caribbean (east coast of YP), the economy of Quintana Roo depends strongly on tourism (alternative and sun-and-beach).

All along the coast, the fishing sector is key for the regional economy in the YP and it focuses on species of high commercial value, such as lobster, octopus and queen conch. The value of fishing production in the YP represents about 10% of the national production (SIAP, 2017). In addition to coastal fishing and tourism, other key economic activities include sport fishing, handicraft production, apiculture, salt exploitation, Wildlife Conservation Management Units, and agriculture, mainly Mayan milpa (traditional agroforestry).

Specifically, the communities within the potential Natural Protected Areas (PA) are predominantly economically dependent on small-scale fishing and tourism. Approximately 11,533 fishers and 299 fishing cooperatives carry out their activities within an NPA, either because they live in the inside localities, are members of fishing camps within the zone, or move to do temporary or fixed jobs. Small-scale fishing is the main economic activity for 15 of 19 localities in NPA. In localities such as Atasta and Isla Arenas in Campeche, fishing employs 80% of its economically active population. In general, tourism is the second most important economic activity for the localities and there are about 39 alternative tourism cooperatives working in the zone.

The relationship between the livelihoods and coastal and marine ecosystems in the passages in Campeche, Quintana Roo and Yucatan is close and interdependent. Transition zones between coastal ecosystems and marine ecosystems, where the influence of both is combined, are important for the biological diversity and productivity of coastal and marine ecosystems and are also vital for the livelihood and economic development of local communities.

Predominant activities include fishing and aquaculture, coastal tourism, marine resource extraction, and other livelihoods related to coastal and marine ecosystems. These livelihoods can

have impacts on coastal and marine ecosystems if not managed sustainably. Overfishing, pollution, overfishing, habitat degradation and other impacts can have negative consequences on the health and productivity of coastal and marine ecosystems.

It is important to note that women, rural communities, and indigenous peoples in the region play crucial roles in economic activities related to coastal and marine ecosystems, such as fishing and harvesting marine resources. However, they often face inequalities in terms of access to resources, economic opportunities, and decision-making in natural resource management.

Information on the Economically Active Population (EAP) in the localities of the project area shows a trend in which Quintana Roo has the highest percentage with 81.3%, probably due to its higher tourism and service activities compared to the other two states, followed by Campeche with almost 75% and Yucatan with 74.3%. Data disaggregated by sex reveals that the male EAP is between 20% and 25% higher than the female EAP, with the gap widening in Yucatan (Figure 25).

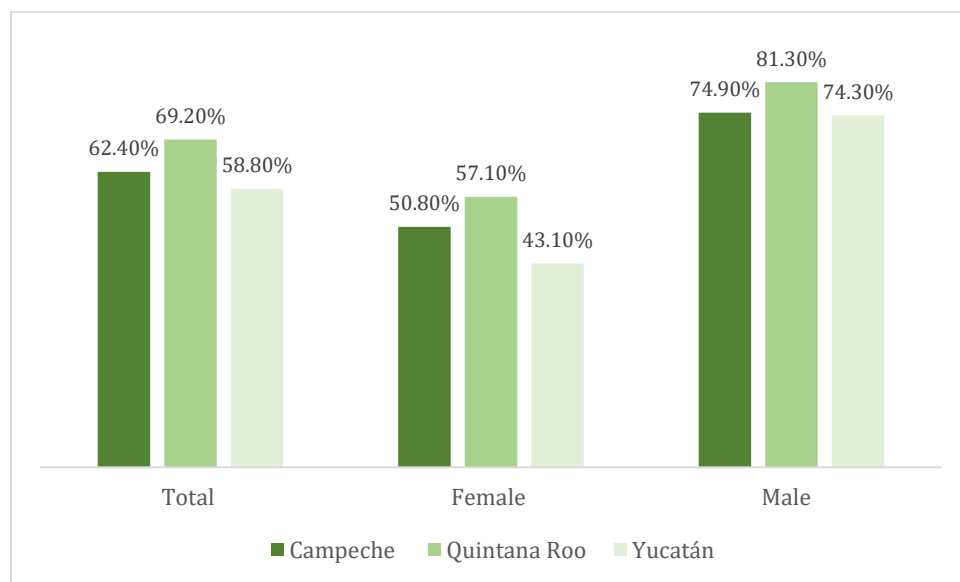


Figure 11 Economically active population by gender at locality level. Source: INEGI, 2020

As for the employed population, the same trend as the EAP is observed, with the highest percentage in the localities of Quintana Roo with 68%, followed by Campeche with 61.2% and Yucatan with 58%.

Table 12 Employed population by gender and sector of economic activity

Economic activity sector	Campeche			Quintana Roo			Yucatán		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Primary	27.4%	3.5%	18.4%	5.9%	0.9%	3.9%	13%	2.2%	8.4%
Secondary	24.3%	13.7%	20.3%	20.6%	7.3%	15.3%	31.8%	20.4%	27.0%

Tertiary	47.6%	82.5%	60.8%	73.3%	91.8%	80.7%	54.9%	77.2%	64.4%
Not specified	0.7%	0.3%	0.5%	0.2%	0.1%	0.1%	0.3%	0.1%	0.2%

Source: National Survey of Occupation and Employment, population aged 15 years and older (INEGI, 2023).

In Mexico, the National Council for the Evaluation of Social Development Policy (Coneval, 2020) measures multidimensional poverty by considering the following dimensions: Educational gap; Access to healthcare; Access to food; Access to social security; Housing quality and space; Basic housing services; and Social cohesion. According to this source, in 16 municipalities within the project's intervention area, more than 50% of the population is living in poverty. Five are in Quintana Roo, eight in Yucatán, and three in Campeche (Table 12).

Table 13 Multidimensional poverty

State	Municipality	Poverty	Extreme poverty	Moderate poverty
Campeche	Calkiní	62.8	17.8	45.1
Campeche	Campeche	32.5	4.7	27.8
Campeche	Carmen	35.4	7.6	27.7
Campeche	Champotón	57.2	12.1	45.1
Campeche	Palizada	59.9	13.7	46.1
Campeche	Seybaplaya	n.d.	n.d.	n.d.
Campeche	Tenabo	53.9	10.6	43.3
Quintana Roo	Bacalar	73.5	24.1	49.3
Quintana Roo	Benito Juárez	37.9	6.2	31.7
Quintana Roo	Cozumel	39.6	5.1	34.5
Quintana Roo	Felipe Carrillo Puerto	81.1	31.7	49.4
Quintana Roo	Isla Mujeres	50.3	8	42.3
Quintana Roo	José María Morelos	80.8	25.1	55.7
Quintana Roo	Lázaro Cárdenas	65.7	20	45.6
Quintana Roo	Othón P. Blanco	43.8	9.7	34.1
Quintana Roo	Puerto Morelos	42.7	8.7	33.9
Quintana Roo	Solidaridad	37.3	4.3	33.1
Quintana Roo	Tulum	61.8	18.8	43
Yucatán	Baca	39.9	4.3	35.6
Yucatán	Buctzotz	76.4	17.8	58.6

Yucatán	Cansahcab	53.8	9.5	44.3
Yucatán	Celestún	85	25.2	59.8
Yucatán	Chicxulub Pueblo	53.2	9.7	43.5
Yucatán	Dzemul	46.2	5.9	40.2
Yucatán	Dzidzantún	54.6	11	43.6
Yucatán	Dzilam de Bravo	49.4	7.4	42
Yucatán	Dzilam González	76.9	20.1	56.8
Yucatán	Hunucmá	65.3	14.9	50.4
Yucatán	Ixil	59.7	11.1	48.6
Yucatán	Mérida	25.7	2.9	22.7
Yucatán	Mocochá	28.4	3.2	25.1
Yucatán	Motul	50.6	10.3	40.3
Yucatán	Panabá	75.5	18.1	57.3
Yucatán	Progreso	42.1	6.3	35.8
Yucatán	Río Lagartos	27.4	4.3	23.1
Yucatán	San Felipe	32.2	3.4	28.8
Yucatán	Sinanché	65.5	11.2	54.3
Yucatán	Telchac Pueblo	56.4	13.9	42.5
Yucatán	Telchac Puerto	42.5	8.3	34.2
Yucatán	Temax	77.9	21.1	56.8
Yucatán	Tizimín	71.8	24.5	47.4
Yucatán	Yobaín	42.3	7.5	34.9

In the three states, the municipalities within ACCIÓN's intervention area exceed the national average (8.5%) in terms of the percentage of the population living in extreme poverty. The coast of Quintana Roo has the highest level at 14.7%, followed by Yucatán at 11.33%. Campeche is the best positioned of the three, with 9.5%. This means that in the project's area of interest, significant social and economic deprivations persist, limiting people's access to the minimum resources necessary to meet their basic welfare needs.

Main economic activities

AGRICULTURE AND AGROFORESTRY

The YP region maintains large forest extensions in a good state of conservation within socially owned lands. To the south, there are several federal protected natural areas, including the Calakmul and Sian Ka'an biosphere reserves. Forest land use change and degradation due to unsustainable use are priority issues that must be addressed in order to reduce GHG emissions.

The pressure of agricultural activities, such as shifting cultivation of rainfed crops, mainly maize, and the conversion of forests to pasture for cattle ranching, are the main drivers of change that cause deforestation and habitat fragmentation. The increasingly intensive use of land leaves less time and space for the natural recovery of degraded vegetation and is associated with low soil productivity for agricultural purposes, a lack of sustainable technification of good agricultural practices and increased food requirements due to the demographic growth of the rural population living in poverty (CONAFOR, 2014).

It is important to prioritize strategies for the conservation and recovery of forest areas in order to contribute to the achievement of global objectives in the fight against climate change. To this end, it is necessary to strengthen multi-stakeholder capacities to articulate actions that reduce climate vulnerability, as well as to define strategies to conserve forests and reforest areas in order to increase their carbon sequestration capacity.

Small-scale agriculture and agroforestry, dating back to at least 2000 B.C. (Pool et al, 2007), play significant roles in the YP, contributing to local food production, livelihoods, and the preservation of traditional farming practices. While the region's fertile soils, favorable climate, and diverse ecosystems support a range of agricultural activities, small-scale and subsistence farmers are considered particularly vulnerable to climate change impacts in the region as they are experiencing intensification of climate variability, in combination with non-climatic forces which negatively impact the production of maize and other staple crops (Mardero et al., 2018).

The indigenous Maya people practiced extensively rather than intensive agroforestry by hunting and gathering in combination with *milpa* horticulture (Schneider et al., 2017) (a form of agroforestry with high cultural significance) (Pool et al., 2007). *Milpa* is a rotational farming system that involves the cultivation of multiple annual crops, including maize, beans, squash, and chilli peppers in a single plot and can also include the integration of fruit trees into a fallow forest, beekeeping, and maintenance of forest corridors for hunting, wood, and conservation of native species (Varns et al., 2028). The cultivation of these annual crops is complemented by a series of managed and enriched intermediate stages of short-term perennial shrubs and trees, culminating in the re-establishment of mature closed forest on the once-cultivated plot (Meso-American Research Center, 2010; FAO, 2022).

The establishment of tree species like mahogany, cedar, or *ramón* alongside food crops, provides shade, improves soil fertility, and diversifies income sources through the sale of timber and/or

non-timber forest products. Increasingly lucrative beef and timber markets and the resultant deforestation pressures in the 20th and 21st centuries have threatened the viability of the *milpa* cultural landscape and tropical ecosystem, which would be more resilient to fires, storms, and soil degradation than the current land use system (Schneider et al., 2017).

More recently, alongside *milpa*, home gardens are still prevalent in the region. Home gardens are small-scale agricultural systems that incorporate diverse plant species, including fruit trees, vegetables, medicinal plants, and herbs. In this context, home gardens are socio-ecological agricultural production systems that involve diversified management of plants and animals for subsistence farming. Home gardens supply farmers with essential goods such as food, medicinal herbs, and timber, as well as occasional income from selling home garden products. The home gardens' contribution to the farmers' livelihoods is critical for marginalized communities. Communities in the YP lowlands maintain a high diversity of plant species in their home gardens within a complex vertical and horizontal structure that mimics the natural ecosystem and often contains 300 to 500 species of plants and animals, where farmers combine practices for soil management, nutrient conservation, and water and crop protection (Neulinger et al., 2013).

Agricultural and agro-forestry livelihood activities hinge on the prevailing land tenure. Five distinct land tenure arrangements are recognized in the YP: i) the home garden, or *solar*, is private land and produce can be sold without constraint; ii) the *milpa* is *ejido* land, primarily for maize cultivation (For which there is a government subsidy of about ~USD 650 per hectare per year), *milpa* is effectively private land; iii) *caña* (or *cañada*) is *milpa* but only after one year of cultivation and is, therefore, less productive (it attracts a slightly lower per hectare government subsidy of ~USD 550 per hectare per year); iv) *parcela*, where communities set aside private land for agroforestry; and v) communal forest land, where fuelwood, timber and non-timber forest products (NTFPs) can be collected for private use but the community assembly must agree to the commercial use of any forest products (Pool et al., 2007). In this regard, compliance with regulations for the commercial use of forest products poses a challenge as it requires an effective governance structure and mechanisms to ensure that community decisions are respected.

Regarding non-timber forest products, the Yucatán Peninsula (YP) has 20 native palm species belonging to 13 genera and three subfamilies. All of these are economically exploited in construction (85%) and honey production (70%), followed by food and medicinal use (35% each), handicrafts (30%), ornamental use (25%), and forage (10%). These data confirm that native palms are an important livelihood for the inhabitants of the Mayan communities in the region, as they represent an additional source of income (Noguera-Savelli & Cetzal-Ix, 2021).

In addition to palms, other non-timber resources such as plant fibers, waxes, and gums are also used in artisanal production. The use of these resources has deep cultural and economic roots, and it is common to see crafts made from plant fibers, especially in local markets and fairs, where these products represent both a livelihood and a cultural heritage (Suárez, 2023).

BEEKEEPING

Nationally, beekeeping is practiced by more than 40,000 producers in Mexico, who have around two million hives in apiaries distributed in the country's five beekeeping regions: the North, Centre and Altiplano, Pacific, Gulf, and the YP. The average annual demand per apiary is approximately US\$125,000 of labor in its primary production phase, representing an important source of jobs and income from salary payments in rural areas (Pool et al., 2007).

Beekeeping, also known as apiculture, has been and remains an important activity in Mexico and especially the YP, dating back to the indigenous Mayan civilization. The use of honey in the Mayan culture extended to medicine, where remedies for ear-, eye-, and throat-related illnesses were treated using honey and honey by-products (Echazarreta et al., 1997).

The YP is the apicultural heartland of Mexico as the region's diverse ecosystems, including tropical forests, savannas, and agricultural areas, provide an ideal environment for beekeeping and support a variety of bee species. The YP's bees have access to a variety of flowering plants, including tropical fruit trees, wildflowers, and *Melipona beecheii*'s –commonly known as stingless bees– preferred food source, the *nance* tree (*Byrsonima spp.*), contributing to the distinct flavors and characteristics of the region's honey. Beekeeping not only supports community livelihoods but also provides important ecosystem services. Bees are key pollinators that facilitate the reproduction of many plant species, including agricultural crops and wild plants. Their pollination services support biodiversity and enhance agricultural productivity.

There are over 130 species of native bees in the YP, however, only a few are social and can be kept in traditional log hives. Amongst the most important of these is *Melipona beecheii* which build blister-like sacks of honey, and comb inside hollow trunks, which can be cut from the tree and sealed at either end with a wooden disc and mud, to be kept domestically. These traditional log hives are placed in natural settings, allowing bees to forage in the surrounding areas and collect nectar from a wide range of floral sources. Managed hives, including Langstroth and top-bar hives, are also used for European honeybees. While relatively small quantities of honey are harvested in this way (around 0.25-1 litre per colony per year) (Echazarreta et al., 1997).

The YP region is nationally significant since it contributes ~95% of Mexico's honey exports, while accounting for only 30 to 35% of the total number of Mexican bee colonies. Beekeepers in the YP are socioeconomically stratified with two main groups emergent: i) one that represents 95% of the producers and is made up of low-income peasants (mostly indigenous) who own 80% of the apiaries; and ii) the second group comprised of medium-sized beekeepers and fully integrated businessmen, who have modern technology and market honey products as their main economic activity (Martínez-Puc et al., 2018).

During the period 2003-2020, the entities with the highest honey production were Yucatan and Campeche (SAGARPA, 2018). In Campeche, 6,810 beekeepers are registered, 3,520 in Quintana Roo and 10,500 in Yucatan.

This order of magnitude is reflected in the organizational and marketing sense. In Yucatan there are 80 associations (first place nationally), in Campeche 56 associations (third place nationally) and in Quintana Roo 20 (SADER, 2023). In the YP there are eight cooperative societies with the largest number of members: Miel y Cera de Campeche and Mielera de Champotón (Campeche), with 3,000 producers; the Cooperative Sociedad de Solidaridad Social Apícola Maya (Yucatan) with more than 4,000 members, and 5 cooperatives with a total of 2,000 members in Quintana Roo. There are also Social Solidarity groups, Women Beekeepers Group, Solidarity Groups with the National Institute of Indigenous Peoples (INPI) and independent beekeepers (SADER, 2023).

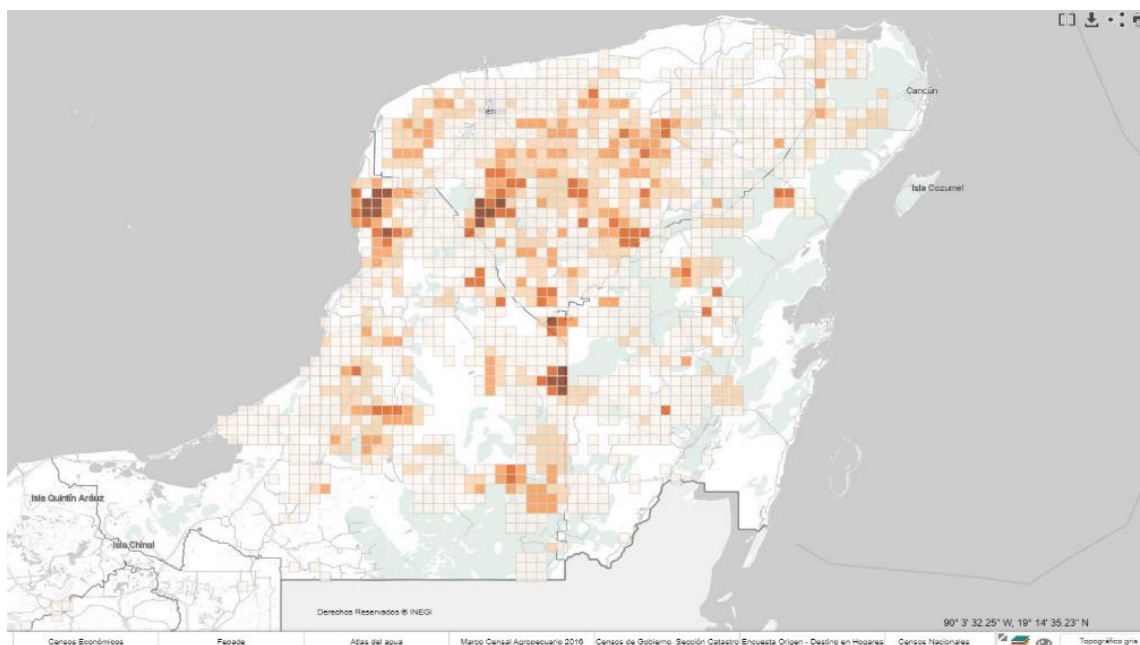


Figure 12 Hive distribution map. Source: INEGI, 2016.

