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# USAID GUATEMALA BIODIVERSITY PROJECT

## FINAL REPORT

June 15, 2021

This publication was produced for review by the United States Agency for International Development. It was prepared by Chemonics International Inc.

PHOTO: An aerial photo of Guatemala's largest mangrove reservoir located in the Machón-Guamuchal Ramsar Site. One of the largest mangrove forests on the Pacific Coast, the Machón-Guamuchal Ramsar Site is ripe with aquatic and terrestrial biodiversity and serves as one of the last remaining habitats for migratory birds on the country's western Pacific corridor. The Guatemala Biodiversity Project supported the strengthening of protected areas in the Pacific Coast region with the objective of strengthening conservation efforts of the mangrove ecosystems of Manchón-Guamuchal Ramsar Site and La Chorrera Private Natural Reserve. (Credit: Sergio Izquierdo, USAID/Guatemala Biodiversity Project)

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**Contract No.** 72052018C000002

**Cover photo:** A quetzal perched on a branch in the Sierra de las Minas Biosphere Reserve. The Guatemala Biodiversity Project monitored quetzal (the national bird of Guatemala), among other endemic species, in the cloud forests of the Sierra de las Minas Biosphere Reserve to evaluate the health of ecosystems that host diverse animal species. (Credit: Sergio Izquierdo, USAID/Guatemala Biodiversity Project)

PHOTO: A flock of scarlet macaws flights across the Maya Biosphere Reserve, where the Guatemala Biodiversity Project supported the monitoring of macaw nests to assess reproductive success, increase captive reproduction, and analyze and document potential threats to natural nesting areas. (Credit: Sergio Izquierdo, USAID/Guatemala Biodiversity Project)

# CONTENTS

# ACRONYMS

| | |
|---|---|
| AGHN | *Asociación Guatemalteca de Historia Natural* |
| APEA | Applied Political Economy Analysis |
| ARCAS | *Asociación de Rescate y Conservación de Vida Silvestre* |
| ARNPG | *Asociación de Reservas Naturales Privadas de Guatemala* |
| ASODESTY | Yaxhá National Park |
| CBD | Convention on Biological Diversity |
| CBO | Community-based organizations |
| CDC | Conservation Data Center |
| CECON | *Centro de Estudios Conservacionistas* |
| CEMEC | *Centro de Monitoreo y Evaluación* |
| CLA | Collaborating, Learning and Adapting |
| CONAP | National Council of Protected Areas |
| COP-10 | Tenth Meeting of the Conference of the Parties |
| DERCAS | Software Acceptance Criteria, Requirements and Specifications Document |
| DIPESCA | *Dirección de Normatividad de Pesca y Acuicultura* |
| DIPRONA | Nature Protection Division |
| ECOSAGUA | Puerto Grande Company |
| FDN | *Fundación Defensores de la Naturaleza* |
| FUNDAECO | Fundación para el Ecodesarrollo y Conservación |
| FY | Fiscal Year |
| GHG | Greenhouse Gas Emissions |
| GIZ | German Agency for International Cooperation |
| GPMA | Group of Like-Minded Megadiverse Countries |
| HICD | Human and Institutional Capacity Development |
| IDAEH | *Instituto de Antropología e Historia* |
| ICC | *Insituto Privado de Cambio Climático* |
| INAB | *Instituto Nacional de Bosques* |
| INACIF | National Institute of Forensic Sciences of Guatemala |
| INGUAT | Instituto Guatemalteco de Turismo |
| IR | Intermediate Result |
| LPRS | Legal and Policy Reform Strategy |
| MAGA | *Ministerio de Agricultura, Ganadería y Alimentación* |
| MARN | *Ministerio de Ambiente y Recursos Naturales* |
| MBR | Maya Biosphere Reserve |
| MEL | Monitoring, Evaluation and Learning |
| MSME | Micro, Small and Medium Enterprises |
| NBSAP | National Biodiversity Strategy and Action Plan |
| NGO | Non-governmental organization |
| NPV | *Asociación Naturaleza por la Vida* |
| PROBOSQUE | National Forest Incentives Program |
| REDD+ | Reducing emissions from deforestation and forest degradation |
| RPU | Providers and Users |

| | |
|---|---|
| SC | Steering Committee |
| SIGAP | System of Protected Areas |
| SMART | Spatial Monitoring and Reporting Tool |
| SMBR | Sierra de las Minas Biosphere Reserve |
| SNIBgt | National Biodiversity Information System for Guatemala |
| TDA | Transnational Development Associates |
| TOC | Theory of Change |
| UNDP | United Nations Development Programme |
| UNESCO | United Nations Educational, Scientific, and Cultural Organization |
| US | United States |
| USAC | *Universidad de San Carlos* |
| USAID | United States Agency for International Development |
| VCU | Verified Carbon Unit |
| WCS | Wildlife Conservation Society |

# EXECUTIVE SUMMARY

Con un enfoque hacia sistemas locales, el Proyecto contribuyó a mejorar la gestión y la gobernanza del Sistema Guatemalteco de Áreas Protegidas, SIGAP, a través de intervenciones a nivel nacional y en tres áreas piloto, Reserva de la Biosfera Maya (MBR), Reserva de la Biosfera Sierra de las Minas (SMBR) y las áreas protegidas en la costa del Pacífico. Basado en el tercer objetivo de la Estrategia de Cooperación para el Desarrollo de País de USAID/Guatemala para el año fiscal 2012-2018, el cual busca "*mejorar la gestión de los recursos naturales para mitigar el impacto del cambio climático global*", el Proyecto se orientó hacia dos resultados intermedios, "Estrategias de conservación y gestión impulsadas por el mercado implementadas", y "Fortalecimiento de la gobernanza ambiental". Para alcanzar sus objetivos el Proyecto se basó en una Teoría de Cambio que postula que la gobernanza efectiva de las áreas protegidas conduce a mejores resultados de conservación de la biodiversidad. La implementación del Proyecto se estructuró en base a cuatro componentes: 1: Optimizar los enfoques de conservación a través de una mejor información sobre especies y ecosistemas clave; 2: Apoyar las reformas legislativas y de política a nivel nacional y subnacional; 3: Crear capacidad para la aplicación y el enjuiciamiento efectivos de delitos cometidos en áreas protegidas; y 4: Involucrar a actores locales en los esfuerzos de conservación. Los principales resultados alcanzados fueron:

**Nivel Nacional: a)** Una plataforma nacional de datos e información de biodiversidad plenamente funcional, para uso de tomadores de decisión y público en general; **b)** elaboración de normativos, políticas y regulaciones ambientales a nivel nacional, incluyendo la Política Ganadera Sostenible, Manual de Participación Social en el SIGAP, Estrategia Nacional de Manejo de Incendios Forestales y Protocolo de Incendios Forestales; **c)** establecimiento de bases para el laboratorio forense ambiental del Instituto Nacional de Ciencias Forenses; **d)** creación de cuatro nuevas unidades especializadas de justicia ambiental; **e)** actualización del Manual Forestal del SIGAP y reglamento para otorgamiento de concesiones forestales; y **f)** capacitación en manejo sostenible de recursos naturales, incluyendo gestión de proyectos, investigación forense de incendios forestales, legislación del patrimonio ambiental y cultural, y gobernanza democrática de áreas protegidas.

**Reserva de Biosfera Maya**: **a)** seguimiento a la enmienda del acuerdo de conservación de Paso Caballos entre el CONAP y la comunidad indígena; **b)** apoyo a la prevención y combate de incendios forestales, incluyendo capacitación y equipamiento de bomberos, desarrollo de un protocolo de respuesta, y propuesta de reglamento de quemas agrícolas; **b)** promoción del uso de tecnologías innovadoras para el monitoreo de especies, ecosistemas y delitos ambientales, incluyendo sobrevuelos; **c)** apoyo a la generación de ingresos a través de medios de vida sostenibles en emprendimientos verdes; **d)** ampliación de la iniciativa Jaguares para Siempre con pequeños y medianos ganaderos; **e)** espacios fortalecidos para el diálogo local de gobernanza en el Parque

Nacional Laguna del Tigre y el "El Bloque"; **f)** elaboración del protocolo de CONAP para el manejo de ganado decomisado; y **g)** promoción de mecanismos de pago por servicios ecosistémicos como el Programa Nacional de Incentivos Forestales y Bosques para la Vida, para conectar a actores locales con incentivos financieros para conservar.