In the municipalities within the project intervention zone, apicultural production is notable in the capital of Campeche, Calkiní, and Champotón, all in this state. Tizimin in Yucatán and Felipe Carrillo Puerto and José María Morelos in Quintana Roo also stand out, benefiting from favorable conditions for this activity such as the warm climate and abundant flora suitable for bee feeding (Figure 26). Honey production in these municipalities not only contributes to the local economy but also supports the conservation of the region's natural ecosystems (INEGI, DENUE, 2023).

Despite their critical role, bees face numerous challenges in the YP. Habitat loss due to urbanization, agricultural practices, and deforestation threatens their natural habitats. Pesticides and insecticides used in farming can harm bees and disrupt their behavior. Climate change, with its unpredictable weather patterns, can impact the availability of nectar and disrupt the

synchronization between plants and their pollinators (see section III.6. Adaptation options and expected impacts for climate-related challenges of beekeeping).

FISHING

The waters of the YP, are characterized by the presence of a high biological diversity of fish species, including commercially important species such as snapper, grouper, tarpon, snook, and many others. Mangroves, lagoons, and estuaries are particularly important habitats for subsistence fishing in the region, especially in the northern coastal parts of the region which are characterized by the presence of marshland and flood lands, especially during the rainy season from June to October. These areas provide nursery grounds for many fish species and support the overall health of the marine ecosystem. Like beekeeping, agriculture and agroforestry, subsistence fishing in the YP is deeply rooted in the cultural heritage of the region. Fish were undoubtedly important for the region's ancient coastal societies, with fish remains consistently found in excavations of several pre-Hispanic Maya settlements, where fishing was a local subsistence activity that helped to meet the dietary needs of the ancient villagers (Jiménez Cano and Sosa, 2015).

Campeche has an old fisheries tradition with 3,904 boats, of these 96.89% constitute the artisanal fleet with about 12,100 formal and informal fishers. In the coastal zone, there are eight primary fishery sites: Isla Arenas, Campeche, Lerma, Seybaplaya, Champoton, Sabancuy, Isla Aguada, and Ciudad del Carmen, reporting 7,428 formal fishers in 2015, with a total catch of 55,664 tons that year. At the national level, Campeche's fisheries are eighth by volume and value and represent 2.73% of the national production. Yucatan's fisheries tradition is more recent, dating from the mid-1940s. The state has a semi-industrial fleet with 549 ships or boats and an artisanal fleet with 4,654 boats, 14,955 formal fishers and about 50% more informal fishers. Yucatan's fisheries are in 13th place by volume and sixth by economic value on the national level, with 48,213 tons per year representing 2.24% of national production (Pedroza-Gutiérrez et al., 2021).

Regarding economically important species, Mexico has the third-largest octopus fishery in the world. The octopus fishery yields between 9 000 and 21 700 metric tons per year in the YP alone, making it arguably the most economically important marine livelihood activity in the region, particularly from a commercial perspective. The fishery consists of two primary species, the Maya octopus (*Octopus maya*) and the common octopus (*Octopus vulgaris*). The non-migratory Maya octopus (**Error! Reference source not found.**) lives exclusively on the seafloor off the coastal states of Yucatan, Quintana Roo, and Campeche, so all Maya octopus sold in the world comes from this fishery (Porterfield et al., 2022). In 2018, Mexico exported more than 11,700 metric tons of octopus, worth US\$94 million.

Around 90% of the fishers in the states of Yucatan and Campeche —about 15,000 in total— fish for Maya octopus (Porterfield et al., 2022). Fishers in Quintana Roo also target the Maya octopus, though to a lesser extent than in Yucatan and Campeche. A total of 3,225 small-scale vessels and 344 large vessels are permitted to fish for octopus in these three states. Underpinning the fishery

are infrastructural investments in warehouses, ice factories, and dedicated octopus processing facilities that provide employment beyond fishing. In addition to bringing in revenue, the Maya octopus is also a highly valued food for locals.

To a lesser extent, inland fishing is also practiced in the YP. Inland fishing is artisanal and subsistence in nature with handlines being the main gear utilized, primarily through barefoot fishing along the shores of limestone-based water bodies, or with the aid of rafts and canoes. In addition to the subsistence benefits of inland fishing, this activity also plays an important cultural and recreational role as part of social reciprocity networks in communally owned land (*ejidos*), beliefs that reflect the close relationship between these communities and the natural environment. Much like many coastal regions around the world, subsistence fishing in the YP faces challenges and pressures. The rapid growth of tourism and commercial fishing, as well as environmental issues such as overfishing and habitat degradation, have had an impact on marine resources and ecosystems. These factors can affect the availability of fish and disrupt the delicate balance of the local ecosystem, potentially threatening the livelihoods of subsistence fishermen (Arce-Ibarra, and Charles, 2008).

In 2020, fishery and aquaculture production in Campeche reached 44,655 tons, with octopus, shrimp and snook being the main products, representing 2.6% of the national volume. The municipality of Carmen is the main producer. Despite the importance of the sector, only 9% of the people employed in the primary sector work in fishing and aquaculture, which is equivalent to approximately 7,910 people.

Most fishing is artisanal, except for species like shrimp, lobster, and demersal fish, which are caught by both fleets. In the three states, several fisheries are at the level of maximum sustainable use (Salas, S., Núñez, et al, 2022). The table 13 below summarizes the status of the resources supporting the main fisheries in the Yucatán Peninsula. In this table, red color means that means that most of the resources exploited by fishermen in the area are in deterioration. Yellow means that the resources are at their maximum sustainable level and green means that the exploitation of the resources is healthy:

Table 14 Status of the resources that support the main fisheries in the states of the Yucatan Peninsula

Resource	Target Species	State of the fishery	%Capture by State
Octopus Gulf of Mexico and Caribbean Sea	<i>Octopus maya</i> <i>O. vulgaris</i> ²	Deteriorating Development power	Campeche 29.6%. Quintana Roo 1.1%. Yucatan 68.9%.
Snails Gulf of Mexico and Caribbean Sea	<i>Lobatus gigas</i> <i>Turbinella angulata</i> ³ <i>Sinistrofulgur perversum</i> <i>Triplofusus giganteus</i> <i>Lobatus costatus</i> <i>Strombus pugilis</i> <i>Melongena melongena</i>	Deteriorating Maximum sustainable use. Deteriorating	Campeche 94.28%. Quintana Roo 2.30%. Yucatan 1.06%.

² Recently identified as *O. americanus* (Avendaño et al., 2021).

³ National Fishing Charter 2018 (DOF,2028)

	<i>Melongena corona bispinosa</i> <i>Fasciolaria tulipa</i>	Deteriorating	
Robalo and Chukumite Gulf of Mexico	<i>Centropomus undecimalis</i> C. <i>poeyi</i> <i>C. parallelus</i>	Making the most of sustainable. Overexploited in Campeche	Campeche 29.9%. Quintana Roo 1.4% Yucatan 1.6%.
Crab Gulf of Mexico	<i>Callinectes sapidus</i> <i>C. rathbunae</i> <i>C. bocourti</i> <i>C. similis</i> <i>C. ornatus</i>	Maximized to sustainable use	Campeche 27.1%. Yucatan 0.8%
Horse mackerel ³ and cojinuda ⁴ Gulf of Mexico and Caribbean Sea	<i>Caranx latus</i> <i>C. hippos</i> <i>C. crysos</i>	Healthy- Levels close to maximum sustainable yield	Campeche 29.2%. ³ , 6.9% Error! Bookmark not defined. ⁴ Yucatán 3.5% ³ , 1% Error! Bookmark not defined.
Stripes Gulf of Mexico	<i>Hypanus americanus</i> <i>Actobatus narinari</i> <i>Rhinoptera bonasus</i> <i>Cymnura micrura</i> <i>Pseudobatos lentiginosus</i> <i>Styracura schmardae</i> <i>Bathytoshia centroura</i>	Maximized to sustainable use	Campeche 32.6%. ³ ; 6.9% ⁴ Quintana Roo 0.2% 0.2% ² ³ ; 1.9% ⁴ Yucatán 1%. ³ ; 6% ⁴
Sierra and Peto Gulf of Mexico	<i>Scomberomorus regalis</i> <i>S. maculatus</i> <i>S. cavalla</i>	Maximized to sustainable use	Campeche 35.8%. Quintana Roo 0.1%. Yucatan 1.0%
Red snapper and snappers Gulf of Mexico and Caribbean Sea	<i>Epinephelus morio</i> <i>Mycteroperca bonaci</i>	Fully exploited sustainable with signs of overexploitation in some federal zones (west, central and northern Yucatan).	Campeche 7.7%. Quintana Roo 6.6%. Yucatan 75.8%.
Red snapper and snappers Gulf of Mexico and Caribbean Sea	<i>Epinephelus morio</i> <i>Mycteroperca bonaci</i>	Deteriorating	Campeche 18%. Quintana Roo 5.3% Yucatan 15.4%.
Sharks Gulf of Mexico and Caribbean Sea	<i>Rhizoprionodon terranova</i> <i>Sphyrna tiburo</i> <i>Carcharhinus limbatus</i> <i>C. acronotus</i> <i>S. lewini</i> <i>C. leucas</i> <i>C. falsiformis</i> <i>C. porosus</i> <i>C. brevipinna</i>	Maximized to sustainable use	Campeche 15.4% Quintana Roo 5.3% Yucatan 11.8%
Lobster Gulf of Mexico and Caribbean Sea	<i>Panulirus argus</i> <i>Panulirus guttatus</i>	Fully exploited sustainable with signs of overexploitation in some focal zones (west, central and northern Yucatan).	Quintana Roo 46.1%. Yucatan 53.9%.
Sea cucumber from the Yucatan Peninsula	<i>Isostichopus badionotus</i> <i>Astichopus multifidus</i> <i>Holoturia floridana</i> <i>H. mexicana</i>	Overexploited	Campeche 6% Quintana Roo 0.1% Yucatan 93.6%
Red shrimp and rock shrimp Gulf of Mexico and Caribbean Sea	<i>Farfantepenaeus</i> <i>Brasiliensis</i> <i>Sicyonia brevirostris</i>	Deteriorating	Quintana Roo Red shrimp 81% Rock shrimp 19%.

⁴ National Fishing Charter 2012 (DOF,2021) and National Fishing Charter 2022 (DOF, 2022)

Pink shrimp Gulf of Mexico	<i>Farfantepenaeus</i>	Deteriorating	Campeche 64.9%.
Marine catfish Gulf of Mexico	<i>Catfish marinus</i> <i>Ariopsis felis</i>	Overexploited and at risk of deterioration	Campeche 49.6%. Yucatan 16.5%.

Currently 85% of the Aquaculture Production Units in Campeche are at the rural aquaculture level, and most of them are located in the most marginalized areas of the state. This reflects the importance of fishing and aquaculture for coastal communities in Campeche, since it is a source of employment and economic development for marginalized areas.

TOURISM

The YP is renowned for its cultural and historical attractions – a tourist field survey undertaken in Quintana Roo by the World Bank in 2020 found that more than 80 percent of tourists were interested in visiting archaeological sites and carrying out activities related to them. The ancient Mayan ruins of Chichen Itza, Tulum, Uxmal, and many others attract visitors interested in exploring the region's rich archaeological heritage. The colonial cities of Merida and Campeche offer well-preserved architecture, vibrant markets, and traditional festivals that provide insights into the region's colonial history and indigenous cultures.

In quantitative terms, tourism represents 8.7% of the national gross domestic product (GDP) mainly through the use of coastal areas where almost half of Mexico's population lives. The tourist sector is critically important for livelihoods in the YP, representing 10.1% of the state's GDP, while 13.4% of the economically active population of the state and 10.5% of its companies are engaged in tourism. Campeche's reliance on tourism mirrors the national ratio and provides 8.7% of the state's GDP (Neulinger et al., 2013).

There is a growing emphasis on sustainable and community-based tourism in the YP. Initiatives focus on promoting responsible tourism practices, supporting local communities, and preserving the region's natural and cultural heritage. A priority challenge for the YP's coastal areas is the lack of sustainability of the tourism model that has driven economic growth, particularly in Quintana Roo. This represents an important case of an economy whose development has been led by the expansion of the tourist industry organized around the traditional model of the tourist enclave and beach resort concentration. Deteriorating environmental conditions and changing international trends combined with climate change threats have made this tradition obsolete as a model of industrial organization, and increasingly unreliable as an engine of sustainable development. Moreover, the model has excluded local populations, particularly indigenous households, from its economic benefits. Encouraging the indigenous community's involvement in the various segments of the tourism value chain, including agriculture, transportation, lodging, and tourism operations is seen as a critical measure to improve the sustainability of the tourism sector (The World Bank Group, 2020).

Tourism can be a valuable source of economic growth and cultural exchange, but it can also negatively impact local communities and the environment. In response to this, many communities in the YP have turned to community-based tourism as a way to promote sustainable development and

preserve their cultural and natural resources. Community-based tourism faces several challenges in the YP including a lack of resources and training for community members to effectively manage and promote their tourism products. In addition, community-based tourism often competes with larger, more established tourism businesses that have greater resources and can offer lower prices (Jouault et al, 2022).

Community-based tourism in the YP has provided new opportunities for women's participation and leadership in local communities. Through community-based tourism projects, women can actively participate in the planning, management, and promotion of tourism in their area, which in turn can generate economic and social benefits for them and their families (Sánchez et al, 2018; Casais et al. 2015). (see section III.6. Adaptation options and expected impacts for climate-related challenges of tourism).

3. Screening, categorization and analysis of result

3.1. Environmental and Social Assessment

The Mexican Fund for the Conservation of Nature (FMCN) has its Environmental, Social, and Gender Safeguards (ESGS), described in its Operation Manual (OM), assessed by GCF in the upgrade and confirmed October 17, 2024, the guidelines are aligned to the Performance Standards of the GFC, consistent to the legal and regulatory framework in the country, and congruent with the IFC, the World Bank (WB), and the Inter-American Development Bank (IDB) standards (Table 1). All programs and projects financed by the FMCN are screened according to these ESGS.

Table 15 . FMCN ESGS and their GCF, IFC, WB, and IDB equivalents by issue.

Environmental and Social Safeguards (SAS) of FMCN	International Finance Corporation (IFC) Environmental and Social Performance Standards (PS)	Green Climate Fund (GCF) Environmental and Social Safeguards (ESS)	World Bank (WB) Environmental and Social Standards (EAS)	Inter-American Development Bank (IDB) Environmental and Social Performance Standards (NDAS)
SAS1 – Assessment and management of environmental and social risks and impacts	PS1 - Assessment and management of environmental and social risks and impacts	ESS1 – Assessment and management	EAS1 - Assessment and management of environmental and social risks and impacts	NDAS1 - Assessment and management of environmental and social risks and impacts
SAS2 – Labor and working conditions	PS2 - Labor and working conditions	ESS2 - Labor and working conditions	EAS2 - Labor and working conditions	NDAS2 - Labor and working conditions
SAS3 -Resource efficiency and pollution control and prevention	PS3 - Resource efficiency and pollution prevention	ESS3 - Resource efficiency and pollution prevention	EAS 3 - Resource efficiency and pollution prevention and management	NDAS3 - Resource efficiency and pollution prevention

Environmental and Social Safeguards (SAS) of FMCN	International Finance Corporation (IFC) Environmental and Social Performance Standards (PS)	Green Climate Fund (GCF) Environmental and Social Safeguards (ESS)	World Bank (WB) Environmental and Social Standards (EAS)	Inter-American Development Bank (IDB) Environmental and Social Performance Standards (NDAS)
SAS4 – Community health and safety	PS4 - Community health, safety and security	ESS4- Community health, safety and protection	EAS 4 - Community health and safety	NDAS4 - Community health and safety
SAS5 – Involuntary resettlement	PS5 – Land acquisition and involuntary resettlement	ESS5 - Land acquisition, land use restrictions and involuntary resettlement	EAS5 - Land acquisition, land use restrictions and involuntary resettlement	NDAS5 - Land acquisition and involuntary resettlement
SAS6 – Biodiversity conservation and sustainable management of natural resources	PS6 – Biodiversity conservation and sustainable management of living natural resources	ESS6 - Biodiversity conservation and sustainable management of living natural resources	EAS6 - Biodiversity conservation and sustainable management of living natural resources	NDAS6 - Biodiversity conservation and sustainable management of living natural resources
SAS7 – Indigenous peoples	PS7 - Indigenous peoples	ESS7 - Indigenous peoples	EAS 7 - Indigenous peoples/Sub-Saharan African historically underserved traditional local communities	NADS7 - Indigenous peoples
SAS8 – Cultural heritage	PS8 - Cultural heritage	ESS8 - Cultural heritage	EAS8 - Cultural heritage	NDAS8 - Cultural heritage
SAS9 – Gender	Transversal	Transversal	Transversal	NDAS9 – Gender equality
SAS10 – Climate change	Transversal	Transversal	Transversal	Transversal
-	-	ESS10 – Financial intermediaries	EAS 9 – Financial Intermediaries	-
Transversal	Transversal	ESS9 – Stakeholder engagement and information disclosure	EAS 10 - Stakeholder engagement and information disclosure	NDAS10 - Stakeholder engagement and information disclosure

FMCN E&S Policy states its exclusion list, establishing that the following activities will not be supported or financed:

- Manufacture, purchase, or trade of any product or activity considered illegal according to Mexican laws or regulations and international conventions and agreements ratified by the country.
- Manufacture, purchase, or trade-in ozone-depleting substances, polychlorinated biphenyl (PCB) compounds, hazardous chemicals, fertilizers, herbicides, pesticides, persistent organic pollutants (POPs) listed in the Stockholm Convention, substances classified by the

World Health Organization as extremely hazardous and very hazardous, unbound asbestos fibers, and wildlife and wildlife products regulated by the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

- Pesticides will not be purchased with project funds. In the event that the use of pesticides is indispensable, all provisions set forth by national laws, regulations, and official Mexican standards (NOM), as well as the international agreements signed by Mexico regarding the use of pesticides, must be strictly followed.
- Manufacture, purchase, or trade-in arms, ammunition, explosives, or other military goods or technologies.
- Manufacture, purchase, or trade of narcotics and tobacco.
- Land acquisition.
- Activities within protected areas (PAs) that are not included in their management programs and, for those PAs that do not have a management program, all activities considered within this exclusion list.
- Activities that promote the change of land use, deforestation, or degradation in critical habitats or that put ecosystem services at risk.
- Infrastructure that may promote conversion, deforestation, degradation, or any other alteration of critical habitats.
- Mining and oil or gas exploration and development projects.
- The use of Genetically Modified Organisms (GMOs) and invasive alien species without technical studies and corresponding authorizations.
- The use of living organisms generated by artificial cloning.
- Manufacture or trade in timber or other forest products that do not come from sustainably managed forests.
- Marine fishing activities with nets over 2.5 km in length and activities that contravene the provisions on priority marine species subject to protection and conservation following the current National Fisheries Charter.
- Activities that may violate human rights.
- Activities involving forced labor and/or harmful child labor.
- Activities that generate involuntary resettlement, especially of indigenous or Afro-Mexican groups.
- Activities that affect the rights of indigenous peoples or local communities, especially land ownership, without the proper Free, Prior, and Informed Consultation (FPIC) process.
- Activities affecting cultural heritage.
- Activities that affect people's assets or generate restrictions on access to natural resources.
- Activities carried out on land under litigation, dispute, or on ejido and/or communal lands that do not have the written approval of the assembly.
- Activities affecting international waters or shared waters.
- The use of resources to support proselytizing or electoral campaigns, as well as betting, gambling, casinos, and equivalent companies.

During the process of designing and developing the ACCIÓN proposal, and the previous section, FMCN's staff screened for the environmental and social risks/impacts based on the available

information and using an Environmental and Social Screening Checklist (ESSC). This ESSC intends to guide the staff in classifying the project as either Low, Moderate, or High risk based on the ESGs. Table 15 presents the ESSC for ACCIÓN, which was classified as low risk, since it has no or minimal potential negative environmental and/or social impacts, either upstream or downstream.

Table 16. Project Environmental and FMCN's Social Screening Checklist.

Would the project,	Not Applicable	No	Yes	Unknown
1. Environmental and social assessment and management.				
1.1 Conserve, protect and enhance natural resources?			X	
1.2 Improve efficiency in the use of resources?			X	
1.3 Protect and improve rural livelihoods and social well-being?			X	
1.4 Respect access and benefit-sharing measures in force?			X	
1.5 Exclude any potentially affected stakeholders, in particular vulnerable groups, from fully participating in decisions that may affect them?		X		
1.6 Safeguard the relationships between biological and cultural diversity?			X	
2. Biodiversity and natural resources (habitat, forests, natural resource management, ecosystem services).				
2.1 Include practices that could have a negative impact on biodiversity, ecosystems, ecosystem services, or result in the conversion or degradation of natural habitat or critical habitat?		X		
2.2 Involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods?		X		
2.3 Pose risks of introducing invasive alien species or genetically modified organisms that may have an adverse effect on biodiversity?		X		
2.4 Involve the production or harvesting of livestock, aquatic species, natural forests, plantation development, or reforestation?			X	
2.5 Is within or adjacent to critical habitats and/or environmentally sensitive areas, including protected areas?			X	
3. Pollution control and prevention (chemicals management, pest control, environmental health).				
3.1 Result in the release of pollutants to the environment with the potential for adverse local, regional, or transboundary impacts?		X		
3.2 Result in the generation of waste that cannot be recovered, reused, or disposed of in an environmentally and socially sound manner (hazardous and non-hazardous)?		X		

3.3. Involve the procurement, provision, application, or disposal of pesticides that have a known negative effect on the environment or human health?		X		
3.4 Include activities that require significant consumption of raw materials, energy, or water?		X		
4. Climate change.				
4.1 Involve activities to reduce greenhouse gas emissions?			X	
4.2 Include measures to build resilience or decrease vulnerability to climate change of people, communities and ecosystems now or in the future?			X	
4.3 Avoid health risks to contagious diseases or transmission for project workers or communities in the project area?			X	
5. Land acquisition and land tenure, compensation, and resettlements.				
5.1 Affect the legitimate tenure rights of individuals, community-based property rights/customary rights to land, territories and /or resources?		X		
5.2 Involve the physical and economic displacement of people (e.g. loss of assets or access to resources due to land acquisition or access restrictions)?		X		
6. Indigenous Peoples.				
6.1 Are there any indigenous peoples present in the project area?			X	
6.2 Are project activities likely to have adverse effects on indigenous peoples' rights, lands, natural resources, territories, livelihoods, knowledge, social fabric, traditions, cultural heritage, or governance systems?		X		
6.3 Are indigenous communities outside the project area likely to be affected by the project?		X		
7. Gender.				
7.1 Potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?		X		
7.2 Promote women's and men's equitable access to and control over productive resources and services?			X	
7.3 Foster their equal participation in institutions and decision-making processes?			X	
8. Physical cultural resources and cultural heritage.				
8.1 Are project activities likely to have adverse effects on culture or heritage (tangible and intangible)?		X		
8.2 Constrain access to cultural sites for the communities?		X		

Risk category	Low
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Additionally, FMCN's staff conducted a screening for environmental and social risks and impacts using the GCF's Environmental and Social screening form, which is attached to this ESAP, signed by the responsible staff (*Annex Form 3 GCF Environmental and Social Assessment Checklist*). The same system used successfully in RÍOS SAP 023 will be applied, providing a standardized approach for managing risks across projects.

ACCIÓN is considered by the GCF as Category C or minimum to no risk, because the project will have a positive impact on ecosystems, biodiversity, and the beneficiaries' livelihoods. Potential adverse environmental and social impacts will be small-scale, minimal, reversible, and readily addressed through mitigation measures. Following FMCN ESS, during implementation, the activities will be screened using FMCN formats included in FMCN operations manual, and reflected in the ESAP checklist below. In those that are the activities are categorized as having moderate to high risks (category A and B), they will be excluded from project financing.

The Environmental and Social Screening Process triggered standards due to the project's potential impacts and commitments, and to ensure a maximization of positive effects. These standards are:

1. Assessment and management of environmental and social risks and impacts
2. Labor and working conditions.
3. Efficiency in the use of resources and pollution control and prevention
4. Community health and safety
6. Conservation of biodiversity and sustainable management of natural resources
7. Indigenous peoples
8. Cultural heritage
9. Gender
10. Climate change

To more effectively address specific environmental and social standards, the project developed several targeted action plans, each linked to a corresponding standard. These include the Environmental and Social Action Plan (Standard 1: Assessment and Management of Environmental and Social Risks and Impacts), the Indigenous Peoples Plan (Standard 7: Indigenous Peoples), the Gender Action Plan (Standard 9: Gender), and the Stakeholder Engagement Plan to ensure active and inclusive participation throughout the project.

Additionally, the project includes three essential procedures and guidelines to effectively manage specific risks: the Integrated Waste and Hazardous Substances Management Guideline, the

Integrated Pest and Vector Management Procedure Guide (addressing Standard 3: Efficiency in the Use of Resources and Pollution Control and Prevention), and the Cultural Heritage Protection Procedure (aligned with Standard 8: Cultural Heritage).

For other standards, such as Labor and Working Conditions (Standard 2), Community Health and Safety (Standard 4), Conservation of Biodiversity and Sustainable Management of Natural Resources (Standard 6), and Climate Change (Standard 10), specific mitigation measures have been integrated into the project design to address related risks effectively.

4. Environmental and social action plans

The social and environmental assessment of ACCIÓN aims to evaluate the potential impacts of project activities on local communities, ecosystems, and biodiversity, and highlights the urgency of implementing EbA (Ecosystem-based Adaptation) measures to reduce the direct impacts of climate change that local livelihoods are experiencing due to the lack of tools, capital, and sustainable economic opportunities for local communities. ACCIÓN is considered a category C risk project. This classification indicates that the project poses minimal or no adverse social or environmental impacts, meaning any impacts would be small-scale, reversible, and manageable through appropriate mitigation measures and best practices. To ensure favorable environmental and social outcomes, ACCIÓN will exclude activities related to, resettlement, use of agrochemicals, or invasive species, and will have no adverse impact on indigenous populations, women, or other vulnerable groups.

To ensure favorable environmental and social outcomes, ACCIÓN will not involve any infrastructure or construction with potential environmental impacts. Only minimal civil works will be financed, such as signs marking the boundaries of the protected area, ecotourism paths to guide visitors, and maintenance of existing facilities. All these activities will be thoroughly screened and supervised to ensure they have no or minimal impact (Category C). Therefore, they require no major infrastructure like deep excavations, paving, or bridge construction. Being unpaved and experiencing minimal traffic, they avoid significant runoff and erosion issues, thus having minimal impact on soil and water quality. All activities in Protected Areas (PAs) adhere to the Regulations of the General Law on Ecological Balance and Environmental Protection regarding PAs, the PA's decree and/or management program, recommendations from the National Council of Protected Areas and the Advisory Council, and other relevant legal requirements. There will be no restrictions imposed on the access of fishermen or local communities to marine protected areas by the project. There is also no expectation to establish or expand Protected Areas (PAs); all the PAs supported under Component 2 are already decreed. The activity exclusion list supported by FMCN states that proposals will be automatically dismissed if they involve:

- Activities that generate involuntary resettlement, especially of Indigenous or Afro-Mexican peoples, and in project areas that affect their cultural heritage;
- Activities that may impact people's assets or lead to involuntary restrictions on access to natural resources.

Others, as stated in the exclusion list in this document Section 3. It is also important to emphasize that ACCIÓN will not have adverse impacts on women, Indigenous peoples, or other vulnerable groups present in the area of influence. Additionally, it will not promote the creation or expansion of Protected Natural Areas (ANP), but will take place in those that already exist by presidential decree or valid certification issued by the National Commission of Protected Natural Areas (CONANP). The ANPs included in the project already have technical studies that serve as planning, programming, and evaluation tools for strategies and action lines aimed at strengthening community processes for sustainable development in the

localities located within them and in their Zones of Influence. This means that, unlike protected areas in other countries, the system of protected areas in Mexico does not affect land tenure and allows for productive activities, as long as they are sustainable and do not impact unique habitats within the protection polygons defined in the Decrees and Management Programs, so ACCIÓN will not impose new restrictions on resource use or support activities that do not align with what is already established for these territories.

Based on the information provided, and in alignment with legal, ethical, and sustainability principles, it has been determined that the project operation will trigger the following of FMCN's Environmental and Social Safeguards:

1. Assessment and management of environmental and social risks and impacts
2. Labor and working conditions.
3. Efficiency in the use of resources and pollution control and prevention
4. Community health and safety
6. Conservation of biodiversity and sustainable management of natural resources
7. Indigenous peoples
8. Cultural heritage
9. Gender
10. Climate change

Similarly, to more effectively address specific environmental and social standards, the following action plans were developed: the Environmental and Social Action Plan, Indigenous Peoples Plan, Gender Action Plan, and Stakeholder Engagement Plan. Additionally, the project includes the following three procedures and guidelines: i) Integrated Waste and Hazardous Substances Management Guideline ii) Guide to Integrated Pest and Vector Management Procedure Plan iii) Protect Cultural Heritage procedure.

All of these plans and procedures are aligned with the risks and mitigation measures outlined below. These assessments, plans, guides and procedures, together with this environmental and social action plan, serve as a general framework to manage potential social and environmental risks. However, FMCN's Environmental and Social (ESS) Management System, includes an integral framework to apply its safeguards system also at sub-project and Annual Working Plan level (POA), as described in Appendix 1. This cascade effects, allow integrating tailored-made management risk measures at all levels. This ESS has been recently approved by GCF, as noted in the upgrade notification, dated October 2024, as is currently applied in RIOS 023 project. Therefore, the mitigation measures included in this action plan and related documents, serve only as a guide to be included directly in sub-projects and POAs annual plans, when relevant.

Summary of risks	Mitigation measures	Risk significance	Responsible Party/Person	Timeline	Expected results	Cost/Budget USD
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1. Assessment and management of environmental and social risks and impacts						
Environmental and social issues and impacts are not appropriately addressed.	<ul style="list-style-type: none"> A specialized environmental and social team will be running the project, as well as observing and managing the potential risks arising during operation, including reporting to the Coordination Committee (CC) and the Green Climate Fund (GCF) on ESAP implementation and performance. Sufficient training to project-contracted personnel, CONANP, Sureste Sostenible, and beneficiaries on how to comply with the environmental and social safeguards will be provided. The environmental and social risk management processes and procedures to be followed during project implementation will be aligned to those developed by other relevant current and future projects. Specifically, the same system used successfully in RÍOS SAP 023 will be applied, providing a standardized 	Low	FMCN and Sureste Sostenible	Immediate implementation and throughout the lifetime of ACCIÓN	All environmental and social issues and impacts are appropriately addressed.	\$450,000

	<p>approach for managing risks across projects.</p> <ul style="list-style-type: none"> • A list of exclusion for activities that could involve the conversion or degradation of critical habitats will be included in sub-projects and POAs request for proposals. All received proposals will be initially reviewed and evaluated against this list and throughout the project's implementation. • Contracts with partners, sub-project's executors and consultant services will incorporate FMCN relevant internal policies and procedures, such as codes of conduct, complaint lines, among others, to minimize the project potential risks and impacts. • The Grievance Redress Mechanism (GRM), the Stakeholder Engagement Plan (SEP), the Gender Action Plan (GAP) and the Indigenous Peoples Plan (IPP) will be operational during the lifetime of ACCIÓN. 					
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2. Labor and working conditions

The Project and its activities will not negatively affect the health and safety of workers or will employ vulnerable populations, including children. All people working on the project, as well as all beneficiaries and Project partners, must comply with the Mexican Law and the social standards of FMCN, as well as international labor laws to receive resources from this Project. Mexican labor laws will be applied as they are generally more stringent, ensuring highest level of protection for all participants.

Inequitable opportunities and pay, poor working conditions, or lack of job security.	<ul style="list-style-type: none"> • An exclusion list (e.g., children labor, forced labor) will be included in the sub-project and POA call for proposals and followed throughout project implementation. • Ensure fair treatment, non-discrimination, and equal opportunities for project workers. • Ensure compliance with Federal Employment Law and uphold international labor rights. • Contracts with partners and sub-project's executors will incorporate FMCN relevant internal policies and procedures, such as codes of conduct, complaint lines, among others, to minimize the project potential risks and impacts. • Regular supervision to identify and address potential hazards promptly. This 	Low	FMCN and Sureste Sostenible	Immediate implementation and throughout the lifetime of ACCIÓN	Ensure the well-being of the workforce.	\$20,000
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	<p>includes, site assessments and ongoing monitoring of working conditions.</p> <ul style="list-style-type: none"> The Grievance Redress Mechanism (GRM) will be operational during the lifetime of ACCIÓN to receive and address workers' complaints. 					
Minor civil works, such as signage installation, maintenance of ecotourism paths, and upkeep of existing facilities, may pose minor OHS risks, including slips, trips, falls, and potential strain from manual labor.	<ul style="list-style-type: none"> Appropriate PPE, such as gloves, non-slip footwear, helmets, and masks, will be provided Supervision and inspections will ensure adherence to OHS protocols and prompt response to any concerns 	Low	FMCN and Sureste Sostenible	Immediate implementation and throughout the lifetime of ACCIÓN	Ensure the well-being of the workforce.	\$10,000
3. Efficiency in the use of resources and pollution control and prevention						
Use of agrochemicals during restoration and sustainable production activities, leading to harm and intoxication and impacts on ecosystem	<ul style="list-style-type: none"> The practices promoted through the sub-projects and the POA are designed to reduce pollutants, specifically by minimizing the use of synthetic pesticides and agrochemicals in local production systems. Consequently, the use of 	Low	<p>Sureste Sostenible will supervise the sub-projects.</p> <p>FMCN will supervise the POA</p>	Since the selection of sub-project proposals and throughout the lifetime of the sub-projects	Transition to the use of integrated pest management instead of agrochemicals.	\$30,000

health and biodiversity.	<p>project resources for purchasing agrochemicals is prohibited.</p> <ul style="list-style-type: none"> • Capacity building and increase awareness on integrated pest management and agrochemical-free practices (e.g. organic fertilizers, biocontrols) will be promoted. • In the event that the use of pesticides is indispensable and financed with other resources, all provisions established by national laws, regulations, and Official Mexican Standards (NOM), as well as the international agreements signed by Mexico regarding the use of pesticides, will be suggested to be strictly followed. • Implement at sub-project or POA level, the Waste and Hazardous Substances Management Guidelines and the Integrated Pest and Vector Management Guide which are based on the guides applied in the GEF-Funded CONECTA project. 		<p>implemented by CONANP.</p> <p>FMCN and the CC will be advising and monitoring.</p>			
4. Community health and safety						

The project acknowledges the general security issues in Mexico but confirms that they are not directly linked to project activities.						
Insufficient training in handling specialized equipment, restoration techniques, and sustainable production activities.	<ul style="list-style-type: none"> Comprehensive training will be provided, including practical experience and ongoing development of skills and capabilities to ensure the identification and management of risks or potential impacts on the health, safety, and protection of project personnel and communities. In case of cars and vessel, they will include all the required insurance and services to ensure their correct function. 	Low	<p>Sureste Sostenible will finance trainings and supervise the sub-projects.</p> <p>FMCN will supervise the POA implemented by CONANP.</p> <p>FMCN and the CC will be advising and monitoring</p>	Since the selection of sub-project proposals and throughout the lifetime of the sub-projects	Ensure the well-being of the communities.	\$50,000
Exposition to safety risks (e.g. wild fires, hurricanes, floods), gender-based violence, sexual exploitation, abuse, and harassment (SEAH) (see Gender Risks section below), , organized crime, among others.	<ul style="list-style-type: none"> Contracts with sub-project and POA executors will incorporate FMCN's relevant internal policies and procedures to prevent gender misconduct. The Gender Action Plan (GAP) will be operational during all the lifetime of ACCIÓN. Implement a Grievance Redress Mechanism throughout the project. 	Low	<p>Sureste Sostenible will supervise the sub-projects.</p> <p>FMCN will supervise the POA implemented by CONANP.</p> <p>FMCN and the TPC will be advising</p>	Throughout the lifetime of the sub-projects	Reduction of disease and accident risks.	\$25,000

	<ul style="list-style-type: none"> • Contracts will ensure the confidentiality of agreements and resources to protect stakeholders from potential security issues. • Receive and investigate complaints of gender-based violence, harassment, sexual harassment, abuse, or other issues related to project activities • Implement FMCN Policy on Protection from Sexual Exploitation, Abuse, and Harassment at project level. • 		and monitoring			
5. Land acquisition and land tenure, compensation, and resettlements.						
<p>ACCIÓN will exclude activities related to land acquisition and involuntary resettlement.</p> <p>The project will neither promote the resettlement of individuals or communities nor result in any physical or economic displacement related to the specified land-related transactions, Specifically:</p> <ul style="list-style-type: none"> • The project excludes any activities involving land acquisition or involuntary resettlement, ensuring there will be no acquisition of land rights through expropriation, compulsory procedures, or negotiated settlements that would otherwise lead to expropriation. • The project does not impose involuntary restrictions on land use or access to natural resources that would affect communities' access to traditional or recognizable usage rights. • No evictions of individuals without formal or traditional usage rights will occur, nor will there be a need for compensation related to non-land assets or the restoration of livelihoods. 						

- The project's approach is based on voluntary community collaboration within established Protected Areas (PAs) and emphasizes sustainable resource management practices.

Unlike in other countries, Mexico's PAs system does not affect land tenure and allows for sustainable productive activities, as long as they do not harm unique habitats within the protection zones established by Decrees and Management Programs. It is essential that the Grievance and Redress Mechanism (GCM) of ACCIÓN is accessible to all sectors of the population, particularly the most vulnerable. Additionally, the project will actively promote participatory processes throughout its entire cycle, ensuring the involvement of local actors at every stage of the sub-projects. There are no plans to create or expand new Protected Areas (PAs), as all PAs under Component 2 are already established.