**Reserva de Biosfera Sierra de las Minas**: **a)** implementación de mecanismos de respuesta a incendios forestales, incluyendo capacitación y equipamiento de bomberos forestales y desarrollo de un protocolo de respuesta y monitoreo de incendios; **b)** desarrollo de la "Escuela de Guardarrecursos" para capacitarlos en el monitoreo de biodiversidad y legislación ambiental; **c)** elaboración y presentación de una propuesta al Ministerio de Cultura y Deportes para nominar la reserva como sitio Patrimonio de la Humanidad bajo UNESCO; **d)** fortalecimiento del sistema de información y monitoreo; **e)** desarrollo de capacidades de la Junta Directiva de la reserva, incluyendo una propuesta de reglamento de sesiones y estrategia para abordar ilícitos; y **f)** capacitación en el uso de la herramienta de monitoreo y reporte espacial SMART.

**Costa del Pacifico**: **a)** fortalecimiento del sistema de monitoreo de CONAP Costa Sur y del sistema de monitoreo de incendios forestales del CECON; **b)** actualización del Sistema Nacional de Estadísticas de Pesca; **c)** desarrollo de mapas de cobertura forestal de manglar e inventarios y planes de manejo de bosques de manglar para las Reservas de Usos Múltiples Monterrico y Hawaii; **d)** desarrollo de la "Escuela de Guardarrecursos"; **e)** elaboración de un diagnóstico de la temporada de incendios forestales 2019-2020 y conformación de un grupo de alerta temprana; **f)** desarrollo de un plan de manejo de la pesca para Monterrico, con participación de autoridades nacionales y locales y pescadores; y **g)** implementación del monitoreo de temperaturas de incubación en nidos de tortugas marinas.

# OVERVIEW

## INTRODUCTION

The Guatemala Biodiversity Project was a critical and timely response to growing trends impacting protected areas that, if continued, could have led to significant loss of key conservation gains made in Guatemala in recent decades. Across the country, including in and around project pilot intervention areas, exploitative productive ventures and illicit activities led to growing biodiversity loss, degradation of soil structures, and contamination of waters. The project was dedicated to addressing institutional and resource challenges and constraints at the heart of encroaching threats to key ecosystems and species within protected areas. Using a local systems approach, it contributed to improved management and governance of the country's System of Protected Areas (SIGAP for its acronym in Spanish) at the national level and in three pilot geographic areas, supporting conservation management approaches at all levels and larger scale resource allocation and restructuring, to catalyze management changes across Guatemala's system of protected areas. Originally designed as a five-year $20 million activity, the project was revised to a 36-month $11.5 million activity during project implementation. The project was implemented by Chemonics International from July 16, 2018, to July 15, 2021.

The project directly supported Development Objective 3 of USAID/Guatemala's FY2012-2018 Country Development Cooperation Strategy, which seeks to "improve natural resources management to mitigate the impact of global climate change," through contributions to two intermediate results (IRs): IR 1 Market-driven conservation and management strategies implemented and IR 3 Environmental governance strengthened. The project's main goals included: improving conservation approaches through better information on key species and ecosystems, supporting national and sub-national policy and legislative reforms, building capacity for effective enforcement and prosecution of crimes committed within protected areas, and engaging local stakeholders in conservation efforts.

## PROJECT CONTEXT

In 2010, Guatemala became the 18$^{th}$ of 19 countries in the Group of Like-Minded Megadiverse Countries (GPMA), an honor received at the Convention on Biological Diversity (CBD)'s 10th meeting of the Conference of the Parties in 2010 (COP-10). This designation is a unique international recognition, as member countries of the GPMA are home to approximately 70 percent of the biological diversity in the world. Following COP-10, the CBD Strategic Plan for Biodiversity 2011-2020 established 20 targets referred to as "Aichi Targets." As an active member country of the CBD and a newly recognized GMPA, Guatemala's successes in environmental governance stood to contribute greatly to Aichi Target No. 11, "by 2020, at least 17 percent of terrestrial and inland water, and 10 percent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services are conserved through

effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascapes."

Guatemala adopted a National Biodiversity Policy in 2011. The National Biodiversity Policy focused on five thematic areas: biodiversity and its connection to climate change mitigation and adaptation, biodiversity valuation and knowledge, biodiversity conservation and restoration, sustainable use of biodiversity and ecosystem services, and implementation of sound, effective policy. Following its adoption, in 2012, Guatemala established an official National Biodiversity Strategy and Action Plan (NBSAP) (2012-2022) to serve as a mechanism by which it would plan and implement its policy vision.

Despite the development of the NBSAP, when the project began in 2018, Guatemala faced a number of significant challenges and constraints in its ability to adequately manage and monitor its protected areas. Principally, oversight and management of protected areas was inhibited by low institutional capacity and insufficient human resources to oversee management and protection and funding in key government agencies. The limited resources dedicated to government institutions charged with environmental management meant that national and municipal agencies were overstretched. As a result, government institutions faced significant challenges in intra-agency coordination, the revision and improvement of environmental policies, and the fostering of multi-agency engagement/investment in broader initiatives. These challenges were further exacerbated by a lack of reliable data on key ecosystems and species and the threats impacting them.

Through funding from the Biodiversity Conservation Fund established by the United States (U.S.) Congress, the Guatemala Biodiversity Project provided USAID and the government of Guatemala a means to begin to progress NBSAP objectives, recognizing the value of Guatemala's biodiversity and its central role in the fabric of Guatemalan culture and the livelihoods of its people. Working hand in hand with local partners, including the National Council of Protected Areas (CONAP for its acronym in Spanish), and the *Ministerio de Ambiente y Recursos Naturales* (MARN for its acronym in Spanish), the project aimed to reduce or eliminate major threats to biodiversity conservation at the national level and in intervention sites in three areas.

*Geographical focus.* Over the course of three years, the project focused its work at the national level and in the following pilot intervention areas: the Maya Biosphere Reserve (MBR), the Sierra de las Minas Biosphere Reserve (SMBR), and protected areas along the Pacific Coast (Manchón-Guamuchal Ramsar Site, Sipacate-Naranjo National Park, and Monterrico and Hawaii Multi-Use Zones (see Exhibits 1-4).

*Developments impacting operations*. Since the project began in 2018, two major developments drastically impacted the project's goals and objectives. First, early in project implementation, shifts in bilateral relations between the Guatemalan government

and the U.S. government injected considerable uncertainty into future funding for USAID development investments in Guatemala, including the Biodiversity project. In the first year of the project, fiscal year (FY) 2019, the USAID portfolio in the Northern Triangle was reviewed by the U.S. Department of State. This led to serious uncertainty regarding continued funding for the project, like many others in Guatemala and the wider Northern Triangle.

Secondly, the unexpected emergence of the COVID-19 pandemic in March 2020 added an additional layer of complexity to project implementation. With intermittent lockdowns since March 2020 and travel and meetings restrictions imposed by the Guatemalan government, fieldwork and interventions were limited for the remaining months of project implementation. Despite facing COVID-19 restrictions, the team adapted to pandemic realities and continued to execute interventions, while mitigating health and safety risks of staff and partners. Project leadership supported a shift in implementation that virtualized much of activity implementation, approving staff to work remotely, and supporting local stakeholders with logistical challenges to ensure their participation and engagement in project activities. Dedicated to its mission and to the health and safety of project staff and stakeholders, the project developed biosecurity protocols that informed all interventions, including the approval of any travel or in-person meetings and events.

## THEORY OF CHANGE AND PROJECT APPROACH

Three key assumptions, below, guided the Guatemala Biodiversity Project and provided crucial context to the project's theory of change (TOC).

- Local partners, including protected area managers and co-managers, have the interest, will, and resources to participate in biodiversity conservation activities.
- Political will to engage in governance and enforcement exists at the national level and within the three areas identified for pilot intervention (i.e., Maya Biosphere Reserve, Sierra de las Minas Biosphere Reserve, and the Pacific Coast).
- Buy-in from civil society and licit private sector stakeholders exists for protected area governance schemes — through conservation coalitions and other strategies.

Given these assumptions, the project's TOC outlined how effective protected area governance leads to improved, locally appropriate, and science-based biodiversity conservation outcomes and sustainable natural resource use in Guatemala, through the successful implementation of the following tasks:

- Task 1: Improve Conservation Approaches Through Better Information on Key Species and Ecosystems
- Task 2: Support National and Sub-National Policy and Legislative Reforms
- Task 3: Build Capacity for Effective Enforcement and Prosecution of Crimes Committed Within Protected Areas

- Task 4: Engage Local Stakeholders in Conservation Efforts

The project implemented a local-systems approach that served as an analytical framework, adopting Thinking and Working Politically, Applied Political Economy Analysis (APEA) and Collaborating, Learning, and Adapting (CLA) methodologies to support continual adaptive management. Employing methodologies that gave the project a comprehensive understanding of SIGAP's challenges, constraints, and opportunities was vital to addressing critical weaknesses of the system and identifying areas of opportunity for its improvement.

To achieve integration across project tasks, methodologies deployed under the local-systems approach served as tools to understand and map the institutional ecosystem at the national level and in each pilot intervention area. The project's diverse geographic, thematic, and institutional focuses required an integrated approach to capture economies of scale, enabling the project to address primary threats and drivers, obtain deeper commitments from stakeholders, and deliver concrete outcomes. An integrated approach also permitted the project to learn from project partners and stakeholders and to avoid disconnected or isolated interventions that did not speak directly to the TOC. This was further supported by its dedication to stakeholder-led design and implementation. The project was implemented with intention, engaging local stakeholders early and often through the mobilization of conservation coalitions, as forums for diverse national and local stakeholders to discuss key issues, work towards unified goals, and advocate for common interests. Conservation coalitions accelerated the engagement of national and local stakeholders, established a sense of project ownership among diverse actors, and created a space where national and local actors can continue to address challenging issues and move forward promising ideas.

The project was led by a highly qualified team of Guatemalan professionals, well known for their conservation expertise. Guatemalan leadership and partnerships with subcontractors, Transnational Development Associates (TDA), *Fundación Defensores de la Naturaleza* (FDN) and Wildlife Conservation Society (WCS), facilitated the early engagement and buy-in of local stakeholders. To further a sense of ownership by local stakeholders, the project leveraged the grants program to empower Guatemalan scientists, educators, conservationists, entrepreneurs, and social inclusion advocates to grow, innovate, and deliver project results firsthand.

## REPORT STRUCTURE

To best describe the principal activities, approaches and results achieved under the Guatemala Biodiversity Project, this report presents project achievements as outlined below. In recognition of the natural beauty of Guatemala, project achievements are also highlighted in a photo essay, which is linked here.

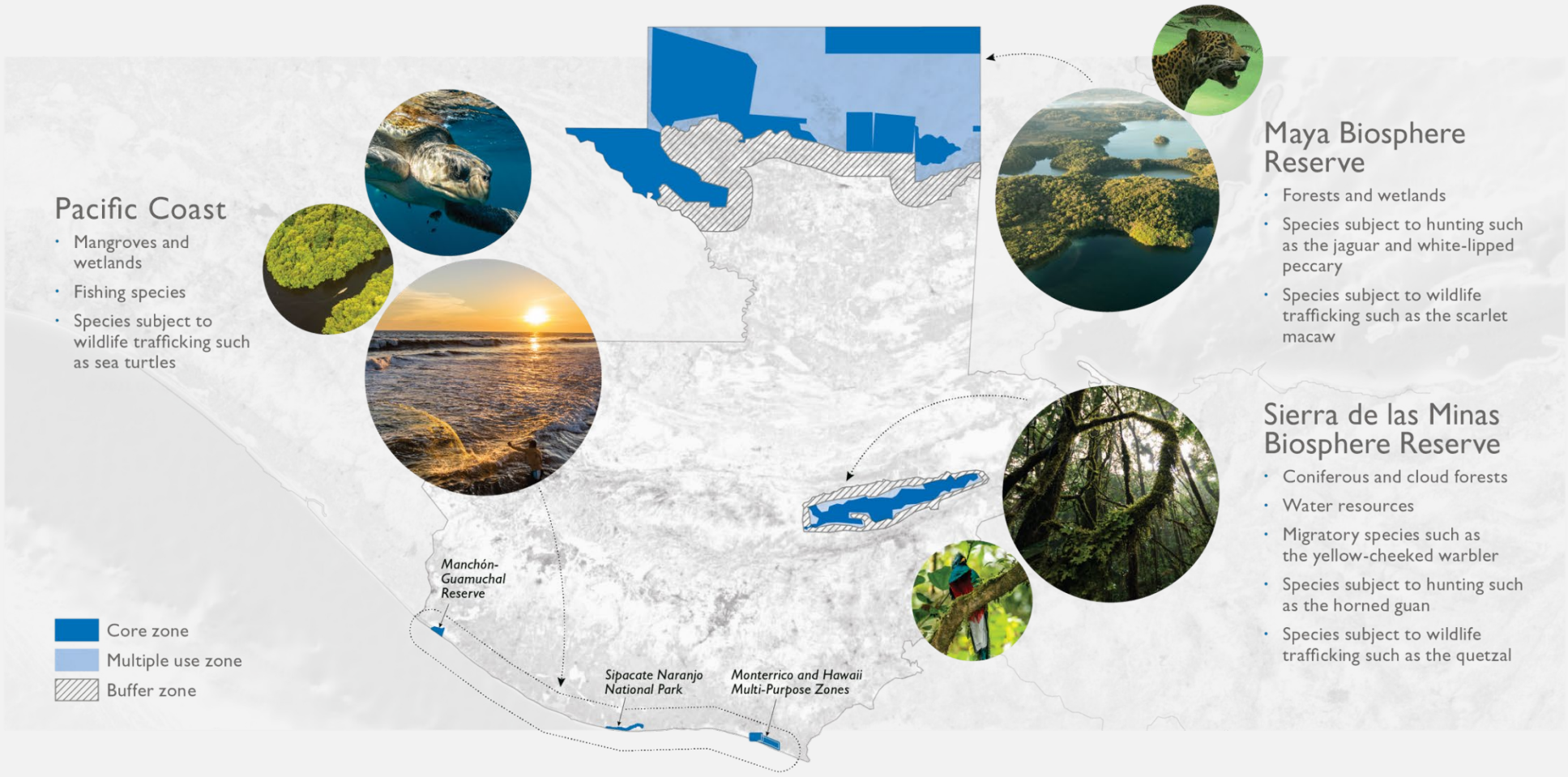
First, the report introduces the project's national level engagement and each of the pilot intervention areas through maps and snapshots. Exhibit 1 presents the national map,

which introduces the three pilot intervention areas and includes conservation targets by area and the four key strategies of the project. Exhibits 2-4 include site-level maps and key indicator outcomes for each pilot intervention area. Following each map is a snapshot that displays key achievements at the national level and within each pilot intervention area; these achievements demonstrate the critical role each task played to strengthen SIGAP and address site-specific threats.