In Mexico, land ownership within PAs is unique, with a significant portion being privately or communally owned, unlike in many other countries where the government owns the land. This diversity of ownership often leads to collaborative management efforts, ensuring that the project does not negatively impact local livelihoods or generate social risks. Instead, the project emphasizes voluntary community collaboration and sustainable resource management, rather than imposing restrictive or prohibitive measures. For voluntary private conservation areas, such as fisheries refuge zones, the project will ensure legal processes are followed to guarantee their voluntary designation. These voluntary areas are expected to have positive effects on watershed conservation and contribute to regional development and the well-being of local communities.

6. Biodiversity and natural resources (habitat, forests, natural resource management, ecosystem services)

Adverse impacts on species, habitats, ecosystems, and ecosystem services during project activities, through possible ecosystem conversion or degradation, hydrological changes, and introduction of invasive species.	<ul style="list-style-type: none"> • Within conservation, restoration, and sustainable production practices, only native species will be promoted for planting based on the approved sub-project and POA technical proposal. • Restoration activities must demonstrate their viability, meaning that they will restore or improve biodiversity as well as the composition, structure, and functions of the ecosystem. 	Low	<p>Sureste Sostenible will supervise the sub-projects.</p> <p>FMCN will supervise the POA implemented by CONANP.</p> <p>FMCN and the CC will be advising</p>	Since the selection of sub-project proposals and throughout the lifetime of the sub-projects	Biodiversity conservation and sustainable management of ecosystems.	\$150,000
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	<ul style="list-style-type: none"> • The selection of species will be based on the environmental and bio-geophysical conditions. • Appropriate plants for restoration activities will be fostered in existing nurseries and a seedling collecting and production strategy will be promoted. • Guidance on site-specific matching and the identification of suitable restoration activities, as well as related standards and procedures, will be provided. • Ensure that all sub-projects and POAs operate under all necessary regulations to carry out funded activities in accordance with the National Legal Framework and applicable international agreements. • Corridors between ecosystems to support habitat connectivity, movements of fauna, and natural resilience will be supported. • Periodic assessments for all the sub-projects, including 		and monitoring			
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	<p>progress reports and follow-up field visits, will be fulfilled. Additional mitigation measures will be incorporated if required.</p> <ul style="list-style-type: none"> • Sub-project and POA evaluation activities will involve the community to promote adaptive management and enhance conservation and restoration outcomes. • Activities will prioritize maximizing the positive impacts on biodiversity by improving and preserving areas with significant ecological value, and the avoidance of negative impacts. • Restoration activities will include an adaptive management plan, allowing for periodic assessments to adjust techniques as needed to ensure successful restoration. • Taking into account public perception by consulting with the local community on where 					
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	<p>to install the personal solar weather station.</p> <ul style="list-style-type: none"> A biodiversity specialist will be engaged to ensure that potential impacts on biodiversity are adequately assessed and addressed. This specialist will provide guidance on best practices for conservation and sustainable management of natural resources, helping to minimize any negative effects on local ecosystems and biodiversity. 					
<p>Biodiversity risks may occur due to the unanticipated expansion of production activities.</p>	<ul style="list-style-type: none"> Conservation and restoration efforts will be complemented by financing sub-projects to conserve, restore, and improve productive practices to increase communities' adaptive capacities in coastal and marine landscapes. This will accelerate the transition to sustainable climate resilient production systems. The use of use of local species with economic value will be promoted. 	Low	<p>Sureste Sostenible will supervise the sub-projects.</p> <p>FMCN will supervise the POA implemented by CONANP.</p> <p>FMCN and the CC will be advising</p>	<p>Since the selection of sub-project proposals and throughout the lifetime of the sub-projects</p>	<p>Ensuring no net loss of forest land and adequate protection of critical habitats and species.</p>	\$47,000

			and monitoring			
7. Indigenous peoples						
Inadequate inclusion of indigenous perspectives in the design and planning of sub-projects and AOPs can result in ineffective or insufficient conservation, restoration, and sustainable production efforts.	<ul style="list-style-type: none"> • Meaningful, inclusive and culturally sensitive consultations with indigenous communities, with interpretation into major local languages as appropriate, will be organized to identify and protect areas of cultural significance and to integrate cultural values into restoration and sustainable production plans. • The Indigenous Peoples Plan (IPP) will be functioning during ACCIÓN project cycle to provide equal opportunities for indigenous populations. • Cultural identity, sacred sites, and traditional knowledge and practices will be recognized, respected, valued, and integrated in project design and implementation. • Implement adaptive management strategies that allow for continuous monitoring and adjustment of 	Low	<p>Sureste Sostenible will supervise the sub-projects.</p> <p>FMCN will supervise the POA implemented by CONANP.</p> <p>FMCN and the CC will be advising and monitoring</p>	Since the selection of proposals and throughout the lifetime of the sub-projects	Ensuring better alignment of project activities, opportunities, and benefits with the needs, rights, and aspirations of indigenous peoples while contributing to ecological recovery.	\$50,000

	<p>activities based on community feedback.</p> <ul style="list-style-type: none"> The GRM will be operational during all the lifetime of ACCIÓN to provide a channel for raising indigenous people concerns and a transparent, consistent mechanism for conflict resolution. 					
<p>8. Physical cultural resources and cultural heritage</p> <p>The ACCIÓN project will not affect tangible or intangible cultural heritage in any of its forms, including natural monuments or sacred sites recognized by communities. However, given Mexico's vast archaeological heritage and the numerous documented and undocumented cultural sites across the country, we have designed a comprehensive Protect Cultural Heritage procedure to address any potential discoveries of cultural heritage during project activities.</p>						
<p>There are cultural heritage places, buildings, or monuments identified in the ACCIÓN eligible area. However, the project's specific intervention activities are not expected to impact any cultural heritage places, buildings, or monuments within</p>	<ul style="list-style-type: none"> Capacity building and increase awareness on the Chance Finds Procedure will be provided by ACCIÓN. The Protect Cultural Heritage procedure will be applied throughout the project at sub-project level when relevant, to ensure proper training and awareness, as well as to manage the discovery of both tangible (material) and intangible (immaterial) heritage. 	Low	<p>Sureste Sostenible will supervise the sub-projects.</p> <p>FMCN will supervise the POA implemented by CONANP.</p>	Throughout the lifetime of the sub-projects	Minimizing risks to cultural heritage.	\$8,000

the project intervention area. Nevertheless, further review on cultural practices shall be conducted, so the project will respect and preserve traditional knowledge and practices (e.g. the use of medicinal plants).						
9. Gender						
Adverse impacts on gender equality and/or reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits.	<ul style="list-style-type: none"> The project will include a gender approach to engage women within the sub-projects, the activities of the local providers for technical support, training, employment opportunities, and decision-making process, based on the potential adverse impacts on gender equality identified in the gender analysis and incorporated into the Gender Action Plan (GAP) with specific associated mitigation measures. The GAP will be functioning during ACCIÓN project cycle to provide equal gender 	Low	FMCN and Sureste Sostenible	Immediate implementation and throughout the lifetime of ACCIÓN	Minimizing risks based on gender.	\$409,000

	<p>opportunities. It will be updated as necessary.</p> <ul style="list-style-type: none"> The GRM will be operational during all the lifetime of ACCIÓN to provide a channel for raising women concerns and a transparent, consistent mechanism for conflict resolution. 					
<p>Gender-based Violence (GbV) risk and SEAH risk during project activities or between ACCIÓN participants.</p> <p>These risks vary among the components, the parties involved, the kind of activities to be implemented, and the GbV types and forms. Examples of kind of SEAH and GbV risks are:</p> <ul style="list-style-type: none"> At the family and community modalities, Psychological, Physical or Economic type of 	<ul style="list-style-type: none"> The Gender Action Plan (GAP) will be operating during all the lifetime of ACCIÓN. Implement a Grievance Redress Mechanism throughout the project. Ensure that the safeguard specialist hired for the project receives specific training on SEAH and can train other project staff on SEAH prevention. Identify the detailed GbV and SEAH risks once the subprojects are selected. Provide Sureste Sostenible with information on institutions and organizations focused on the prevention and management of SEAH, ensuring its dissemination at the sub-project level. 	High	Sureste Sostenible and FMCN	Throughout the lifetime of the project, with specific actions once the sub-projects and POA are operating.	Prevention and address of GbV and SEAH related to ACCIÓN activities.	\$105,000

<p>violence could occur in response to women's active involvement in ACCIÓN activities and to an increase of their autonomy. For example, women's discrimination in local collective activities based on gender norms and stereotypes; partner physical restrictions, and threats to avoid spouse or daughter participation.</p> <p>– At the labor and institutional modalities, Psychological and Economic violence may occur to women working in the diverse institutions involved in ACCIÓN,</p>	<ul style="list-style-type: none"> • Coordinate with institutions and organizations specialized in preventing and addressing GbV in the implementation area. • Create a group of gender equality promoters among subproject participants and provide them with information and tools to prevent and report GbV and SEAH. 					
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<p>affecting women's career advancement, mental health and financial income.</p> <p>– Risk of sexual abuse and harassment during activities in solitary spaces (e.g. reforestation, fishing, biodiversity monitoring)</p>						
10. Climate change						
<p>Adaptation actions may not reduce ecosystem and community climate vulnerability.</p>	<ul style="list-style-type: none"> • ACCIÓN has an ecosystem and social assessment to provide feedback on feasible adaptation actions. The evaluation included climate risks to which the region is exposed, its sensitivity, and adaptive capacity. 	Low	<p>Sureste Sostenible will supervise the sub-projects.</p> <p>FMCN will supervise the POA implemented by CONANP.</p> <p>FMCN, through the CC, will be advising and monitoring</p>	Throughout the lifetime of the sub-projects	Reduction of ecosystem and community climate vulnerability.	\$40,000

Stakeholder Engagement and Information Disclosure						
Low participation or lack of trust with stakeholders.	<ul style="list-style-type: none"> • The Stakeholder Engagement Plan (SEP) will actively involve stakeholders and project affected people in a timely manner, providing sufficient information and opportunity to voice their opinions and concerns that may influence project decisions. It will be updated as necessary. • The Indigenous Peoples Plan (IPP) will be functioning during ACCIÓN project cycle to provide equal opportunities for indigenous populations. It will be updated as necessary. • The GRM will be operational during all the lifetime of ACCIÓN and will be known by the stakeholders involved or potentially impacted by the project. • A dissemination strategy will be developed to inform stakeholders on the project results in culturally appropriated ways. • Information on the project design, implementation and compliance will be accessible 	Low	FMCN, CONANP and Sureste Sostenible	Immediate implementation and throughout the lifetime of ACCIÓN	Manage risks and impacts on affected communities and other stakeholders.	\$45,000

	<p>on the website of FMCN and the Sureste Sostenible.</p> <ul style="list-style-type: none"> • Register of external communications, including minutes of meetings held with stakeholders, will be maintained. • Periodic reports on how GAP, IPP, SEP, and GRM are being addressed and respected during the implementation of the project will be delivered to the CC and the GCF. 					
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**Risk significance. The probability of occurrence is the likelihood for a risk to occur and can be characterized in terms of the degree to which it will happen (for example, the UNDP screening procedure uses “expected, highly likely, moderately likely, not likely, and slight”). The impact or magnitude of risks is the description of how severe the impacts would be if it were to occur (for example, “critical, severe, moderate, minor, and negligible”). A significance value of the risk (for example low, medium, high) can be obtained by combining the probability and impact values. The risk significance indicates the relationship between probability and severity or magnitude of impacts. The entities or organizations that will be implementing the proposed activities are best positioned to define the probability of occurrence and severity or magnitude of impacts.*

There is no single technique to determine the significance of risks nor will it apply in all situations. The entities and organizations that will be implementing the activities will need to determine which technique will work best for each situation. Determining risk significance would require an understanding of activities and locations, the urgency of situations, and objective judgment.

4.1. Environmental and Social Plans

Based on the analysis and the ESAP, the plans and mechanism triggered by the project are:

- The Stakeholder Engagement Plan (SEP)
- The Gender Action Plan (GMP)
- Indigenous Peoples Plan (IPP)
- Grievance Redress Mechanisms (GRM)

This ESAP is based on an analysis of the overview of the legal framework and the socio-environmental context relevant to the intervention scope of ACCIÓN. It identifies the main potential unintended environmental and social adverse risks expected from the project operation activities and proposes mitigation measures necessary to avoid, prevent, or minimize the impacts identified. These assessments, plans, guides and procedures, together with the environmental and social action plan, serve as a general framework to manage potential social and environmental risks. However, FMCN's Environmental and Social (ESS) Management System, includes an integral framework to apply its safeguards system also at sub-project and Annual Working Plan level (POA), as described in Appendix 1. This cascade effects, allow integrating tailored-made management risk measures at all levels. This ESS has been recently approved by GCF, as noted in the upgrade notification, dated October 2024, as is currently applied in RIOS 023 project.

The Stakeholder Engagement Plan (SEP) is a roadmap for involving various stakeholders along the Project activities. Through stakeholder mapping, the SEP details their interests, impacts on the project, influence, and associated risks. The plan outlines stakeholders' engagement during the design phase, including dates, locations, methods, objectives, and outcomes. Emphasizing ongoing communication, the SEP also addresses disclosure, reporting of indicators, and lessons learned during the design phase. The monitoring and evaluation section outlines reporting frequency, responsible parties, and disclosure details, ensuring continuous improvement and responsiveness.

The Gender Action Plan (GMP) and the Indigenous Peoples Plan (IPP) are a comprehensive strategy designed to integrate an indigenous peoples and gender-responsive approach throughout the project. The primary goal of the IPP and the GAP is to ensure that both women and men as well as vulnerable groups experience culturally compatible economic and social benefits, free from discriminatory effects during development and implementation, while upholding their dignity and human rights. Beyond mere inclusion, it fosters sustainable equality of responsibilities, opportunities, and benefits, recognizing women and indigenous peoples' pivotal role in natural resource utilization and family health. The project's IPP and GAP addresses root causes of inequalities, encompassing limited access to and control over natural resources, inadequate employment opportunities, and capacity building opportunities. Systematic collection of Indigenous and gender-disaggregated information will be collected to monitor and track participation and engagement, fostering accountability and transparency.

The Grievance Redress Mechanisms (GRM), which is found in the Pre-Feasibility Study Annex, addresses complaints and grievances related to the project's adherence to safeguard procedures. It provides transparent procedures for raising concerns, ensuring dialogue, and maintaining public support. The GRM details eligible and ineligible grievances, mechanisms for transparency and fairness, confidentiality, accessibility, timelines for resolution, documentation, monitoring, and reporting. The involvement of FMCN in the grievance process ensures formal tracking, investigation, and monitoring. The GRM also outlines the responsible persons, budget requirements, and resources for implementation and monitoring, reinforcing the commitment to transparency and accountability throughout the project's lifespan.

For the project, GRM will indeed be accessible to all workers engaged through the project. Specifically, FMCN's GRM (as stated in the Operational Manual) includes two levels of action:

1. Institutional GRM for the prevention and detection of fraud; acts of corruption and non-compliance with the Code of Ethics; disputes regarding institutional procurement; staff grievances; and environmental and social issues of a project.
2. Project-level GRM to address complaints and reports related to specific projects.

As previously mentioned, for the ACCIÓN project, Sureste Sostenible (SAAC), playing a crucial role in the grievance mechanism by serving as the first point of contact for receiving and handling complaints related to the project, but always aligned with the GRM at the FMCN project level. They are responsible for recording, classifying, reporting, and processing grievances, as mentioned before, SSAC supports the formulation of complaints, including providing translation for indigenous languages if needed, and investigate the validity of each grievance through interviews and dialogue with stakeholders. They prepare reports with findings and recommendations, maintain ongoing communication with the complainant, and utilize traditional community grievance mechanisms when appropriate. SSAC will keep the area director responsible for the project informed throughout the process, while the area director, depending on the scale and nature of the complaint or report, will seek advice from the Internal Auditor.

If a complaint or report requires an investigation, regardless of whether it originates at the executing or implementing entity level, the FMCN Project Director will notify the GCF Project Manager. Upon request from the GCF Project Manager, the matter may also be referred to the Independent Integrity Unit (IIU) or the Independent Redress Mechanism (IRM), depending on the nature of the issue⁵, as outlined in clause 8.02 of the AMA signed between FMCN and GCF. The case will be communicated to GCF's project manager within two working days after the investigation begins.

⁵ FMCN acknowledge IIU attends complaint or report involving fraud, corruption, misconduct, or other prohibited practices, while the IRM review complaints made by individuals who feel adversely affected by the ACCIÓN project.

For complaints or disagreement related to irregularities committed by public servants or in contracting procedures related to public resources

For complaints or disagreement related to irregularities committed by public servants or in contracting procedures related to public resources, people will be encouraged to contact the Internal Control Body (OIC) at the Secretariat of Environment and Natural Resources (SEMARNAT) or the Secretariat of Public Function (SFP).

Internal Control Body in the Secretariat of Environment and Natural Resources

By phone: Within Mexico at 01 800 00 00 247 and in Mexico City 5490 0900 and 5490 0988

In person: At the offices of the OIC at SEMARNAT, located at Av. Ejército Nacional 223, Col. Anáhuac, Del. Miguel Hidalgo, C.P. 11320, Mexico City.

By mail: Free letter addressed to the Head of the OIC at SEMARNAT, with address at Av. Ejército Nacional 223, Col. Anáhuac, Del. Miguel Hidalgo, C.P. 11320, Mexico City.

By email: Email sent to the email addresses oic.quejas@semarnat.gob.mx or atencion.ciudadana@semarnat.gob.mx

Secretary of the Public Service

By phone: Within Mexico 01 800 11 28 700 and in Mexico City 2000 2000 and 2000 3000 extension 2164

In person: At the SFP Citizen Contact space, located at Av. Insurgentes Sur No. 1735, PB Module 3, Col. Guadalupe Inn, Del. Álvaro Obregón, C.P. 01020, Mexico City.

By mail: Free written communication addressed to the General Directorate of Complaints and Investigations of the SFP, with address at Av. Insurgentes Sur No. 1735, Floor 2, North Wing, Col. Guadalupe Inn, Del. Álvaro Obregón, C.P. 01020, Mexico City.

By mail: Email sent to the email address reclamaciones@funcionpublica.gob.mx or contactociudadano@funcionpublica.gob.mx

By chat: Contact through the chat of this system.

On the other hand, based on the assessment, the following three guidelines and procedures have been integrated into the ESAP to ensure the implementation of effective mitigation measures. These guidelines and procedures serve as illustrative potential mitigation actions that may be included at sub-project or POA level when relevant, following the FMCN ESS:

1. **Waste and Hazardous Substances Management Guidelines (Appendix 2):** The objective of this guideline is to promote sustainable practices in waste management within the ACCIÓN project, focusing on reducing environmental and health impacts. Specifically, the guidelines aim to follow the 4Rs principle—Reduce, Reuse, Recycle, and Recover—minimizing hazardous and non-hazardous waste generation. The guidelines are designed to ensure proper handling of waste from its creation to final disposal, prevent environmental contamination, and mitigate risks associated with pesticide use.
2. **Guide to Integrated Pest and Vector Management (Appendix 3):** This guide aims to reduce and eliminate the use of toxic pesticides and fertilizers in livestock and agroforestry systems to prevent soil contamination and negative impacts on biodiversity and human health. When synthetic pesticides are necessary, the guide sets out guidelines for their responsible and safe handling throughout their lifecycle—from transportation and storage to application and disposal—adhering to national regulations and international standards. It also promotes the adoption of sustainable agricultural practices to maintain ecological balance and improve overall environmental health within the project's target areas.
3. **Procedure to Protect Cultural Heritage (Appendix 4):** This procedure is focused on safeguarding both tangible and intangible cultural heritage in areas affected by project activities, including archaeological sites, historical artifacts, and cultural practices tied to indigenous and local communities. The guidelines aim to prevent any potential harm to these heritage elements, ensuring they are preserved according to national regulations and international standards, such as the IFC Performance Standard 8 (PS8). It also includes measures for handling unexpected discoveries of cultural heritage, emphasizing community engagement and respecting local traditions and practices.

These plans, guides and procedures are aligned with the relevant guidelines identified in the assessment. The mitigation measures related to these plans will be directly integrated into the appropriate activities of the sub-projects' annual plans. Specific guidance documents referenced in the assessment can be found in the corresponding annexes. Finally, this ESAP aligns with and adheres to FMCN's Policy on Protection from Sexual Exploitation, Abuse, and Harassment. The Policy on Protection from Sexual Exploitation, Abuse, and Harassment by FMCN establishes a zero-tolerance approach to sexual exploitation, abuse, and harassment within its operations. It emphasizes the respect for human dignity and the right to a safe working environment, free from all forms of discrimination, abuse of authority, and harassment. The policy also provides mechanisms for reporting misconduct through a whistleblower hotline, ensuring confidentiality and protection for those who come forward.

5. Implementation Arrangements

The accredited entity (AE) is the Mexican Fund for the Conservation of Nature (FMCN), which has a strong structure and capacities for implementing multilateral-financed projects. For example, FMCN has the adequate capacity to carry out the administration and supervision of the Project, given its trajectory in implementing projects financed by international institutions such as the World Bank, the State Development Bank of the Federal Republic of Germany (KfW) and the Inter-American Development Bank (IDB), among others. FMCN's internal control is solid since it has manuals, policies, and operating procedures for executing international projects.

FMCN will play the role of both Accredited Entity (AE) and co-Executing Entity (EE). The Regional Fund (RF) SSAC will be co-Executing Entity along with FMCN. The roles and responsibilities of each party clearly defined in Table 15. SSAC is one of the five funds created by FMCN in the past ten years (See section A.16). These RFs and FMCN are part of the Mexican Network of Environmental Funds (RedFAM). The use of RFs for project execution has reduced operation costs by working closer to community-based enterprises and local organizations, developing capacities to finance projects, strengthening partners in the field, joining efforts by creating programs and strengthening coalitions.

Table 17. Activities and execution

Component	Output	Activities	Sub-activities	Executing Entities	
				Leads	Co-EE
Component 1: Ecosystem-based adaptation on selected coastal and marine landscapes.	Output 1.1. Coastal and marine ecosystems have been conserved, restored, or under improved management practices that reduce climate vulnerability.	1.1.1 Finance ten sub-projects to conserve, restore, and improve productive practices to increase communities' adaptive capacities in coastal and marine landscapes.	1.1.1.1 Design and disseminate the RFP for Sub-projects for EbA solutions	SSAC	FMCN
			1.1.1.2 Evaluation of RFP by external evaluators.	SSAC	FMCN
			1.1.1.3 Selection of simplified proposals by the Coordination Committee.	FMCN	
			1.1.1.4 Provide technical assistance to selected sub-projects to develop a full proposal	SSAC	FMCN
			1.1.1.5 Award contracts to organizations whose Sub-projects were selected.	SSAC	FMCN
			1.1.1.6 Provide technical and administrative support to EbA Sub-projects.	SSAC	FMCN
			1.1.1.7 Evaluate where appropriate, extend annual contracts with the organizations in charge of the Sub-projects.	SSAC	FMCN
		1.1.2 Support ten sub-projects in implementing procedures to maximize environmental and social benefits, with a gender approach.	1.1.2.1 Supervise administrative management of sub-projects	SSAC	FMCN
			1.1.2.2 Supervise the implementation of the Environmental and Social Action Plan	SSAC	FMCN
			1.1.2.3 Supervise the implementation of the gender action plan	SSAC	FMCN
		1.1.3. Monitor the climatic events and implement climate early warning systems linked to sub-projects.	1.1.3.1 Adjust existing early warning systems to be focused on sub-projects needs	FMCN	
			1.1.3.2 Create partnerships to monitor and communicate early warning systems	SSAC	FMCN
			1.1.3.3 Implement early warning systems, including training and communicating	SSAC	FMCN
Component 2: Ecosystem-based adaptation on coastal and marine Protected Areas (PAs).	Output 2.1. Five-year plans, and associated Annual Operating Plans (POAs), are financed for PAs through an inclusive	2.1.1. Finance gender-responsive and inclusive five-year operating plans of 20 PAs.	2.1.1.1 Design and disseminate the RFP for PA financing	FMCN	
			2.1.1.2 Present to for approval to the CTFANP and MEX30x30 Committee.	FMCN	

	participatory process coordinated by CONANP.		2.1.1.3 Award contracts to OLLCs for POAs.	FMCN	
			2.1.1.4 Support the government to develop five-year plans	FMCN	
			2.1.2.1 Supervise administrative management of POAs	FMCN	
			2.1.2.2 Supervise the implementation of the Environmental and Social Plan	FMCN	
			2.1.2.3 Supervise the implementation of the gender action plan	FMCN	
	Output 2.2 The vulnerabilities status of PA have been monitored	2.1.2. Finance gender-responsive and inclusive Annual Operating Plans to implement EbA measures in 20 PAs.			
		2.2.1 Define and apply methodologies for analyzing PAs social and environmental vulnerability.	2.2.1.1 Adapt methodologies to assess the vulnerability of communities and ecosystems using participatory and technical experts' methodologies in PAs.	FMCN	
		2.2.2 Analyze the vulnerability of communities and ecosystems.	2.2.1.2 Analyze the vulnerability of communities and ecosystems using participatory and technical experts' methodologies in PAs.	FMCN	
Component 3: Sustainable financing for scaling up EbA measures.	Output 3.1. Private and public investments for scaling-up EbA interventions are promoted through a financial facility.	3.1.1 Design and establish a financial facility for EbA measures in marine and coastal ecosystems.	3.1.1.1 Design the detailed procedures to operate a financial facility for marine and coastal ecosystems EbA.	FMCN	
			3.1.1.2 Convene and coordinate existing institutions and mechanisms to implement the financial facility	FMCN	
			3.1.1.3 Convene and coordinate institutions and mechanisms to leverage public and philanthropic finance to finance effective PAs	FMCN	
		3.1.2 Support ten financing plans between producer groups /community enterprises implementing marine and coastal EbA measures with investors, financial institutions, aggregators, and others.	3.1.2.1 Organize events, workshops and investors rounds to link local producer groups, microenterprises, cooperatives, and others with investors, financial institutions, aggregators and others.	FMCN	
			3.1.2.2 Provide technical, financial and legal support to improve the investment and commercial agreements	FMCN	
	Output 3.2. Innovative sustainable finance for scaling-up EbA measures in marine and coastal ecosystems has been selected to be piloted/strengthened	3.2.1. Design and pilot a small-scale fisheries parametric insurance to compensate for local livelihoods lost under extreme events.	3.2.1.1 Continue the small-scale fisheries parametric insurance to compensate for local livelihoods lost under extreme events.	FMCN	SSAC
			3.2.1.2 Pilot the parametric insurance	FMCN	SSAC
			3.2.1.3 Provide training to small-scale fisheries related to the insurance	SSAC	FMCN
			3.2.1.4 Provide training to potential buyers of the insurance	SSAC	FMCN
		3.2.2. Pilot selected innovative sustainable finance that is legally, financially and technically feasible.	3.2.2.1 Conduct legal, financial, and technical assessments to evaluate the possibility of supporting at least two innovative financial mechanisms, such as insurance and offsets.	FMCN	
			3.2.2.2 Pilot selected innovative sustainable finance that is legally, financially and technically feasible.	FMCN	
	Output 3.3. Business strategies have been financed to improve capacities of local producer groups, micro-enterprises, cooperatives, and others.	3.3.1. Finance 14 PLATs to improve skills and competencies for developing business strategies and sound financial management of local producer groups, micro-enterprises, cooperatives, and others	3.3.1.1 Design and disseminate the RFP for PLATs to improve business skills of sustainable local producer groups, micro-enterprises, cooperatives, and others	SSAC	FMCN
			3.3.1.2 Evaluation of RFP by external evaluators.	SSAC	FMCN

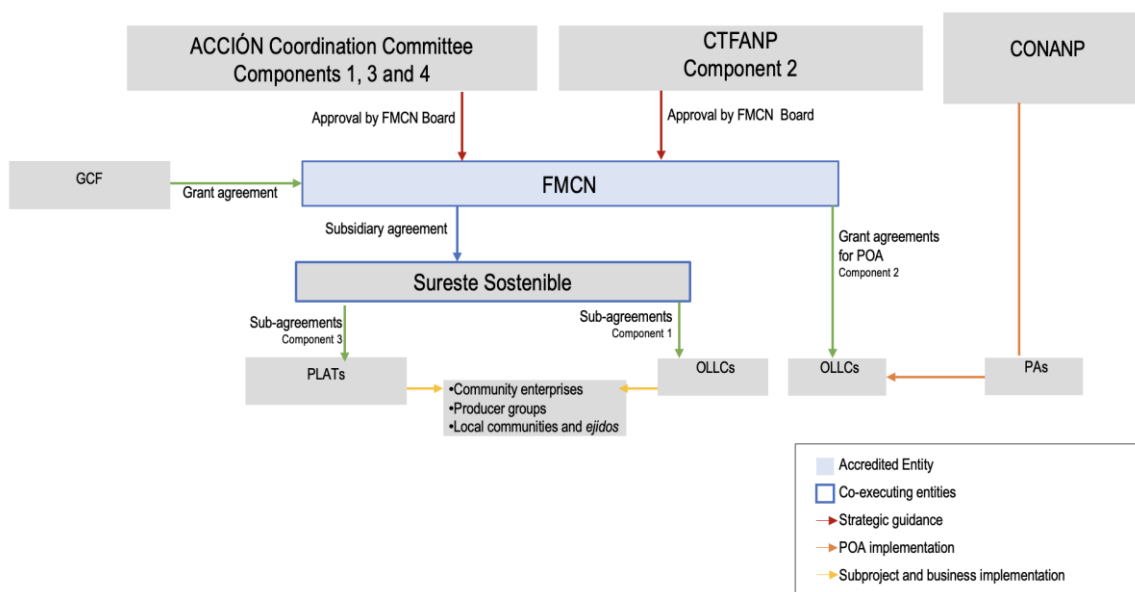
			3.3.1. Selection of proposals by the Coordination Committee.	FMCN	
			3.3.1.4 Assess the local producer groups, micro-enterprises, cooperatives, and others needs and develop tailored plan.	SSAC	FMCN
			3.3.1.5 Finance PLAT's plan to strengthen business capacities of local producer groups, micro-enterprises, cooperatives, and others	SSAC	FMCN
			3.3.1.6 Supervision of PLAT's plan implementation to strengthen business capacities of local producer groups, micro-enterprises, cooperatives, and others and monitor the impact.	SSAC	FMCN
Component 4: Knowledge management and coordination with regional public policies and initiatives.	Output 4.1 Strengthened multi-level and multi-stakeholder coordination mechanisms in the region that contribute to reducing climate change vulnerability.	4.1.1 Strengthen at least two YP multi-stakeholder public and private platforms	4.1.1.1 Support the operation of at least two multi-level and multi-stakeholder platforms	SSAC	FMCN
			4.1.1.2 Finance at least two selected plans or strategies for adaptation in the YP	FMCN	SSAC
	Output 4.2: Enhanced knowledge to inform decision-making at all levels.	4.2.1 Implement a communication strategy and appropriate knowledge products, to share results and lessons learned.	4.2.1.1 Design a communication strategy to share results, lessons learned, and relevant information on ecosystem-based adaptation promoted by this project.	FMCN	SSAC
			4.2.1.2 Develop appropriate knowledge products, including photo stories, videos, leaflets, presentations and briefing notes, for use in policy advocacy activities.	FMCN	SSAC
		4.2.2 Conduct knowledge-exchange activities and local level forums and scale-up lessons learned into state, regional, and national level policies.	4.2.2.1 Promote the incorporation of lessons learned from field actions implemented under Component 1, 2 and 3 into the agendas of the respective public institutions	FMCN	SSAC
			4.2.3.1 Establish a regional learning community that will be linked to national projects, to scale-up the experiences	FMCN	
		4.2.3. Establish a learning community for knowledge exchange of EbA measures, under an inclusive and gender-responsive approach.	4.2.3.2 Establish system learning communities for specific EbA measures	SSAC	FMCN

The governance structure of ACCIÓN includes a Coordination Committee (CC) with the participation of CONANP, representative of the state governments of YP, FMCN, and a representative of each sector: (a) civil society, (b) private; (c) social; and (d) academia. The Ministry of Finance (SHCP) will participate as NDA as an observer. FMCN will be the technical secretary of the CC. The CC will provide strategic guidance in coordinating efforts with CONANP, the state governments and other to support community enterprises. It will also identify public investments to enhance and scale up the sub-projects.

The Technical Committee of the Protected Areas Fund (CTFANP) will oversee the activities under Component 2, such as the preparation and approval of the Annual Operational Plans (POA). Every year, the CTFANP will inform on advances to the MEx30x30 Donors Committee (in process to be created with expected representation of GEF, GCF and other donors), which will oversee the closing of the financial gap

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for protected areas (PAs) by 2030. CONANP, the federal agency in charge of managing protected areas, will provide fundamental technical inputs during project implementation in protected areas and ensure coordination with the national government, promoting scaling up the local strategies and lessons learned



Based on the institutional arrangements that are in place, contractual arrangements will be made, which begin with the signing of a Specific Funded Activity Agreement (Grant Agreement) between GCF and FMCN. This contract will be the framework agreement for the project. Once this agreement is signed and operating, FMCN will sign a subsidiary agreement with SSAC, who will **be responsible for supervising** the direct operation in the field, as are the sub-projects with civil society organizations. CONANP and the state governments will ensure country appropriation and long-term sustainability. **See section IV.3. Implementation arrangements and governance of the project of the Annex 2 Pre-feasibility study**

The post-implementation arrangements have been delineated, with comprehensive Operation and Maintenance (O&M) Plans established to ensure the sustained effectiveness of the project's outcomes. The three states of the YP—Yucatán, Campeche, and Quintana Roo—will support to guarantee the continuity of the activities implemented under this project. This commitment ensures that the initiatives undertaken will remain functional and effective in the long term, securing the resilience and sustainability goals of the project (see **Annex 16 for support letters**).

In relation to the arrangements of ESAP, following FMCN ESS, the activities related to Sub-projects (Component 1), Annual Operating Plans (Component 2) and PLATs (Component 3) will be screened using FMCN formats included in FMCN operations manual, and reflected in the ESAP checklist. **If the activities are categorized as having moderate to high risks (category A and B), they will be excluded from project financing.** The screening process is detailed below (please see FMCN OM, Annex 6 for more details).

Sub-project screening process (Component 1)

FMCN has a well-established process for selecting grant recipients, based on its experience with over 90 previous Request for Proposals (RFP) processes. The standard procedure to screen Sub-Projects (Component 1) is as follows (all **detailed** steps are in FMCN Operations Manual, Annex 6):

1. **Assessment and selection of sub-project to be financed** (see the complete process in the *Sections 3.1.2 Assessment of sub-project proposals* and *3.1.3 Selection of sub-project proposals* of the Operations Manual). At the close of the period for receipt of proposals, under FMCN oversight, the Executing Entity (EE), in this case, SSAC, receives the proposals and conducts an initial review to ensure they meet the basic eligibility criteria, including complying with the exclusion list, and a first screening to exclude activities with medium or high risk. The EE, with FMCN oversight, ensures the execution of the relevant project, reviews the sub-project proposals received, and verifies that they comply with the requirements indicated in the call for proposals. An external group of experts is then assembled, comprising representatives from local academia, local government, civil society, and other relevant stakeholders. This group evaluates and scores the proposals, including evaluating the environmental and social relevance, and proposing to exclude activities with medium or high risk. A minimum threshold for scoring is determined using statistical methods and expert advice. Under FMCN oversight, SSAC compiles the comments of all evaluators.
2. **Support to the sub-projects to be financed.** The sub-projects approved by the corresponding external group go through a process of technical, administrative, and environmental and social risk assessment support by the FMCN Area responsible for the execution of the project concerned. In this process, the Safeguard Coordinators and Officers of the respective Area examine and analyze information related to environmental and social risks and impacts in the sub-projects, using an internal tool for risk identification and mitigation measures at the sub-project level (*Annex 6.5 Sub-Project Environmental and Social Assessment Tool*). This screening will include SEAH and GbV-related risks. Based on this assessment, the Safeguard team defines the applicable ESS at the sub-project level, determines the risk category, and proposes mitigation measures and relevant modifications to ensure compliance with the corresponding ESS within a specified timeframe. In ACCIÓN, all activities with medium and high risks will be excluded. In this regard, the originally proposed activities in the sub-project may: 1) be supplemented to include necessary mitigation measures as part of the activity (e.g., requesting reforestation with native species); 2) be eliminated, or 3) include recommendations for best practices for the sub-project or a group of sub-projects (e.g., specific trainings). The identified measures are integrated into the logical framework of the annual plan for each sub-project and monitored through the Project Tracking System (SISEP). The environmental and social safeguards specialist ensures to exclude activities with medium or high risk.
3. **Finalizing the proposal and signing the agreements.** After the selection process and under the supervision of FMCN, SSAC requests the proponents to integrate the comments both from the evaluators and the Project Committee, including to exclude activities with medium or high risk. . SSAC follows a due diligence process established by FMCN to ensure that the recipients meet the legal and administrative requirements established in the call for proposals. Ultimately, each adjusted sub-project and will outline the activities and timelines necessary to manage potential environmental and social risks and impacts throughout its life cycle, (analogous to an Environmental and Social Management Plan). The incorporation of adjustments resulting from the environmental and social review is mandatory for all sub-projects to be financed and forms part of the legal agreement to be signed. The package of selected sub-projects, and the corresponding grant agreements to be signed by SSAC and the selected proponents are reviewed by FMCN before being formalized. The final decision on the grant agreements that can be signed is of FMCN. The legal agreements also includes the obligation for signatories to be familiar with and adhere to the current policies established in the Organizational Manual and the corresponding procedures defined in FMCN's Operations Manual, which comply with national legislation, social and environmental standards, as well as the Federal Labor Law.

POA screening process (Component 2)

1. **POA Preparation** (see the complete process in *Section 4.1 POA Preparation* of the Operations Manual). The personnel of the FMCN Conservation Area supports the Conanp team or the state

agency in the preparation of a five-year strategic plan, from which the PA personnel derives the POA for the year to be financed. The POAs prepared are the result of a participatory planning process, in which FMCN coordinates the process and identifies potential risks in conjunction with Conanp. This process includes the participation of representatives from key sectors (e.g., through the Advisory Council) and the verification of having delivered or submitted the report of the results of the previous year's POA to these representatives, in the case of receiving funding in previous years. The documentation of these activities must be done by PA personnel through meeting minutes, workshop records, and/or signed agreements. Likewise, the activities, goals, and budget of the POA must (see all details in FMCN OM):

- Comply with the Regulations of the [General Law on Ecological Balance and Environmental Protection regarding Protected Areas](#), the creation decree and/or management program of the PA, the recommendations of the National Council of Protected Areas and the Advisory Council, as well as other applicable legal and regulatory provisions.
- Ensure broad stakeholder participation by strengthening their organizations and participation mechanisms, including indigenous populations.
- Identify a communication strategy to disseminate the results.