Second, the report presents detailed sections on each of the project tasks, which align with the four strategies of the project: monitoring species and ecosystems, improving policies and legislative reforms, strengthening environmental governance, and engaging local stakeholders. Each of the four task-focused sections in this final report includes a description of the context and challenges prior to the start of the project, the approach employed by the project to address these challenges, and main achievements.

The report concludes with a section containing recommendations for sustainability of the project's achievements for USAID and future implementers of biodiversity conservation programs in Guatemala and an overview of monitoring, evaluation, and learning.

## EXHIBIT 1. PROJECT CONSERVATION TARGETS AND STRATEGIES




### STRATEGIES

- Monitoring species and ecosystems
- Improving policy and legislative reforms
- Strengthening environmental governance
- Engaging local stakeholders

SNAPSHOT

# NATIONAL LEVEL ENGAGEMENT

**Guatemala contains 14 ecoregions, including forests that cover more than 30 percent of the landscape and the highest rate of species endemism in Central America.**

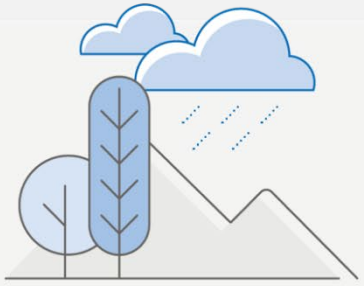
**The project signs an agreement with the Attorney General's Office to promote the opening of environmental prosecutor's offices in Zacapa and Escuintla.**

PHOTO: *Danilo Valladares, USAID/Guatemala Biodiversity Project*

Guatemala boasts protected areas that cover approximately 30 percent of the national territory. Focused on advancing national-level commitments that support SIGAP and address conservation targets under the project's intervention areas, the project progressed in its four tasks to achieve the following:

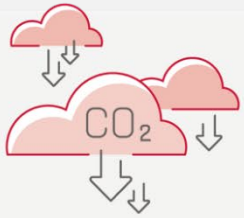
- Operationalized a fully functional scientific database, the National Biodiversity Information System for Guatemala (SNIBgt), that collects and retains open-source data for use by decision-makers and the general public.
- Supported the Trinational Biological Monitoring Roundtable in coordination with principal biodiversity agencies in Mexico and Belize for the preservation and conservation of transnational species.
- Developed 10 national-level environmental laws, policies, or regulations, including the Sustainable Livestock Policy and SIGAP´s Social Participation Manual.
- Revised the National Forest Fire Management Strategy and developed a nationally accepted Forest Fires Protocol.
- Used the Human and Institutional Capacity Development (HICD) methodology to develop Institutional Performance Improvement Roadmaps that identify and address capacity gaps in CONAP, National Civil Police´s Nature Protection Division (DIPRONA for its acronym in Spanish), Attorney General's Office, the Judicial Branch, *Centro de Estudios Conservacionistas* (CECON), and the SMBR Board of Directors. Oriented towards intervention sites, these roadmaps were used to build capacities of participating stakeholders.
- Laid the groundwork for an environmental forensic laboratory at the National Institute of Forensic Sciences of Guatemala (INACIF).
- Supported the creation of four new Specialized Justice Units (Zacapa Court, Zacapa and Escuintla Prosecutor's Offices, and Analysis Unit in the Environmental Prosecutor's Office).
- Updated SIGAP´s Forestry Manual and developing Regulations for the Granting of Forest Concessions.
- Trained 753 people on sustainable natural resource management at the national level, including project management, forensic investigation of forest fires, environmental and cultural heritage legislation and law enforcement, and democratic governance of protected areas.

## EXHIBIT 2. MBR KEY INDICATOR OUTCOMES



232,209
hectares showing improved biophysical conditions

683,265
hectares under better management



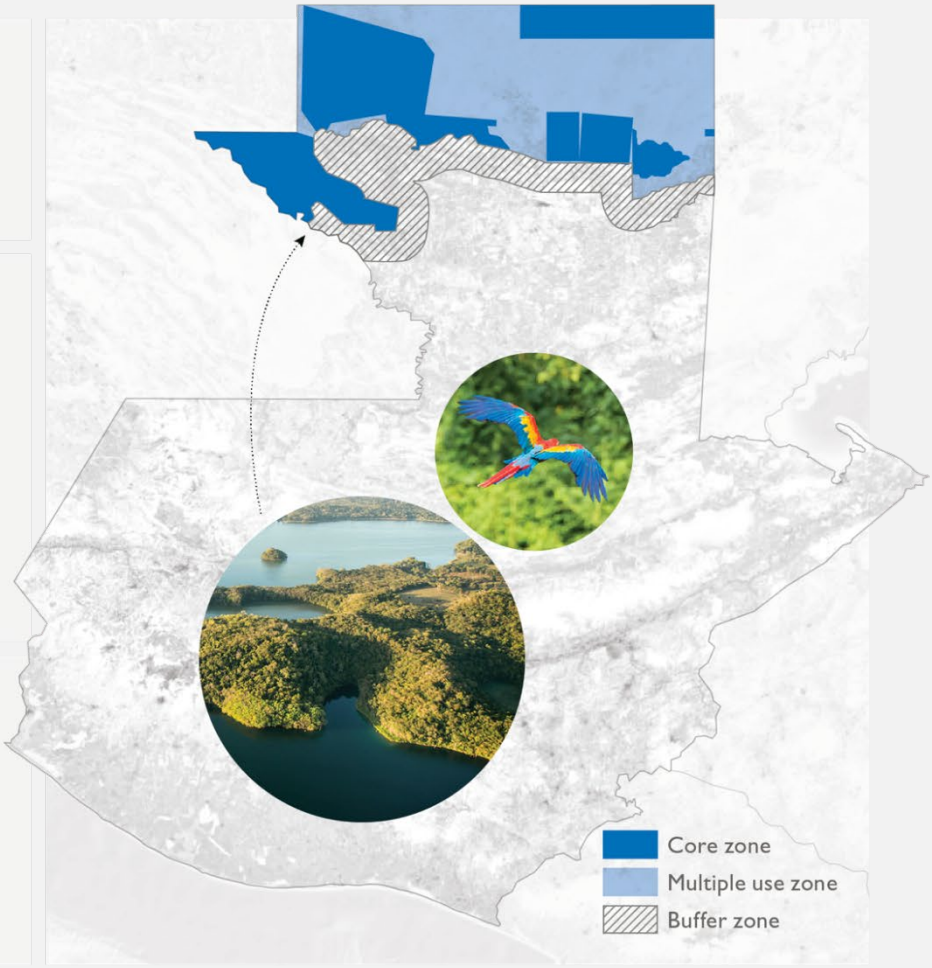

988,948
metric tons of CO2 reduced, sequestered, or avoided

17
institutions with improved NRM capacity

824
people trained

3,404
people with improved economic benefit

13
institutions using biodiversity information or implementing threat reduction



SNAPSHOT

# MAYA BIOSPHERE RESERVE

**The MBR is Mesoamerica's largest protected area, spanning 2.1 million hectares to form the heart of the Selva Maya which crosses Belize, Guatemala, and Mexico.**

**Aerial footage from a low-altitude aircraft overflight in the Maya Biosphere Reserve.**

PHOTO: *Sergio Izquierdo, USAID/Guatemala Biodiversity Project*

**MAIN THREATS**

- **the advance of the agricultural frontier**
- **forest fires**
- **illegal logging**
- **poaching**
- **wildlife capture**
- **unsustainable livestock practices**
- **conflicts between ranchers and jaguars**

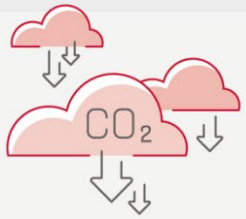
The main threats to the MBR are vast and required a concerted effort across all strategies to address. Among its achievements, the project:

- Realized conservation incentive systems and mechanisms, including the facilitation of an amendment to a conservation agreement between CONAP and the indigenous community of *Paso Caballos*.
- Established critical responses to forest fires, including training and equipping forest firefighters and developing an Institutional Protocol on Forest Fire Response, Threat Control Monitoring Plan, a Proposal for Regulations of agricultural burns, and daily monitoring practices.
- Advanced the use of innovative technologies for species and ecosystems monitoring and environmental justice, including logging a total of 77 low-altitude overflights over more than 27,983 km, in coordination with 18 institutions.
- Led income-generating initiatives that promote licit livelihoods, including ecotourism with the Association for the Sustainable Development of the Yaxha National Park (ASODESTY), Carmelita Cooperative, Uaxactún Tourism Association, Dos Aguadas Community and La Técnica Cooperative, among others.
- Expanded *Jaguares para Siempre* initiatives to guide, train, and equip small and medium-size cattle ranches in the communities of Cruce a Dos Aguadas, El Naranjo and El Caoba, near the El Zotz Biotope and Yaxhá-Nakum-Naranjo and Tikal National Parks to reduce human-jaguar conflict and encroachment on protected areas.
- Strengthened spaces for local dialogue, such as the Petit Committee for Laguna del Tigre National Park and the Block Governance Dialogue for Tikal and Yaxhá National Park, Bioltzá Indigenous Community Reserve and El Zotz Biotope, to promote conservation regions.
- Developed CONAP´s Confiscated Livestock Management Protocol with MBR stakeholders, like WCS and Petén's Livestock Roundtable.
- Promoted payment for ecosystem services mechanisms, including the National Forest Incentives Program (PROBOSQUE) and Forests for Life, to connect cattle ranchers with financial incentives to conserve private land along protected areas.
- Expanded the use of the Spatial Monitoring and Reporting Tool (SMART) in the MBR, generating threat reduction information in various monitoring routes.

## EXHIBIT 3. SMBR KEY INDICATOR OUTCOMES

**32,133**
hectares showing improved biophysical conditions

**240,332**
hectares under better management

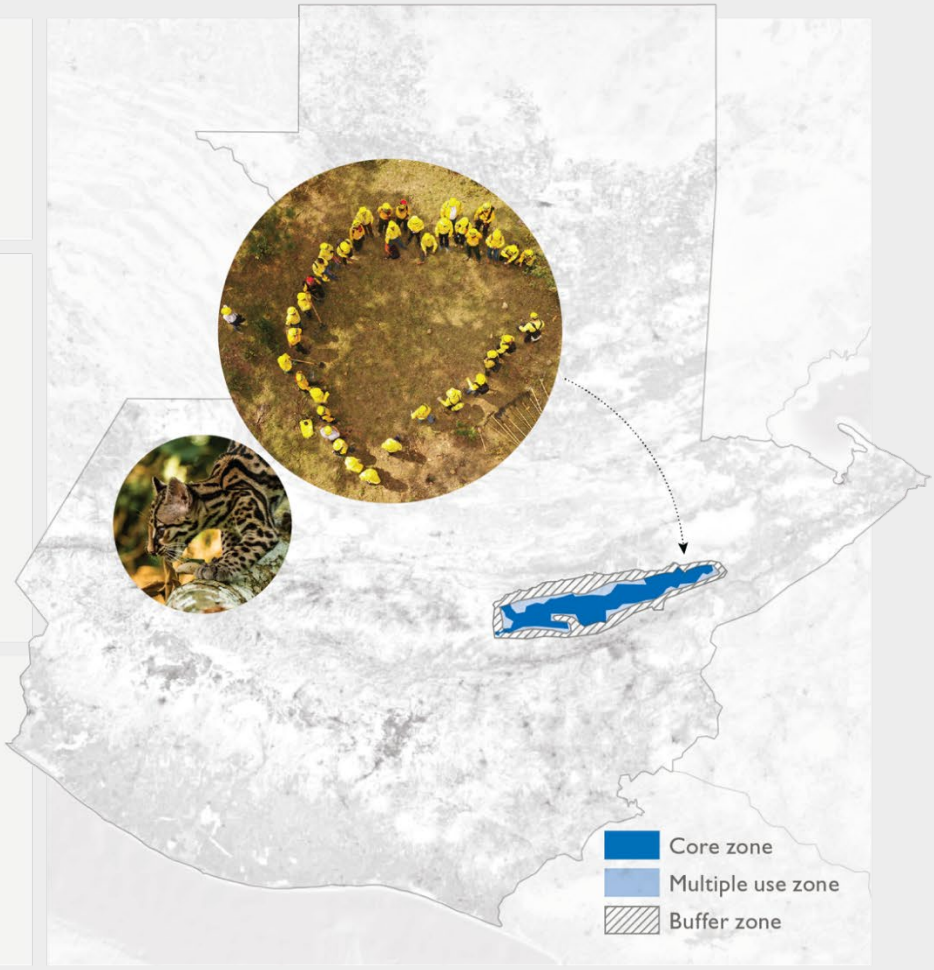



**7,996**
metric tons of CO2 reduced, sequestered, or avoided

**3**
institutions with improved NRM capacity

**461**
people trained

**9**
institutions using biodiversity information or implementing threat reduction



SNAPSHOT

# SIERRA DE LAS MINAS BIOSPHERE RESERVE

**SMBR contains Guatemala's largest remaining cloud forest and a diverse range of animal and plant species.**

An ocelot visits the Sierra de las Minas Biosphere Reserve.

PHOTO: *Sergio Izquierdo, USAID/Guatemala Biodiversity Project*

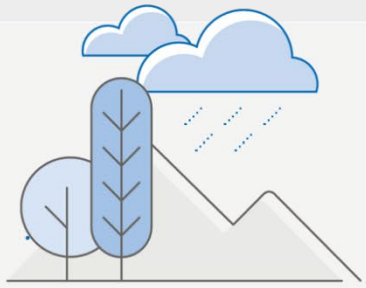
**MAIN THREATS**

- the advance of the agricultural frontier
- forest fires
- forest pests and diseases
- illegal logging
- illegal human settlements
- landslides and erosion
- contamination by solid and liquid waste
- the inappropriate and disorderly use of water

The second largest protected area in the country with 2,426 km², the SMBR has made progress in strengthening environmental justice and conserving its biodiversity through project interventions. Among its achievements, the project:

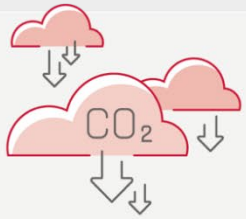
- Led critical responses to forest fires, including training and equipping forest firefighters and developing an Institutional Protocol for Forest Fire Response and daily monitoring of heat points and active fires.
- Advanced the use of innovative technologies for species and habitat monitoring and environmental justice, including observation transects and direct flock counting to identify the abundance of the golden-cheeked warbler, horned guan, and resplendent quetzal, and camera traps to identify midsize and large vertebrates.
- Developed the "Park Rangers School" in coordination with CONAP and CECON to train park rangers on biodiversity monitoring and legal information regarding biodiversity, among others.
- Drafted and presented a proposal to the Ministry of Culture and Sports, that formally nominates SMBR as a World Heritage Site under the United Nations Educational, Scientific, and Cultural Organization (UNESCO).
- Strengthened SMBR's Monitoring Information System in coordination with FDN, monitoring river and stream flow rates in three priority watersheds (Hato, Mululhá, and San Jeronimo) key to local communities and connecting its data to the SNIBgt.
- Used the HICD methodology to build the capacity of SMBR´s board of directors and its ability to address environmental threats, including a proposed regulation for board meetings and a strategy on how to approach illicit activities.
- Trained park rangers in the use of SMART, expanding its use in the region and generating threat reduction information in various monitoring routes.