In the process of preparing the POAs, the FMCN Conservation Safeguards Coordinators and Officers review and analyze information related to environmental and social risks and impacts in the POAs, using the POA-level risk identification and mitigation measures tool (Annex 6.5). Based on this assessment, the Safeguards team determines which safeguards should be activated at the POA level, the risk category, and proposes and agrees with Conanp or the state agency on the identified mitigation measures so that the POA complies with the ESS within a given timeframe. **In ACCIÓN, all activities with medium and high risks will be excluded.** In this regard, the originally proposed activities in the POA may: 1) be supplemented to include necessary mitigation measures as part of the activity (e.g., requesting reforestations to be done with native species); 2) be eliminated; or 3) include best practice recommendations for the POA or a group of POAs (e.g., specific trainings). Ultimately, each adjusted POA incorporates the activities and timelines required to manage potential environmental and social risks and impacts throughout the POA's life cycle (analogous to an Environmental and Social Management Plan). The inclusion of adjustments resulting from the environmental and social review is mandatory for all financed POAs and is part of the legal agreement to be signed with FMCN. The identified measures are integrated into the logical framework of each POA's annual plan and monitored through the Project Tracking System (SISEP). FMCN verifies the documentation supporting the participation process, as well as the incorporation of measures into the POA, before the respective technical committee approves the POA for financing.

PLAT screening process (Component 3)

PLATs provide only technical assistance and are processed as consultancy services. Therefore, the process The standard procedure for PLATs is al(Component 3) is:

1. **Assessment and selection of PLATs proposals to be financed.** At the close of the period for receipt of proposals, under FMCN oversight, the Executing Entity (EE), in this case, SSAC, receives the proposals and conducts an initial review to ensure they meet the basic eligibility criteria, including complying with the exclusion list and the all the requirements of the PLATs call for proposals. The EE with FMCN oversight ensure the execution of the relevant project reviews for PLATs proposals received and verifies that they comply with the requirements indicated in the call for proposals. **Although this component do not includes any field activity and only provides technical assistance, all activities with medium and high risks will be excluded.** An external group of experts is then

assembled, comprising representatives from local academia, local government, civil society, and other relevant stakeholders. This group evaluates and scores the proposals, including evaluating the environmental and social relevance. A minimum threshold for scoring is determined using statistical methods and expert advice. Under FMCN oversight, SSAC compiles the comments of all evaluators.

2. **Support to the PLATs to be financed.** The PLATs approved by the corresponding external group go through a process of technical, administrative, and environmental and social risk assessment support by the FMCN Area responsible for the execution of the project concerned. In this process, the Safeguard Coordinators and Officers of the respective Area examine that the PLATs comply with all the details from the call, including compliance with the exclusion list.
3. **Finalizing the proposal and signing the agreements.** After the selection process and under the supervision of FMCN, SSAC requests the proponents to integrate the comments both from the evaluators and the Project Committee. SSAC follows a due diligence process established by FMCN to ensure that the recipients meet the legal and administrative requirements established in the call for proposals. The package of selected PLATs, and the corresponding agreements to be signed by SSAC and the selected proponents are reviewed by FMCN before being formalized. The final decision on the agreements that can be signed is of FMCN. The legal agreements also includes the obligation for signatories to be familiar with and adhere to the current policies established in the Organizational Manual and the corresponding procedures defined in FMCN's Operations Manual, which comply with national legislation, social and environmental standards, as well as the Federal Labor Law.

According to the due diligence process to the EE SSAC, implemented by a third party with GCF Readiness resources, SSAC has the capacities to implement the ESAP activities detailed in this section.

6. Information Disclosure

The Information Disclosure can be found in FMCN's Operation Manual in Section A6.5.5, "Meaningful Stakeholder Engagement and Information Disclosure. FMCN will ensure the disclosure of relevant information related to the projects, mainly through its website (www.fmcn.org), social media, and learning events scheduled for each initiative. Implementing organizations should also ensure the dissemination of information to stakeholders in the project's areas of impact. Relevant information includes: (i) the objective, components, duration, and scale of the project; (ii) the proposed activities and their duration; (iii) the potential environmental and social risks and impacts, as well as relevant mitigation measures at the project level; (iv) the potential opportunities and benefits; (v) the planned stakeholder engagement process; and (vi) the grievance redress mechanism. All this information must be available in a timely, culturally appropriate manner and in understandable (non-technical) language to enable the informed participation of individuals, groups, and communities. This process will open communication channels to ensure that the diversity of views, opinions, concerns, suggestions, and proposals are incorporated into the design and implementation of the project, avoiding or reducing potential adverse environmental and social risks and impacts.

APPENDIX 1. FMCN's Environmental and Social Risk and Impact Assessment

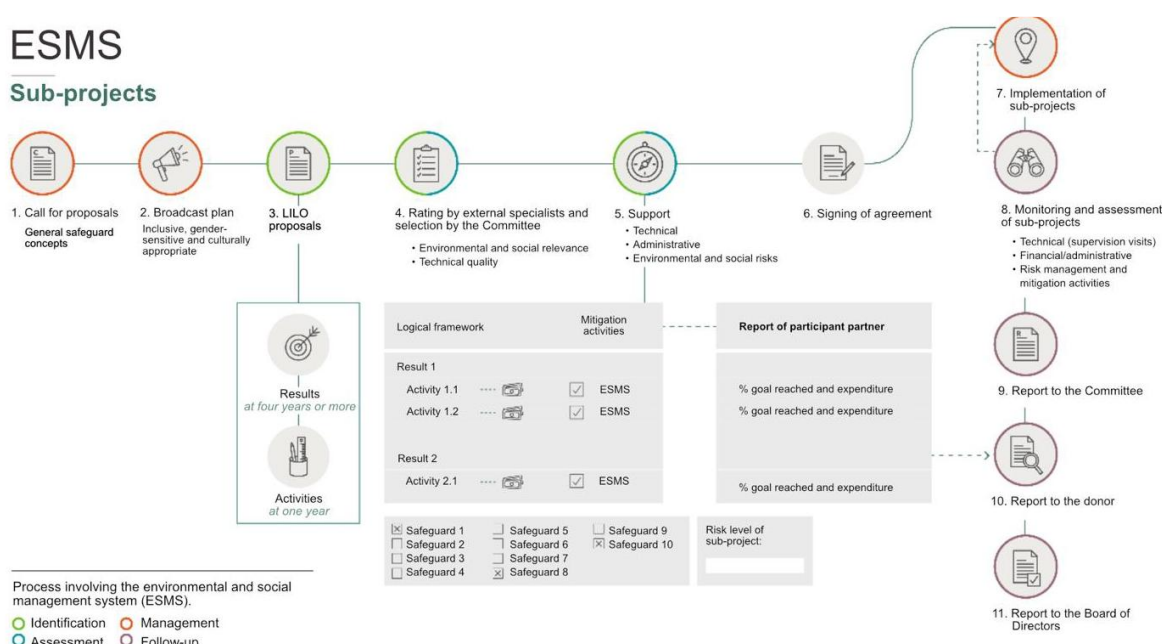
This section describes the cascade effects of FMCN ESS, that allow integrating tailored-made management risk measures at all levels; this section includes how ESS will be implemented and integrated during all the lifecycle of sub-projects and POAs. This section is based on the FMCN Operations Manual Annex 6, and has been recently approved by GCF, as noted in the upgrade notification, dated October 2024, as is currently applied in RIOS 023 project.

Identification and Management of Environmental and Social Risks in Sub-projects

Sub-projects are selected through calls for proposals, (RFP) and their risks are assessed during the entire project cycle. Proposals are evaluated for environmental and social risks, and selected sub-projects are required to integrate mitigation measures. The FMCN Safeguards team works closely with organizations to adjust sub-project activities, ensuring compliance with FMCN's environmental and social safeguards. These adjustments are monitored and reported to ensure ongoing compliance and proper risk management.

ESMS

Sub-projects

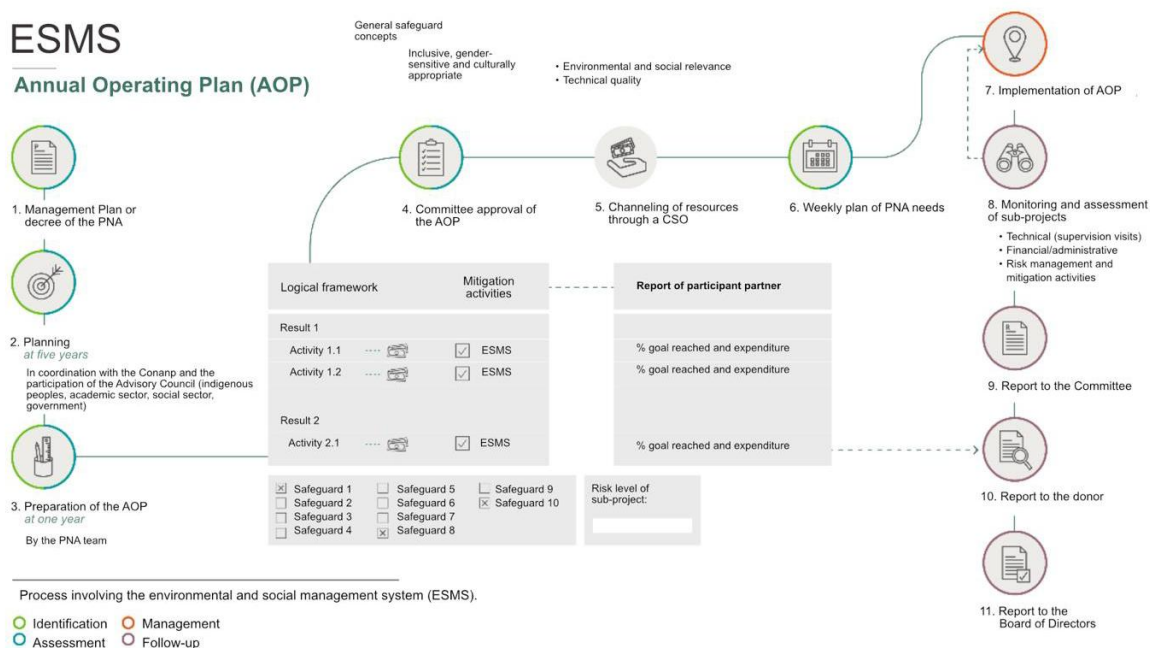


Identification and Management of Environmental and Social Risks in the POAs:

Annual Operating Plans (POAs) focus on supporting activities within protected natural areas. The environmental and social risks of these plans are assessed through participatory planning with key stakeholders, including indigenous populations. Mitigation measures are integrated into the POA's activities and monitored throughout the implementation phase. The Safeguards team works with the National Commission of Protected Areas (CONANP) or state agencies to ensure compliance with environmental and social standards. Adjustments to the POAs are mandatory and incorporated into the project's legal agreements.

ESMS

Annual Operating Plan (AOP)



For more details, review de Operations Manual, Annex 6.

APPENDIX 2. Waste and Hazardous Substances Management Guidelines

INTRODUCTION

ACCIÓN seeks to promote sustainable agroforestry models in Yucatán Peninsula. In this sense, this Waste and Hazardous Substances Management Guidelines (WHSMG) of the project aims to (i) promote the management of any type of waste generated within the framework of the project, following the rule of the 4Rs in waste management: Reduce, Reuse, Recycle and Recover, and (ii) avoid the generation of hazardous waste and any type of environmental contamination. These objectives represent a central part of the best practices (BP) to be promoted in the watersheds and, in cases where they cannot be avoided, the project must follow procedures to make the best possible management of waste and neutralize its negative impacts.

With respect to waste, ACCIÓN will seek congruence between the principles of sustainable production and management and the acquisition, use and disposal of products and inputs in a sustainable manner within the framework of its activities. To this end, it will promote environmental and social responsibility in waste management, adhering to the principles of the 4Rs:

- **Reduce:** Consists of avoiding the purchase of products that are not necessary and that, in addition, contain containers or packaging that in a very short time are going to be used up become garbage.
- **Reuse:** This involves making the most of any product before discarding or repairing it so that it can continue to fulfill its function.
- **Recycling:** It is related to returning to the productive cycle those wastes that, after treatment, they can be reintroduced into the market, reducing the consumption of raw materials and energy.
- **Recovery:** It is based on the utilization of the waste in another process different from the original one, in order to reintroduce it into a new process directly or by means of pretreatment.

NATIONAL LEGAL FRAMEWORK AND RELATED WORLD BANK ENVIRONMENTAL STANDARDS

The Mexican legal framework for the proper management of hazardous and non-hazardous waste is based on the General Law for Ecological Equilibrium and Environmental Protection (LGEEPA) and the General Law for the Prevention and Integral Management of Waste (LGPGIR). Table 1 summarizes the main national legal instruments that frame this WHSMG.

Table 1. Legal framework of ACCIÓN's WHSMG.

Document	Sections / Contents
LGEEPA	ARTICLE 143. Pesticides, fertilizers and other hazardous materials shall be subject to the official Mexican standards issued by the Secretariat and the Secretariats of Agriculture, Livestock, Rural Development, Fishing and Food, Health and Economy, within the scope of their respective competencies. The Regulations of this Law will establish the regulations, which within the same coordination framework must be observed in activities related to such materials, including the final disposal of their residues, packaging and empty containers, measures to avoid adverse effects on the ecosystems and the procedures for the granting of the corresponding authorizations.

<p>General law for the prevention and integral management of waste. Last amendment published in the DOF 19-01-2018</p>	<p>Article 5, fractions:</p> <p>XXXII: Hazardous Waste: Those that possess any of the characteristics of corrosiveness, reactivity, explosiveness, toxicity, flammability, or that contain infectious agents that make them hazardous, as well as containers, receptacles, packaging and soils that have been contaminated when transferred to another site, in accordance with the provisions of this Law.</p> <p>XXVI. Recycling: Transformation of waste through different processes that make it possible to restore its economic value, thus avoiding its final disposal, as long as this restitution favors a saving of energy and raw materials without harming health, ecosystems or their elements;</p> <p>XXXV. Reuse: The use of a previously used material or waste, without any transformation process.</p> <p>Article 19.- Special handling wastes are classified as indicated below in the Fractions:</p> <p>III. Waste generated by fishing, agricultural, forestry, forestry, poultry and livestock activities, including waste from inputs used in these activities.</p> <p>Technological waste from the computer industry, manufacturers of electronic products or motor vehicles and others that, at the end of their useful life, due to their characteristics, require specific management;</p> <p>Batteries containing lithium, nickel, mercury, cadmium, manganese, lead, zinc, or any other element that allows the generation of energy in them, at levels that are not considered hazardous waste in the corresponding official Mexican standard.</p> <p>Article 31: The following hazardous wastes and used, expired, withdrawn from commerce or discarded products that are classified as such in the corresponding official Mexican standard shall be subject to a management plan: fraction I (used or discarded oils).</p>
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Document	Sections / Contents
	VIII (pharmaceuticals) and IX (pesticides and their containers containing their remnants). Article 67, section IX: Regarding hazardous wastes, prohibits the incineration of hazardous wastes that are or contain persistent and bioaccumulative organic compounds; organochlorine pesticides.
NOM-052-SEMARNAT	Establishes the procedure for identifying whether a waste is hazardous, which includes lists of hazardous wastes and the characteristics that cause them to be considered as such. Classifies as hazardous waste: Zinc/silver oxide, lead piles. Used and spent oils
NOM-161-SEMARNAT-2011	Establishes the criteria for classifying special handling wastes and determining which are subject to a management plan; the list of these wastes, the procedure for their inclusion or exclusion to such list; as well as the elements and procedures for the formulation of management plans. Listing: VIII. Products that are discarded at the end of their useful life and which are listed below: a) Technological waste from the computer and electronic product manufacturing industries: Personal desktop computers and their accessories. Cellular phones. Monitors Liquid crystal and plasma displays (including televisions). Portable audio and video players. Cables for electronic equipment. Printers, photocopiers and multifunctional printers
NOM-082-SAG-FITO/SSA1-2017	Establishes maximum residue limits. Technical guidelines and procedures for authorization and review.
NOM-232-SSA1-2009	Pesticides: establishes the requirements for packaging, packing and labeling of products by technical grade and for agricultural, forestry, livestock, gardening, urban, industrial and domestic use.
NOM-017-STPS-2008	Personal protective equipment: Selection, use and handling in the workplace.
NOM-032-SSA2-2014	For epidemiological surveillance, promotion, prevention and control of vector-borne diseases.

OBJECTIVES OF THE GUIDE FOR THE MANAGEMENT OF HAZARDOUS WASTES AND SUBSTANCES

The ACCIÓN project's GMRSP objectives are aligned with the WB's EAS 3 and with the national legal framework. Specifically:

- Avoid or minimize adverse impacts on human health and the environment by reducing or avoiding pollution from project activities.
- Avoid or minimize emissions of short- and long-lived climate pollutants associated with the project.
- Avoid or minimize the generation of hazardous and non-hazardous waste.
- Properly manage waste at the intervention sites from its generation to its final disposal.
- Minimize and manage the risks and impacts associated with the use of pesticides, in accordance with ACCIÓN's Integrated Pest and Vector Management Guide (IPVMG).

Anticipate and avoid adverse health and safety impacts to people and communities involved in project activities throughout the project cycle, in both routine and non-routine circumstances and including avoiding or minimizing their exposure to the pandemic, including rigorous management of any proven or potentially coronavirus-infected materials.

IDENTIFICATION OF HAZARDOUS WASTES AND SUBSTANCES ASSOCIATED WITH THE PROJECT

The environmental and social assessment conducted for the project indicates that, in general terms, the implementation of ACCIÓN is expected to have a positive impact on the environment and society, bringing benefits to various habitats and landscapes and contributing to improving the living conditions of vulnerable people living in the local communities that depend on natural resources for their productive activities.

Given the nature of the project, it is expected that ACCIÓN will generate minimal waste, but it may have negative effects on the environment, the people involved in the activities, and the surrounding communities. The project will seek to change those production practices that negatively impact the health of ecosystems and people. For example, the management of livestock excrement to incorporate it into the soil and avoid the accumulation of organic waste; minimize or avoid the use of pesticides that can harm human health and contaminate the soil and water sources; among others.

Waste management by type

ACCIÓN includes activities to improve the management of waste generated in agroforestry systems, through best practices associated with the different types of waste. These include:

Organic Waste

Organic wastes are all biodegradable materials that disintegrate or degrade rapidly in a natural way. Potential organic wastes resulting from project activities include plant material derived from pruning and mowing, the accumulation and mismanagement of which can be a source of fires, or the excreta from livestock that can cause contamination of water bodies and/or disease transmission. Similarly, food leftovers or open defecation by farm workers can contaminate soil, water or be vectors of disease. The recommended measures to reduce these risks are:

Origin of waste	Recommended measurements
Pruning and mowing	Standard agroecological practices such as chopping branches, aligning them transversally to the slope or spreading them for rapid degradation.
Livestock manure	Exclusion fencing to prevent cattle from entering water bodies.
Waste from food from workers	Place duly marked containers at the intervention sites for the disposal of organic waste that can later be used for composting.
Open defecation	Bury or cover feces with soil to promote decomposition and prevent the proliferation of disease vectors.