## EXHIBIT 4. PACIFIC COAST KEY INDICATOR OUTCOMES



**1,552**
hectares showing improved biophysical conditions

**27,750**
hectares under better management




**45**
metric tons of CO2 reduced, sequestered, or avoided

**8**
institutions with improved NRM capacity

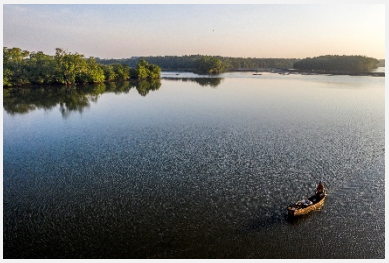
**241**
people trained

**15**
institutions using biodiversity information or implementing threat reduction

SNAPSHOT

# PACIFIC COAST

**Guatemala's Pacific Coast contains diverse ecosystems that are home to more than 200 species of wildlife, including mangroves critical to bird migration and sea turtle nesting habitat.**



**An artisanal fisherman at dawn in the sea along the Sipacate-Naranjo National Park.**

PHOTO: *Sergio Izquierdo, USAID/Guatemala Biodiversity Project*

**MAIN THREATS**

- contamination by solid and liquid waste
- unsustainable, illegal fishing and bycatch of species
- sedimentation of estuaries and diversion of river channels
- habitat conversion for shrimp farming and salt production
- the use of motorized vehicles on beaches
- poor management of sea turtles and the harvest of sea turtle eggs
- the cutting of mangroves for construction and firewood
- the development and expansion of urban and tourist areas

Biological monitoring using innovative technologies, the promotion of governance at the local level, and environmental justice wins boosted conservation efforts on the Pacific Coast´s protected areas. Among its achievements, the project:

- Strengthened CONAP's Costa Sur local monitoring information system and CECON's local forest fire monitoring system, supporting CECON's development of a forestry inventory, and connecting its data to the SNIBgt.
- Updated *Dirección de Normatividad de Pesca y Acuicultura* (DIPESCA for its acronym in Spanish)'s National Fishing System that collects fisheries data along the Atlantic and Pacific coasts and connects it to SNIBgt.
- Developed mangrove forest inventories and management plans for Monterrico and Hawaii Multiple Use Reserves and a national mangrove forest cover map.
- Developed the "Park Rangers School" in coordination with CONAP and *Universidad de San Carlos* (USAC)'s *Centro de Estudios Conservacionistas* (CECON) to train park rangers on biological monitoring and patrolling methods, among others.
- Completed a diagnosis of the 2019-2020 forest fire season along the Pacific Coast and a roadmap that assigned roles and responsibilities and formed an Early Warning Group.
- Led at the national level with local engagement, the project aided the creation of the Escuintla Prosecutor's Office.
- Consolidated alliances between communities and the private sector to maintain the ecosystem of the coastal lagoon and mangroves in Manchón-Guamuchal and the Puerto Grande company and a group of fisherwomen from Monterrico to increase the value of their fish products in the city market.
- Established alliances with DIPESCA and local management authorities and fishermen to develop a Fisheries Management Plan that addressed threats to estuarine artisanal fisheries identified through monitoring in Monterrico, including undersize fish catch and illegal gear.
- Implemented a sea turtle nest temperature monitoring protocol to identify egg incubation temperatures in several sea turtle hatcheries, providing scientific data that fostered decisions that contribute to the conservation of the species.

TASK 1

# IMPROVE CONSERVATION APPROACHES THROUGH BETTER INFORMATION ON KEY SPECIES AND ECOSYSTEMS

## CONTEXT AND CHALLENGES

Inadequate data collection and information management on key ecosystems and species has long been a main driver of ecological degradation in Guatemala, impeding private and public sector stakeholders from fully understanding or addressing the total impact of threats to ecosystems and species. While marked achievements were made in the decades preceding the project, such as the formation of the Conservation Data Center (CDC) under the San Carlos University of Guatemala's CECON in 1990 and an initial proposal by CONAP for SNIBgt in 2016, progress remained slow. Upon project start, no networks had been established across academic or research institutions, despite the collection and management of biodiversity data and information at CDC and other universities. Further, reports developed by universities that documented ecosystems and species remained untracked and did not reach a common database. Intended to integrate national biodiversity data through an open access system, at project start, SNIBgt remained nonoperational due to a lack of support by CONAP. Monitoring systems and techniques were likewise not prioritized due, in large part, to the lack of a repository where collected data and information could be maintained for use by decision-makers. As a result, a lack of easily accessible, science-based information continued to hamper conservation planning, decision-making and management actions, remaining a key obstacle to improving environmental governance and management of protected areas.

## APPROACH

Task 1 was guided by two learning questions that served to engage counterparts and stakeholders to jointly design interventions. These interventions served to build a more robust and actionable information base that addressed gaps in the conservation system's knowledge of threats to priority ecosystems and species.

1) What are the characteristics of an information exchange platform that ensures decision-makers will use the information?
2) What are the incentives, challenges, and motivations for researchers to share their information?

Based on data from a baseline analysis, and in close coordination with project stakeholders, the project identified main threats and defined the monitoring approach for the species and ecosystems within intervention sites. The project aimed to connect reliable information from protected areas and surrounding areas of influence with a fully operational SNIBgt, where data can be uploaded and maintained for use in implementing

conservation actions. Central to its local systems approach, under Task 1, the project worked closely with WCS, FDN, TDA, *Asociación de Rescate y Conservación de Vida Silvestre* (ARCAS), CECON, and grantees to implement three lines of intervention:

1. Strengthen biological monitoring systems, providing technical assistance, training, equipment, and innovative technologies
2. Improve the performance of SNIBgt and other information systems through training, technical assistance, equipment, and support to develop capabilities to improve the collection, analysis, processing, and dissemination of information
3. Promote the use of information among protected area managers and decision-makers to address threats and mitigate risks

## KEY OUTCOMES

### CAPACITY TO MONITOR AND IMPLEMENT CONSERVATION ACTIONS IMPROVED

The project strengthened biological monitoring systems at the national and local levels through technical assistance, training, equipment, and innovative technologies. Across pilot intervention areas, these efforts prepared institutions to assess monitoring data and information and identify priorities and informed conservation actions. Through its three years of implementation, the project:

*Identified biological monitoring and information management capacity gaps and addressed them in priority institutions.* Based on findings, the project developed, in collaboration with more than 20 institutions, including WCS, FDN, *Asociación Naturaleza por la Vida* (NPV), CECON, *Asociación de Reservas Naturales Privadas de Guatemala* (ARNPG), and CONAP, a tailor-made biological monitoring capacity building plan for institutions to increase capacities to collect, analyze, disseminate, and use biodiversity information. By project end, the project trained more than 490 individual project stakeholders from each intervention site and at the national level in natural resource management, biodiversity conservation, and biological monitoring under Task 1. These training sessions were designed to address significant threats to intervention areas; for example, training on monitoring fish landings address a key threat to the Pacific Coast, unsustainable, illegal fishing and bycatch of species.

*Developed, in coordination with WCS, FDN, CECON, and ARCAS, more than 150 reports on monitoring of key species and ecosystems in the three pilot intervention areas.* These reports — generated using innovative technologies, such as remote sensors, temperature data loggers, camera traps, and drones — were shared with more than 250 representatives of CONAP, *Instituto de Antropología e Historia* (IDAEH), *Instituto Nacional de Bosques* (INAB), DIPESCA, MARN, WCS, FDN, *Asociación de Comunidades Forestales de Petén* (ACOFOP), *Fundación Pro Petén*, NPV, Balam Association, CECON, *Fundación para el Ecodesarrollo y Conservación* (FUNDAECO), ARNPG, *Instituto Privado de Cambio Climático* (ICC), United Nations Develop Program (UNDP)-Central Volcanic Chain Project, *Asociación Guatemalteca de Historia Natural* (AGHN), ARCAS, *Instituto Nacional de*

*Sismología, Vulcanología, Meteorología e Hidrología*, *Asociación Fundaselva de Guatemala*, *Asociación Programas de Gestión Ambiental Local*, *Universidad del Valle de Guatemala*, World Wildlife Fund for Nature, *Centro de Estudios del Mar y Acuicultura*-USAC, Magdalena Sugar Mill, Pro-Tortugas, and *Instituto de Ambiente y Recursos Naturales* of the *Universidad Rafael Landívar*. During project implementation, 34 organizations documented use of report information for forest fire control and prevention actions, climate monitoring and patrol planning, and other conservation actions.