Inorganic waste

Inorganic wastes are all wastes of non-biological origin that take many years to degrade naturally. Potential inorganic wastes resulting from project activities include packaging materials, food, medicines and substances used in rural areas. If not properly managed, their accumulation generates risks or even contamination problems in the watersheds. The measures that ACCIÓN will promote to reduce this risk are:

- Place duly marked containers at the intervention sites for the temporary disposal of waste.
- Enable a vehicle for the collection and transportation of this waste to an official waste disposal site designated by the municipality.
- Organize cleanup brigades and workshops to raise public awareness about the reduction, reuse, recycling and recovery of these wastes.

Hazardous waste

The most common hazardous wastes in rural areas are agrochemical containers, gloves, masks, rags with pesticide residues, among others, which are disposed of improperly and can cause contamination of soil, water bodies and proliferation of disease vectors.

Some of these containers are sometimes reused to store and transport water and food, or are even handled by children in the communities, causing intoxication and severe health effects. To mitigate or neutralize these negative impacts, ACCIÓN will promote the following measures for the management of hazardous containers:

- Do not use chemical containers to store water or food.
- Train sub-projects on best disposal practices.

Electronic waste

Although electronic waste will be minimal, it is very likely that ACCIÓN's activities will require the use of computers, tablets, cell phones, monitors, liquid crystal and plasma screens (including televisions), video players, printers, photocopiers, multifunctional devices, small portable climatic stations, electric fence push buttons, solar panels, among other electrical and electronic equipment.

In this regard, NOM-161-SEMARNAT establishes general provisions, which must be followed at ACCIÓN, that technological product waste requires special handling and must be disposed of in reception centers officially validated by federal, state or municipal environmental authorities, so that its final disposal does not affect the environment or human health.

Regarding the final disposal of batteries or electric accumulators, the provisions of NOM-052-SEMARNAT must be followed, which establishes that these products must be disposed of in officially validated collection centers or recycled.

SSAC should familiarize themselves with the provisions of NOM-161-SEMARNAT and NOM-052-SEMARNAT and train the OLLC responsible for operating sub-projects under Component 1, providing them with clear and concrete information on the procedures for disposing of these wastes, the validated reception centers and the programs that the different levels of government operate to collect and recycle this type of waste.

Handling of hazardous substances derived from the use of internal combustion engines

In order to avoid soil and water contamination due to the disposal of internal combustion engine lubricants used in ACCIÓN's activities, and vehicles used in the development of its activities must be taken to service centers that have the capacity to store and properly dispose of this waste, in accordance with NOM-052-SEMARNAT.

SCOPE OF APPLICATION

The WHSMG must be applied in a tailored way to ACCIÓN sub-projects of Component 1 and POAs of component 2, focused on the compliance with the regulations in this area as described in the project's ESAP. The mitigation actions will be directly reflected in their annual plans, and this guide serves only as a general framework.

THOSE WHO PARTICIPATE

- The Project Coordinating Unit (PCU) at FMCN.
- Sureste Sostenible
- Civil society organizations (OLLC) and beneficiaries of Components 1 and 2.

REFERENCES

- International Bank for Reconstruction and Development/World Bank (2017). Environmental and Social Framework. Washington: World Bank.
- Bejarano, F. (. (2017). Highly Hazardous Pesticides in Mexico (Impresos Gamma ed.). Mexico, D.F., Mexico: Red de Acción sobre Plaguicidas y Alternativas en México, A. C. Retrieved December 15, 2019.

APPENDIX 3. Guide to Integrated Pest and Vector Management

NEGATIVE IMPACTS OF CONVENTIONAL PRACTICES

According to the environmental and socioeconomic diagnoses carried out, pesticides are used to manage pests in forest, other plants and pastures in the project area. These chemicals have negative impacts on the health of people, animals and the ecosystems surrounding the production areas. Among the most commonly used practices are:

Use of glyphosate-based pesticides to control weeds and insects that extract sap from the grass.

Use of chemical insecticides to combat the proliferation of flies, whose populations increase due to the surplus of non-degraded excrement or because of the proximity to fruit crops, such as mango. A common practice is the application of Methyl Parathion, a highly toxic pesticide whose importation into Mexico has been prohibited since November 2019.

INTEGRATED PEST AND VECTOR MANAGEMENT IN THE ACCIÓN PROJECT

The ACCIÓN project seeks to reorient EbA productive practices towards models that improve the conservation and restoration of ecosystems. The project is in line with the General Guidelines on Environment, Health and Safety, making a commitment not to promote the use of pesticides and to do what is necessary "to avoid or minimize the use of hazardous materials" (International Finance Corporation, 2009, p. 43). Therefore, related activities are included in the exclusion list.

The ACCIÓN project establishes this Integrated Pest and Vector Management Guide (GIPVM), as a general guideline to address pests and diseases derived from agricultural activities. GIPVM will also promote good practices for the health and sanitation of livestock, in order to reduce diseases in the herd and prevent it from becoming a vector that affects the human population or other animal populations.

The GIPVM is then conceived as a series of balancing practices that are carried out on the basis of the following principles:

- Use scientific and technical knowledge about the habits, life cycle, needs and aversions of pests to regulate their populations.
- Recovering and sharing the farmers' knowledge about the life cycle of pests.
- Use the least toxic methods first, leaving the use of pesticides as a last option.
- Monitor pest activity and adjust methods over time.
- Tolerate harmless pests.
- Establish an economic threshold to decide when it is time to act.

The terms pesticide shall be understood as synonyms to refer to a range of chemically synthesized products (herbicides, insecticides, fungicides, fumigants, nematicides, among others)

LEGAL FRAMEWORK AND ENVIRONMENTAL AND SOCIAL STANDARDS OF GIPVM

National legislation provides a broad body of instruments for the management of hazardous substances and environmental impacts. The general framework for environmental protection and the regulation of

productive activities is provided by articles 4 and 27 of the Mexican Constitution, the General Law of Ecological Balance and Environmental Protection (LEGEEPA), and the Law of Sustainable Rural Development (LDRS). From these laws derive regulations and a series of Mexican Official Standards (NOM) for the agricultural and livestock sector. Table 1 lists the main laws, regulations and NOMs that frame this GIPVM.

Table 1. National laws, decrees, official documents, NOM and state laws of general application in the GIPVM

Document	Sections / Contents
Political Constitution of the United Mexican States	Human right to a healthy environment for the development and well-being of all people.
Sustainable Rural Development Law	In order to achieve sustainable rural development, the State shall promote productive and social development activities, seeking the optimal use, conservation and improvement of natural resources. Priority support shall be given to producers in the reconversion zones, and especially to those located in the upper parts of the basins, so that they may carry out the transformation of their productive activities based on the optimal use of soil and water, through agricultural, livestock and forestry practices, which will ensure sustainable production.
General Law of Ecological Equilibrium and Environmental Protection	In order to avoid water pollution, the application of pesticides, fertilizers and toxic substances are subject to federal or local regulation. Article 134-IV. The use of pesticides, fertilizers and toxic substances must be compatible with the balance of ecosystems and consider their effects on human health, in order to prevent the damage they may cause. Article 143. Pesticides, fertilizers and other hazardous materials shall be subject to the official Mexican standards issued within the scope of their respective competences, the

Document	Sections / Contents
	Secretariat and the Secretariats of Agriculture, Livestock and Rural Development, Health and Commerce and Industrial Development. The Regulations of this Law will establish the regulations that, within the same framework of coordination, must be observed in activities related to such materials, including the final disposal of their residues, packaging and empty containers, measures to avoid adverse effects on ecosystems and the procedures for the granting of the corresponding authorizations. Authorizations may not be granted for the importation of pesticides, fertilizers and other hazardous materials when their use is not permitted in the country where they have been developed or manufactured.
NOM-003-STPS-1999	Safety conditions to be considered by persons performing agricultural activities to prevent risks due to exposure to pesticides or fertilizers during storage, handling, transport or application to crops.
NOM-017-STPS-2008	Personal protective equipment - Selection, use and handling in the workplace.
NOM-032-SSA2-2014	Protocols for epidemiological surveillance, promotion, prevention and control of vector-borne diseases.
Official Gazette of the Federation of January 3, 1991	List of pesticides prohibited for import, manufacture, formulation, marketing and use.
Dirección General de Inocuidad Agroalimentaria Acuicola y Pesquera (August 01, 2016). Oficio B00.04.02.02.0844. Mexico City, Mexico: SAGARPA, SENASICA.	Cancellation of pesticide molecules.
NOM-082-SAG-FITO/SSA1-2017	Maximum residue limits. Technical guidelines and procedures for authorization and review.
NOM-033-FITO-1995	Phytosanitary requirements and specifications for the notice of commencement of operations to be complied with by individuals or legal entities interested in marketing agricultural pesticides.

NOM-047-SSA1-2011	Environmental health and biological exposure indices for personnel occupationally exposed to chemicals.
NOM-048-SSA1-1993	Standardized method for the evaluation of health risks as a consequence of environmental agents.
NOM-052-FITO-1995	Phytosanitary requirements and specifications to submit the notice of commencement of operation by individuals or legal entities engaged in the aerial application of agricultural pesticides.
NOM-059-SEMARNAT-2010	Environmental protection of Mexican native species of wild flora and fauna in risk category and specifications for their inclusion, exclusion or change in the list of species at risk.
NOM-082-SAG-FITO/SSA1-2017	Maximum residue limits. Technical guidelines and procedures for authorization and review.

Document	Sections / Contents
NOM-003-STPS-2016	Agricultural activities - Occupational health and safety conditions.
Pesticides and Toxic Substances Import Permit Regulations (PLAFEST)	Decree amending, adding and repealing several provisions of the Regulations on Registrations, Import and Export Authorizations and Export Certificates of Pesticides, Plant Nutrients and Toxic or Hazardous Substances and Materials.
Livestock Organizations Law	Generally applicable.

International treaties and mandatory protocols signed by Mexico are also relevant and must be respected in ACCIÓN's operation, as they are binding for the country (see ESAP).

Application

This GIPVM applies mainly to Components 1 and 3 of ACCIÓN, in which production practices are reoriented towards sustainable schemes. The services and sub-projects, where appropriate, must incorporate measures to promote good practices that lead to the adoption or strengthening of the Livelihoods approach.

Participation

The operational Project Coordinating Unit (PCU). Located within the FMCN, it will have a specialist in environmental and social management, who will train and supervise the staff Sureste Sostenible in compliance with the EAS, including this GIPVM.

SSAC will coordinate the implementation of services and sub-projects in Components 1 and facilitate coordination with local stakeholders, supporting their training for GIPVM follow-up. The main functions of the SSAC related to GIPVM are as follows:

Ensure adequate compliance with the EAS applicable to ACCIÓN, providing technical support to the actors involved in the execution.

Support and strengthen learning communities, including aspects related to GIPVM.

OLLCs in charge of operating services and sub-projects that are selected; the beneficiaries of the calls for proposals under Components 1 and 2 will be responsible for training the corresponding beneficiaries in

GIPVM, as well as following up on the adoption of these practices throughout the life cycle of the service and sub-project.

MEASURES TO PROMOTE GIPVM IN THE ACCIÓN PROJECT

The adoption of the GIPVM approach will be carried out primarily through training and orientation of practices in the services and sub-projects derived from the call for proposals where relevant. Training in GIPVM will be one of the most important measures to be taken, starting with the personnel who collaborate in ACCIÓN's operation. Specifically, the specialist in environmental and social management and the coordinators and technicians of the SSAC, who will supervise and guide the operation of the sub-projects in the area of IPPM and link them with specialists in the field.

The request of proposals for services and sub-projects under Components 1 and 3 of ACCIÓN should include guidelines so that proposals that so require incorporate elements related to integrated pest management and animal health, such as:

- To have a baseline diagnosis of pest and disease control in the production units, based on the diagnostic sheet on practices to control pests and diseases.
- Develop an integrated pest and vector management plan aligned with IPPM principles, including a strategy and training and technical assistance activities to promote its adoption.
- Design a health and sanitation training plan, including a strategy and training and technical assistance activities to promote its adoption.
- Respect and comply with applicable laws, regulations and NOM, as indicated in this GIPVM, in case pesticides are used within the framework of the sub-project (acquired with resources not coming from ACCIÓN).

Define, if applicable, protocols or procedures to be followed for the transport, application, storage and disposal of pesticide and medicine containers (e.g. Procedure Manuals of the National Service for Agri-Food Health, Safety and Quality (SENASICA) and the provisions of the applicable NOMs).

Include training activities on the negative impacts of the use of pesticides and medicines on human health and the environment, as well as on regulations and safe practices for the application, transportation, storage and disposal of containers of these products.

Prepare a report of the procedure applied for the use of pesticides (surface, times, quantities, application methods and use of protective equipment) and the results obtained.

During the operation of the service and sub-project proposals, the consulting firms and the CSOs in charge will be the main channel for promoting the adoption of IPPM and animal health practices. With support from the FRs, they should incorporate measures in the ESAP to train beneficiaries, as well as to promote and monitor the adoption of these practices throughout the service or sub-project cycle (see the monitoring and follow-up section of this appendix).

Annexes

Annex 1. Pesticides prohibited in Mexico according to DOF.

Common name	Chemical Name
Fumisel	Ethylene dibromide.

MERX	Dodecachlorooctahydro-1, 3, 4-methane-2H-cyclobuta (CD) pentalene)
DBCP	(1, 2-Dibromo-3-chloropropane).
DINOSEB	(2-(sec-Butyl)-4, 6-dinitrophenol)
NITROFEN	(2-4-Dichlorophenyl-p-nitrophenyl ether)
CHLORANIL	(2, 3, 5, 6-tetrachloro-1, 4-benzoquinone)
KEPONE CHLORDECONE	(Decachlor-octahydro-1, 3, 4-methene-2H-cyclobuta (CD) pentalen-2-Ona)
ERBON	2-(2, 4, 5 trichlorophenoxy) ethyl 2, 2 dichloro propionate.

Common name	Chemical Name
SODIUM FLUOROACETATE	(1080) Sodium monofluoroacetate.
AC. 2, 4, 5-T	(2,4,5-trichlorophenoxyacetic acid)
DINITROAMINE	(N4, N4-Diethyl-a, a, a-trifluoro-3, 5-dinitro toluene-2, 4-diamine).
MONURON	(3-(p-Chlorophenyl)-1, 1-dimethylurea)
CYANOPHOS	(o-4-Cyanophenyl O, O-dimethylphosphorothioate)
FORMOTION	(S-(2-(2-(Formylmethylaminol)-2-oxoethyl)O, O-dimethylphospho rhodithioate).
PHENYLMERCURY ACETATE OR PROPIONATE	Phenylmercury acetate or propionate
SCHRADAN	(Octamethylpyrophosphoroamide)
DIALIFOR	(S-(2-chloro-1-phthalimidoethyl)O,O-diethyl-phosphorodithioate.
TRIAMIFOS	p-(5-Amino-3-phenyl-1H-1, 2, 4-triazol-1-, il)-N, N, N, N'-tartamethyl phosphonic diamide)
ALDRIN	(1R, 4S, 4aS, 5S, 8R, 8aR)-1, 2, 3, 4, 10, 10 hexachloro-1, 4, 4a, 5, 8, 8a-hexahydro-1, 4:5, 8dimethanonaphthalene.
ENDRIN	(1R, 4S, 5R, 8S)- 1, 2, 3, 4, 10, 10-Hexachloro-1, 1, 4, 4a, 5, 6, 7, 8, 8a-octahydro-6, 7-epoxyl-1, 4:5, 8-demethanonephthalene.
DIELDRIN	(1R, 4S, 4aS, 5R, 6R, 7S, 8S, 8aR)-1, 2, 3, 4, 10, 10 hexachloro-1, 4, 4a, 5, 6, 7, 8, 8a octahydro-6, 7 epoxyl-1, 4:5, 8-dimethanonaphthalene

Prohibited import pesticides (Diario Oficial de la Federación, 2019).

CODE	DESCRIPTION
2903.81.04	1,2,3,4,5,6-Hexachlorocyclohexane (HCH (ISO)), including Lindane (ISO, INN).
2903.82.04	1,2,4,5,6,7,7,8,8-Octachloro-3-alpha,4,7,7,7-alpha tetrahydro-4,7-methanoindene (Chlordane).
2903.92.04	1,1,1-trichloro-2,2-bis(p-chlorophenyl) ethane DDT (ISO), clophenotane (INN).
2920.11.03	O,O-dimethyl-O-p-nitrophenyl phosphorothioate (Methyl parathion).
2920.90.18	6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methane-2,4,3-benzodioxathiazepin-3-oxide (Endosulfan).
2924.12.03	2-chloro-2-diethylcarbamoyl-1-methylvinyl dimethylphosphate (Phosphamidon).

2924.29.49	2-Chloro-2',6'-diethyl-N-(methoxymethyl) acetanilide (Alachlor).
2930.50.03	N-(1,1,2,2,2-Tetrachloroethylmercapto)-4-cyclohexen-1,2-dicarboximide (Captafol).
2930.90.74	2-methyl-2-(methylthio)propionaldehyde-O-methyl carbamoyl oxime (Aldicarb); O,O-dimethyldithiophosphoryl-phenylacetic acid ethyl ester (Phenthoate).
2931.90.22	O,O-dimethyl 1-hydroxy-2,2,2-trichloroethylphosphonate (Trichlorfon).
2932.99.17	2,3-Dihydro-2,2-dimethyl-7-benzofuranyl methyl carbamate (Carbofuran).
2933.99.49	O,O-dimethyl-S-(4-oxo-1,2,3- benzotriazin-3(4H)-yl)methyl phosphorodithioate (Azinphos methyl).

CODE	DESCRIPTION
3808.50.02	Formulated with: captafol; carbofuran; chlordane; DDT; phosphamidon; Hexachlorocyclohexane (HCH (ISO)), including lindane (ISO, INN); methyl parathion.
3808.50.99	Others.
3808.91.05	Formulated with: oxamyl; Bacillus thuringiensis.
3808.91.06	Formulated with: aldicarb; azinphos methyl; carbofuran; endosulfan; phenthoate; trichlorfon.
3808.93.05	Herbicides formulated with: alachlor.
3808.99.03	Acaricides based on: azinphos methyl; endosulfan; O,O-dimethyldithiophosphoryl phenylacetic acid ethyl ester.
3808.99.04	Formulated with: trichlorfon.

Prohibited imports of pesticides in Mexico (COFEPRIS, 2019).

In view of the environmental degradation that for years has been affecting people's quality of life, the Ministry of Health, through the Federal Commission for the Protection against Sanitary Risks (Cofepris), the Ministry of Economy (SE), the Ministry of Environment and Natural Resources (Semarnat) and the Ministry of Agriculture and Rural Development (SADER), establish measures to advance compliance with various international treaties signed by Mexico, in order to prohibit the use of highly hazardous pesticides and reduce pressure on natural resources and minimize the generation of waste and polluting emissions.

The Stockholm Convention on Persistent Organic Pollutants, as well as the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, aim to protect human health and the environment from persistent organic pollutants.

These conventions recommend adopting measures to prohibit the importation of hazardous chemicals such as Azinphos-methyl, Captafol, Chlordane, DDT, Endosulfan, Lindane, Alachlor, Aldicarb, Phosphamidon, Methylparathion, Carbofuran and Trichlorfon, due to their high level of risk to the health of the population.

The publication in the Official Gazette of the Federation, on November 6 of this year, of the *Decree amending the Law of General Import and Export Taxes*, will make it possible to prohibit the importation of various toxic substances, avoiding the use of prohibited molecules, as well as those highly dangerous pesticides whose sanitary registration has been cancelled".

Annex 2. International Agreements and documents of mandatory compliance signed by Mexico regarding pesticides.

List of international agreements signed by Mexico

Agreement/Treaty/Convention	Year
Convention for the Protection of the Flora and Fauna and Natural Scenic Beauty of the Countries of the Americas.	1942
Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.	1975
Convention on Wetlands of International Importance especially as Waterfowl Habitat.	1986
Vienna Convention for the Protection of the Ozone Layer.	1987

Montreal Protocol on Substances that Deplete the Ozone Layer (as amended in 1991, 1994 and 2006).	1990
North American Agreement on Environmental Cooperation.	1991
Environmental Cooperation Agreement between the United Mexican States and the Government of Canada.	1991
Convention on Biological Diversity.	1993
International Convention on Oil Pollution Preparedness and Response Cooperation.	1995
Kyoto Protocol to the United Nations Framework Convention on Climate Change.	2000
Cartagena Protocol on Biosafety to the Convention on Biological Diversity.	2003
Stockholm Convention on Persistent Organic Pollutants (signed in 2001 and entered into force in 2004).	2004
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.	2005
Agreement on Environmental Cooperation between the governments of the United Mexican States, the United States of America and Canada (NAAEC - ECA).	2018

Source: (SENDAS, A.C. - CEMDA A.C., 2018).

International treaties that are binding for Mexico in environmental, natural resources and species matters (Suprema Corte de Justicia de la Nación, 2012).

Document	Sections
Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights.	Articles 1 and 11
Stockholm Declaration on the Human Environment.	Principle 1
Rio Declaration on Environment and Development. Adopted by the United Nations Conference on Environment and Development, Rio de Janeiro, June 1992.	Principle 10
Convention on Biological Diversity.	Article 14

Document	Sections
Aichi Biodiversity Targets.	Objective 5 and 7
Convention 169 of the International Labor Organization on indigenous and tribal peoples.	Articles 4, 7.3 and 7.4
Report of the United Nations High Commissioner for Human Rights. Analytical study of the relationship between human rights and the environment.	
Report of the Independent Expert on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment, John H. Knox.	

Source: (SENDAS, A.C. - CEMDA A.C., 2018).

Annex 4. Laws, regulations and Mexican Official Standards applicable to the use of pesticides.

Document	Sections / Contents
General law for the prevention and integral management of waste. Last amendment published in the DOF 19- 01-2018.	Article 31, Sections VIII and IX; Article 67, Section IX.
Regulation of the general law for the prevention and integral management of waste. Last amendment published DOF 31-10-2014	Article 87.
Law on Livestock Organizations	Generally applicable.
Regulation of the Law on Livestock Organizations	Generally applicable.
Dirección General de Inocuidad Agroalimentaria Acuicola y Pesquera (August 01, 2016). Oficio B00.04.02.02.0844. Mexico City, Mexico: SAGARPA, SENASICA.	Cancellation of pesticide molecules.
NOM-003-STPS-1999	Safety conditions that must be taken into account by persons involved in agricultural activities to prevent risks from exposure to pesticides or fertilizers, whether in storage, handling, transportation or application to crops.
Mexican Official Standard NOM-017-STPS-2008,	Personal protective equipment-Selection, use and handling in the workplace.
Mexican Official Standard NOM-032-SSA2-2014.	For epidemiological surveillance, promotion, prevention and control of vector-borne diseases.
Mexican Official Standard NOM-082-SAG-FITO/SSA1- 2017.	Maximum residue limits. Technical guidelines and authorization and review procedures.
Mexican Official Standard NOM-033-FITO-1995,	Establishing the phytosanitary requirements and specifications for the notice of commencement of operations to be complied with by individuals or legal entities interested in marketing agricultural pesticides.
Mexican Official Standard NOM-047-SSA1-2011.	Environmental health-Biological exposure indexes for personnel occupationally exposed to chemicals.
Mexican Official Standard NOM-048-SSA1-1993.	Establishing the standardized method for the evaluation of health risks as a consequence of environmental agents.
NOM-052-FITO-1995 Mexican Official Standard.	Establishing the Phytosanitary Requirements and Specifications for Filing the Notice of Commencement of Operation by Individuals or Legal Entities Engaged in the Aerial Application of Agricultural Pesticides.
Mexican Official Standard NOM-059-SEMARNAT- 2010,	Environmental protection-Mexican native species of wild flora and fauna-Categories of risk and specifications for their inclusion, exclusion or change-List of species at risk.

Document	Sections / Contents
Mexican Official Standard NOM-082-SAG-FITO/SSA1- 2017	Maximum residue limits. Technical guidelines and authorization and review procedure.
Draft Mexican Official Standard NOM-003- STPS-2016,	Agricultural activities-Occupational safety and health conditions.
PLAFEST Regulations	Decree amending, adding and repealing several provisions of the Regulations on Registrations, Import and Export Authorizations and Export Certificates of Pesticides, Plant Nutrients and Toxic or Hazardous Substances and Materials.

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Networks and websites of interest to the project

- Technical Working Group on Pesticides in Mexico, https://www.gob.mx/cms/uploads/attachment/file/451603/Elementos_para_Desarrollar_una_Estrategia_Integral_de_Manejo_Responsable_de_Plaguicidas_final_3_.pdf
- Networks of Ecoethology, Biosystematics and Environment and Sustainability of INECOL, A.C.
- Cofepris, 2019. Sanitary registrations of pesticides cancelled <http://siipris03.cofepris.gob.mx/Resoluciones/Consultas/ConWebRegPlaguicida>

APPENDIX 4. Procedure to be Followed to Protect Cultural Heritage

BACKGROUND

Mexico is one of the five countries considered megadiverse, a situation that is reflected in the cultural manifestations of the past and present. As of 2010, the country had a registry of 42,614 archeological sites (Consejo Nacional para la Cultura y las Artes, 2010).

The cultural manifestations of the country's past, as well as the current tangible and intangible heritage, are found in places where natural resources are better conserved and associated with original indigenous peoples (Boege, 2008) and where there are social and political practices and agreements that help to conserve them.

This situation reflects the cultural richness found in the work zones proposed for the ACCIÓN project, with the state of Yucatán being one of the entities with the greatest number of archaeological sites registered, followed by Quintana Roo and Campeche. In addition, there is also the cultural richness represented by the diverse cultures of the indigenous peoples present in the country, as well as by the historical monuments.

In the case of intangible cultural heritage, specifically for the states of Yucatán, Quintana Roo, and Campeche, the table 1 provides a comprehensive record of the inventory of intangible cultural heritage, as well as other relevant cultural and archaeological data. The table shows the number of elements registered in the inventory of intangible cultural heritage for each state, along with the number of sites designated as World Heritage sites, archaeological zones, UNESCO declarations, and cathedrals. (National Council for Culture and the Arts, 2010).

Table 1. Intangible and tangible heritage cultural recorded in the states of intervention of the ACCIÓN project.

Category	Yucatán	Quintana Roo	Campeche
Intangible Cultural Heritage	11	9	9
World Heritage Sites	2	1	2
Archaeological Sites	17	19	17
UNESCO Declarations	4	0	1
Cathedrals	1	1	1
Total Tangible Heritage	24	21	21
Total Intangible Heritage	11	9	9

Overview of International Finance Corporation (IFC) Performance Standard 8 (PS8)

The guidance on IFC's Performance Standard 8 (PS8) centers on safeguarding cultural heritage in project areas. Key sections emphasize avoiding adverse impacts on significant cultural heritage, particularly those recognized internationally. Projects should explore alternative designs to prevent harm or consider relocation when in-situ preservation is not viable. Engagement with local communities and stakeholders is essential to identify and protect cultural heritage, ensuring legal

and international standards are met. Specific address the risks associated with infrastructure projects and emphasize mitigation strategies like design modifications, protection plans, and community participation.

The Guidance Notes (GN) expand on these principles, detailing procedures for identifying, managing, and monitoring cultural heritage. They highlight the importance of consulting with stakeholders, using local knowledge, and conducting a proper inventory to assess risks and potential impacts. Guidance includes protocols for engaging local communities and ensuring legal compliance. Mitigation efforts focus on implementing external audits, conducting completion evaluations, and maintaining continuous engagement with local and indigenous communities to adapt project planning as needed, protecting cultural heritage throughout the project lifecycle.

By integrating these actions, the project ensures comprehensive protection of cultural heritage, respecting local and international standards, and fostering responsible project development.

National legislation

For purposes of cultural heritage in Mexico, the General Law of Culture and Cultural Rights (Chamber of Deputies of the H. Congress of the Union, 2017) refers to tangible cultural heritage as tangible cultural heritage and intangible cultural heritage as intangible cultural heritage.

Based on this framework, for the ACCIÓN project, cultural heritage may be tangible (of archaeological and historical origin) and also intangible or immaterial, such as music, dance, handicrafts, gastronomy and festivities.

With respect to national legislation, the General Law on Culture and Cultural Rights in its Fourth Title, Chapter II on the participation of the private sector, Articles 39 and 40 establishes that: *"The Ministry of Culture in coordination with the agencies and entities of the public administration of the three levels of government competent in the matter, will promote and enter into agreements with the private and social sectors for the research, conservation, promotion, protection and development of Cultural Heritage"*.

Article 40.- The Ministry of Culture shall enter into agreements between the federal entities, the municipalities, the mayor's offices of Mexico City and with the private and social sectors, to promote awareness, dissemination and promotion campaigns on the importance of the participation of the different sectors of the country's population in the conservation of the intangible and tangible assets that constitute the Cultural Heritage, in accordance with the participation mechanisms created for such purpose." (Chamber of Deputies of the H. Congress of the Union, 2017)

On the other hand, the Federal Law on Archaeological, Artistic and Historical Monuments and Zones in its Article 2⁶ recognizes the entities responsible for the protection of the country's tangible cultural heritage:

⁶ Federal Law on Archaeological, Artistic and Historic Monuments and Zones, enacted in 1972 and last amended on February 16, 2018 (Cámara de Diputados del H. Congreso de la Unión, 2018).

"Article 2.- The research, protection, conservation, restoration and recovery of archaeological, artistic and historical monuments and monument zones is of public utility. The Ministry of Culture, the National Institute of Anthropology and History, the National Institute of Fine Arts and the other cultural institutes of the country, in coordination with state and municipal authorities and individuals, will carry out permanent campaigns to promote knowledge and respect for archaeological, historical and artistic monuments".

Another important legal instrument is the Regulations of the Federal Law on Archaeological, Artistic and Historic Monuments and Zones⁷, which states:

"CHAPTER II Registration

ARTICLE 17.- In the inscriptions of movable monuments or respective declarations made in the public registries of the

competent Institutes, the following shall be noted: I.- The nature of the monument and, if applicable, the name by which it is known;

II.- The description of the piece of furniture and the place where it is located"

(Chamber of Deputies of the H. Congress of the Union, 2015).

Application

The ACCIÓN project does not contemplate activities that may affect tangible or intangible cultural heritage in all its manifestations, including natural monuments or sacred sites identified as such by the communities. However, due to the cultural richness of the country and of the territories targeted for the development of the ACCIÓN project, the following procedure is established to ensure due diligence in case of chance or fortuitous discoveries of tangible or intangible heritage. This procedure serves only as a general guideline, and the specific, tailor-made mitigation actions will be incorporated into annual plans of sub-projects when relevant.

Training and awareness

As part of the ESMF training, the Regional Fund (RF), Sureste Sostenible (SSAC), supported by ACCIÓN's environmental and social management specialist, will sensitize the PLATs and OLLCs that operate the POAs and sub-projects under Component 1 and 3 to the value of the tangible and intangible cultural heritage in the regions where they work.

With respect to intangible cultural heritage, the ACCIÓN project is based on the premise that livestock and agroforestry systems in Mexico have deep roots in the country's cultural heritage, manifested in cultural expressions such as music, dance, handicrafts, gastronomy and festivities. Although these expressions will not be threatened or negatively affected by the project, they could be the vehicle for transmitting concepts or disseminating innovative practices that guide livestock farming towards sustainable or regenerative schemes or help conserve agroforestry systems that emulate nature, based on the recognition of ancestral cultural practices, as well as the integration of new practices that enhance traditional

⁷ Reglamento de Ley Federal sobre Monumentos y Zonas Arqueológicas, Artísticas e Históricas, published on December 8, 1975 and last modified on July 8, 2015

knowledge. This procedure is also contemplated in the Indigenous Peoples Plan (IPP) of the ACCIÓN project.

With respect to tangible cultural heritage, SSAC will guide the consulting firms, OLLCs and participants in the services and sub-projects on the procedures to follow in the event of findings of tangible cultural heritage, applying measures that guarantee the inclusion and equity of the local indigenous population. To this end, the following will be established a link with the National Institute of Anthropology and History (INAH)⁸, a Mexican government agency that is responsible for processing inspection and registration requests within the timeframe established by regulations or procedures and that are established at the time of establishing contact with the SSAC or beneficiaries of the project.

Procedure for discovery of tangible heritage (material)

If in the course of the implementation of any service or sub-project evidence of tangible/material cultural heritage (archaeological or historical) is found, such as artifacts, utensils, complete and/or fragmented, or others, that potentially lead to the presumption that they correspond to archaeological remains, the SSAC, OLLC's, PLATs and beneficiaries of the project will carry out the following actions:

The beneficiaries will stop the activities, works and/or construction that are being carried out in the field and that could affect the integrity of the archaeological or historical remains found. Subsequently, they will report the finding to the OLLC's or consulting firm operating the sub-project or service and the latter, in turn to SACC. SACC will report the finding to the FMCN and the FMCN to the GCF.

- Beneficiaries will isolate the area where the archaeological or historical remains were found, by means of a perimeter fence or tape, particularly in the face of imminent loss or looting.
- The OLLC's in charge of the sub-project or service will record the archaeological or historical remains through photographs and, if possible, geo-referencing.
- The OLLC's, together with the beneficiaries, will inform the local authorities (ejidos, municipalities) about the finding.
- SSAC will contact the INAH that corresponds to its region and will request an inspection of the archaeological or historical remains, will keep the acknowledgement of the report or request to INAH, and will request a copy of the inspection report or report issued.
- SSAC, the OLLC, and the beneficiary will follow the recommendations of the INAH for the conservation of the material cultural heritage found, and will include in the records

⁸ Which is defined as "the federal government agency founded in 1939, to ensure research, Technical definitions, protection and dissemination of Mexico's prehistoric, archaeological, anthropological, historical and paleontological heritage" (Government of Mexico, 2019)

of the execution of the procedure and the corresponding agreements with the institutions and authorities.

Procedure for finding intangible heritage (immaterial)

In the event that the beneficiaries of sub-project, the OLLC operating the service or sub-project, or SSAC identify a possible negative impact on a manifestation of intangible cultural heritage (forms of traditional organization, indigenous languages, dialects, calendars or ritual or symbolic practices, spiritual valuation of sites or objects, etc.) due to project activities, they shall carry out the following actions in order to document and protect such cultural practices:

The beneficiaries shall suspend the execution of the actions of the service or sub-project and inform the OLLC operating sub-project and SSAC, regarding the manner in which the cultural manifestation may be affected by ACCIÓN's activities.

The OLLC will ask local authorities (community, ejido, municipal) for permission to record the signs of community practices and symbols detected: description, symbolic meaning, periodicity, record of the actors who demonstrate or practice them. The record includes concerns expressed about possible negative impacts of the sub-project or service. The OLLC will inform to SSAC, SSAC will inform the FMCN and the FMCN will inform the GCF.

SSAC will consult local primary and secondary sources, as well as specialists (INAH, academic institutions, local cultural agencies) regarding the cultural manifestation and will ask for their opinion on the possible impact and ways to protect it.

The beneficiaries and the responsible OLLC together with SSAC will propose a way to document the practice (photography, video, oral testimony, etc.) in consensus and with the written authorization of those who carry out the practice and the local authorities (community, ejido, municipal).

The beneficiaries, responsible OLLC together with SSAC will convene a community assembly to present the case, which will determine whether or not to continue with the actions.

Indications for notification of tangible or intangible findings to cultural institutions and authorities

A free writing addressed to INAH will be developed, for the regional office in each state, in which the archaeological or historical or intangible find will be notified, contemplating the following basic information:

- Site location (coordinates).
- Name of the site or place, nearby locality, municipality and state.

- Type of finding (structural foundation, whole or broken ceramics, bone remains with burial artifacts, ritual or symbolic practices, spiritual valuation of sites or objects, shrines, etc.).
- Date of finding.
- Works that were carried out when the discovery was found and the description of the use of the property.

Person(s) who made the finding.

Contact information to carry out the inspection visit.

Photographic annex.

RESPONSIBILITIES DURING THE PROCEDURE

SSAC must raise awareness, guide and support OLLCs, of sub-projects and services to value and protect tangible and intangible cultural heritage, recommending their registration as INAH's coadjutant bodies⁹. The beneficiaries of the services or sub-projects, OLLCs, and SSAC will be responsible for informing the authorities and following up on the actions derived from any fortuitous finding. It is the duty of the competent Mexican authorities to follow up on inspection and registration requests, within the period of time established in the regulations or procedures and from the moment the SSAC or project beneficiaries notify the finding.

It is the responsibility of the SSAC, OLLCs, and the beneficiaries of the sub-projects and services to document the manifestations of intangible cultural heritage that have not been registered. The OLLCs are responsible for supporting the registration and ensuring the permanence of the expressions of cultural heritage identified in the sub-project and service they operate. It is the responsibility of the SSAC to link stakeholders (INAH, local population, specialists) to document the cases and formulate the necessary measures and agreements for the protection of cultural heritage.

INSTRUMENTS APPLIED FOR COMPLIANCE

General Law of Culture and Cultural Rights

Federal Law on Archaeological, Artistic and Historical Monuments and Zones

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⁹ Procedure available online at: <https://www.gob.mx/tramites/ficha/solicitud-para-el-reconocimiento-de-asociaciones-civil-juntas-vecinales-y-uniones-de-campesinos-como-organos-coadjutantes-del-inah/INAH1296>

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APPENDIX 5. Example of eligible activities

Small portable climatic stations

Personal solar weather station allows to monitor outdoor conditions, including wind speed, wind direction, rainfall, UV, solar radiation, barometric pressure, indoor/outdoor temperature (F and C), indoor/outdoor humidity, dew point, heat index, wind chill, and more. This are the stations, and the health compliance specifications. The stations to not have to be in an antenna tower and do not require excavation, construction, and repair of components of the system. UNEP Small Donation Program is already using it in five communities in the region with excellent results.

Picture: example of a small portable climatic station



Activities with no or minimal risks such beekeeping and fishing facilities

The example of beekeeping and fishing facilities are as shown in the picture. The project will support the maintenance of the bee boxes (as you can see in the pictures, those are local, endemic no string bees) , stands, and ceilings. During hurricanes and other climatic events, the thatched roof structures often suffer damages.

Example of a facility in the Yucatan peninsula where fishermen put their fishing gear



Example of beekeeping facility in the Yucatan Peninsula