*Collaborated with institutions that manage nature reserves, including CONAP, CECON, FDN, and ARCAS to place 951,347 hectares of biologically significant land under improved management.* Using USAID's carbon calculator, the project determined that the investment in enhanced conservation and management practices of these areas offset more than 996,989 tons of greenhouse gas emissions (GHG). While this effort is due to work across components, Task 1 contributed significantly by improving the monitoring capacities of 13 institutions, including CONAP, CECON, FDN, and ARCAS, in natural resource management and monitoring, biodiversity conservation, biological monitoring, and use of biodiversity information for biodiversity management and conservation. A key example of monitoring efforts that have reduced threats to intervention sites and placed hectares under improved management, is how the project contributed significantly for forest fire prevention and control.

The project identified forest fires as a threat most critically in need of concrete coordinated actions between state agencies and communities. The project established alliances and completed training and information gathering and sharing between community-based organizations, local municipalities, CONAP, the Guatemalan Army, and WCS. Due to these efforts, conservation actions have been implemented for fire control and prevention. The project provided advice and equipment to more than 323 forest firefighters, which contributed to improved forest management. Further, the project completed

**TASK 1 IMPACT HIGHLIGHTS**

- *Strengthening the SNIBgt.* As result of the project's intervention, the SNIBgt is fully operational with sufficient storage capacity to engage internal and external users. Inputs from the project also contributed to a user-friendly interface and improved accessibility of the platform critical as the project supported other local and national systems, such as CONAP's Centro de Monitoreo y Evaluación, to connect their datasets to SNIBgt.

- *Engaging key institutions to advance monitoring and management practices.* The project collaborated with actors that oversee nature reserves, including CONAP, CECON, FDN, and ARCAS, to place 951,347 hectares of biologically significant land under better management, resulting in the offset of 996,989 tons of GHG.

- *Expanding use of innovative technologies.* The project introduced and trained key actors on innovative technologies, such as remote sensors, drones, transects, temperature dataloggers, and camera traps, which contributed to the production of more than 150 reports that were disseminated to public and private sector actors.

- *Improving forest fire prevention and response.* The project completed training sessions on fire control and prevention, supported the development of fire season and heat point reports and their dissemination to a broad audience, and lead fire alert actions. Due to these efforts, the project has effectively capacitated actors in each intervention site and been credited with the prevention or early detection of various forest fires in each.

daily monitoring of heat points and active fires with use of the U.S. National Aeronautics and Space Administration's Fire Information for Resource Management System platforms and Mexico's *La Comisión Nacional para el Conocimiento y Uso de La Biodiversidad* Early Fire Warning System that led to the identification of thousands of heat points in intervention areas and informed efforts with CONAP and INAB to address numerous fires over the life of project.

*Informed key conservation actions for ecosystems, such as the completion of mangrove forest inventories and forest management plans for Monterrico and Hawaii Multiple Use Areas under the direction of CONAP and in coordination with CECON and ARCAS.* Known as natural barriers against flooding and storm surges, mangrove forests also sequester carbon at a rate five to ten times more per acre than the rainforest. To protect these valuable ecosystems, these forest inventories supported the generation of agreements with partners, CECON and ARCAS, to conduct annual monitoring of mangrove indicators, forest cover, and an index of human intervention. These inventories were used to outline sustainable mangrove use with local communities and are central to addressing key threats to the Pacific Coast and other coastal areas of Guatemala, which include the cutting of mangroves for construction and firewood, exploitative productive activities (i.e., shrimp farming and salt production), and commercial developments. No small feat,

PHOTO: Technicians install camera traps to monitor animal species in *Parque Nacional Laguna del Tigre* in the Maya Biosphere Reserve. (Credit: Alejandro Arrivillaga/USAID Guatemala Biodiversity Project)

the project also held a series of inter-agency meetings, in conjunction with INAB, and with the participation of CONAP, CECON and ARCAS, that supported the successful development of a national mangrove forest cover map.

*Using innovative technologies and in coordination with project partners (see Exhibit 5), the project monitored critical species.* These monitoring efforts led to key findings, including confirmation that the same jaguars cross through the forests of Belize, Guatemala, and Mexico. This finding motivated greater support to the Trinational Biological Monitoring Roundtable. Demonstrating that species do not have borders, the project supported CONAP to advance the Trinational Biological Monitoring Table with key biodiversity agencies in Mexico, (*Comisión Nacional para el Conocimiento y Uso de la Biodiversidad*) and in Belize (the Forestry and Protected Areas Department) on species preservation and conservation for jaguars and other critical species. Poaching and wildlife capture are key threats in MBR, the protected area that borders Mexico and Belize and completes the *Selva Maya*; the establishment of a coordinated effort across the *Selva Maya* that monitors jaguars and other flagship species is a substantial win for species targeted by illegal actors.

*Promoted community involvement in natural resource management efforts.* A prime example of the project's success in local community engagement is its interventions in the monitoring of estuarine artisanal fishing in Monterrico. The project's monitoring of estuarine artisanal fishing reviewed the species, size, catch volumes, and fishing methods and gear used by estuarine artisanal fishermen. The results determined the presence of an invasive species of fish — suckermouth catfish — which is not edible and depletes native fish populations in the area. The project also identified fishing methods and gear that negatively impacted fish stock. With information generated, in alliance with DIPESCA, local fisheries management agencies, and local community fishermen, the project developed a Fisheries Management Plan. This plan sought to balance profitable fishing practices with conservation efforts and effectively addressed unsustainable, illegal fishing and bycatch of species, a main threat to the Pacific Coast. In addition, while the plan did not explicitly reference the suckermouth catfish, it does include guidelines that promote the participation of fishermen as citizen scientists and their critical role in the control of invasive species and other illegal practices that negatively affect fish stock.

*Established a project database for use by decision-makers.* The project developed a database that displayed 21 biological indicators and stored biological monitoring data and information on project-monitored species and ecosystems for use by decision-makers. The use of data and information within this database contributed to various instruments designed to address threats to intervention areas, including the fisheries management plan for Monterrico, forest fires control activities, protections for scarlet macaw nests, the mangrove forest management plan, and management of sea turtle hatcheries based on nest temperatures.

The project implemented all the activities for improving capacity to monitor and implement conservation actions in line with USAID's environmental regulations, as

mandated by 22 CFR 216. This included the application of environmental mitigation measures when activities posed the risk of potential negative environmental impact.

**EXHIBIT 5. INDICATORS OF KEY SPECIES AND ECOSYSTEMS MONITORED**

| AREA | BIODIVERSITY INDICATORS | METHODS | INSTITUTIONS |
|---|---|---|---|
| MBR | Jaguar: density and apparent survival rate | Camera traps, wildlife picture index | WCS, CONAP-*Centro de Monitoreo y Evaluación* (CEMEC), Grantees (*Fundación Pro-Petén*) |
| | Scarlet Macaw: reproductive success and fledging success rate | Direct inspection of nests and remote sensing | |
| | White Lipped Peccary: average group size | Camera traps | |
| | Hunting species abundance | Wildlife picture index | |
| | Mountainous, wetland and hill-plain landscapes: number of active fires, fire scar, and forest cover | Overflights, smartphones, drones, Moderate Resolution Imaging Spectroradiometer (MODIS), Visible Infrared Imaging Radiometer Suite | |
| SMBR | Golden-cheeked warbler, horned guan, and quetzal: abundance | Observation transects, direct flock counting | FDN, Grantees (Asociación Programas de Gestión Ambiental Local) |
| | Mid-size and large vertebrates: species richness | Camera traps | |
| | Cloud forest: forest cover (includes cloud, pine-oak, and tropical forests) | MODIS, remote sensing techniques | |
| | Pine-oak forest: fire scar and pine weevil infestation | Transects, drones, remote sensing | |
| | Water: river flow | Hydrology monitoring | |
| Pacific Coast | Mangroves and wetland cover, aerial cover, human intervention index | Remote sensing, permanent mangrove monitoring plots | ARCAS, CECON-USAC, INAB, CONAP |
| | Fisheries species of commercial importance: catch per unit effort, proportion of catch in each economic category, average length | Fisheries landing site monitoring, drones | |
| | Sea turtles: turtle trails in nesting beaches, number of incubated eggs in hatcheries, percent turtle eggs hatched | Beach monitoring transects, direct count, temperature dataloggers | |

## STRENGTHENING NATIONAL AND SUB-NATIONAL INFORMATION SYSTEMS

In parallel to project efforts to strengthen the quality and volume of information collected through improved monitoring efforts, the project operationalized the SNIBgt, developed alongside the local monitoring information system in CONAP's CEMEC, the SMBR Monitoring Information System, CECON's local forest fire monitoring system in Costa Sur, and DIPESCA's National Fishing Statistics System. Under Task 1, the project achieved key progress in its aim to strengthen these systems through training, technical assistance, equipment, and support to technological capabilities to improve the collection, analysis, processing, and dissemination of information.

*Strengthening the SNIBgt.* Hand in hand with CONAP leadership, the project supported the realization of the four pillars of SNIBgt: open-source information and facts, citizen participation, standardized and quality information, and information for decision-making. The project designed the Network of SNIBgt Information Providers and Users (RPU for its acronym in Spanish) — composed of more than 20 organizations from academia, government, the private sector, non-governmental organizations, social organizations and indigenous groups, and international organizations and donors — to enhance the management and functionality of SNIBgt through:

- *Establishment of a SNIBgt Steering Committee (SC) for the RPU.* Under CONAP's direction, the project established a steering committee for the RPU. The SC, made up of elected representatives from the RPU, harnesses and applies the knowledge and influence of the RPU's approximately 170 members from an estimated 20 member institutions. The SC plays a key leadership role in the maintenance of SNIBgt by opening and encouraging dialogue between key stakeholders to discuss system requirements and inefficiencies, formalizing responsibilities and commitments of each member institution, addressing barriers to participation and engagement, and developing and mobilizing buy-in for key initiatives.
- *Development of the SNIBgt Governance and Financial Sustainability Plan.* The project developed and presented to CONAP an SNIBgt Governance and Financial Sustainability Plan to support the establishment of a logical framework, governance structure, and interinstitutional programs and mechanisms to improve the system. This plan enhances the quality and quantity of reliable, open-source biodiversity data and information.
- *Improvement of SNIBgt functionalities.* The project facilitated user engagement with the system by updating the SNIBgt Operational Manual and developing and implementing a Biodiversity Assessment Module for ecosystem services and protected areas that includes a Software Acceptance Criteria, Requirements and Specifications Document (DERCAS). These interventions proved fundamental to data and information uploads by member institutions; from the implementation of DERCAS' recommendations in Q1 FY20 to project end, 2.44 million datasets were uploaded, users jumped from 32 to 1,984, and SNIBgt recorded 1,984 visits from more than 10 countries.
- *Enhancement of technological infrastructure and capacity.* The project provided financial and technical support and capacity building that enhanced the technological infrastructure of SNIBgt. The project procured cloud storage space to increase SNIBgt's data storage and management capacity. This procurement allows SNIBgt to be more easily used and lowers risk of data loss. The project fully engaged the SNIBgt SC and CONAP in this procurement process, thereby educating stakeholders on future functionality and maintenance costs to include in CONAP's annual budget. In addition, the project provided technical support to design and set up a geospatial portal for SNIBgt and streamlined "frontend

and backend" design elements to make SNIBgt more user-friendly. To support sustainability, the project held three virtual workshops with the participation of CONAP staff on the use of the geospatial portal. A total of 15 people learned how to upload geographic information to the geoportal and about portal architecture and other functionalities.

*Advancing information systems that link to SNIBgt.* The project provided tailored support to enhance the performance of local and national monitoring systems that link to SNIBgt, including:

- *CONAP's Centro de Monitoreo y Evaluación.* The project supported the early implementation of CONAP-CEMEC's local monitoring information system on the Pacific Coast, providing computer equipment, software licensing, and training for CONAP Regional Southeast staff to facilitate the flow of information from protected areas to SNIBgt at CONAP Central and vice versa. Focused on sustainability, the project also provided technical assistance to strengthen the alliance between FDN and CEMEC.
- *SMBR Monitoring Information System*. In SMBR, the project coordinated with FDN to develop a plan to strengthen SMBR's Monitoring Information System, monitoring flowrates in three priority watersheds (Hato, Mululhá, and San Jeronimo) that will serve as models to be replicated across the protected area.
- *CECON's local forest fire monitoring system (Pacific Coast).* In Costa Sur, the project provided technical assistance to support CECON's development of a forestry inventory.
- *DIPESCA's National Fishing Statistics System.* The project provided DIPESCA with technical assistance to update its National Fishing Statistics System, which collects fisheries data at the national level, including Pacific and Atlantic Ocean coasts and continental waters.

*Enhancing inter-agency dialogue.* Recognizing the importance of inter-agency coordination that facilitates the sharing of information for decision-making by key institutions, authorities and local communities, the project provided technical assistance to various national and local information systems and created or strengthened five interagency coordination spaces (e.g., monitoring discussion roundtables and knowledge exchange platforms), including the *Alianza Intersectorial para la Conservación de Ecosistemas y Recursos Marino-costeros*.

### MITIGATING CLIMATE RISKS

*Forest fire prevention and control.* Considered part of the Central American Dry Corridor, Guatemala is profoundly vulnerable to drought and extreme weather and climate events. Potential negative consequences derived from climate risk include intensified forest fires, due to reduced rainfall and higher ambient temperatures, all of which contribute to food insecurity and livelihood vulnerabilities that in turn increase

PHOTO: An aerial view of a group of forest firefighters participating in training conducted by the U.S. Forest Service with support from the Guatemala Biodiversity Project, in the SMBR. (Credit: Danilo Valladares/USAID Guatemala Biodiversity Project)

residents' likelihood to emigrate. Recognizing the reality of climate risks to biodiversity conservation efforts in its intervention sites, the project has integrated climate variables into its strategic approach and in the implementation of activities. Under Task 1, the project provided equipment, technical assistance in fire alert actions, fire and heat point monitoring, and the development and dissemination of reports (fire season reports, heat point reports, etc.), and training sessions on fire monitoring, prevention, and control to all three intervention sites. Harnessing local and international expertise, the project developed forest firefighter training sessions hand in hand with the U.S. Forest Service through the INAB and engaged grantees Fundación Pro-Petén in MBR and Asociación Programas de Gestión Ambiental Local in SMBR to provide training and technical assistance to local communities, protected area administrators, and community stakeholders. Additionally, the project supported CONAP's Monitoring and Evaluation Center in its production and broadcasting of daily and weekly bulletins on climate and forest fire conditions in MBR, developed weekly environmental and climate conditions bulletins for the Pacific Coast, and produced, through project partner FDN, weekly bulletins for SMBR. By project close, 89 bulletins were distributed to partners and other interested parties in pilot intervention areas for use in planning and implementing daily activities and in decision-making for forest fire prevention and control. The project documented and collected evidence of the information being used to inform key decisions, such as the analysis of heat point reports to determine high risk areas and the allocation of firefighters to areas with a higher incidence of active fires. Increased capacity to monitor indicators of forest fires and to share and maintain information

across organizations improves fire prevention and control and, as such, the ability to face inclement climate and weather patterns.

*Conserving critical species and habitats vulnerable to climate variability.* The vulnerability of Guatemala's natural resource base is exacerbated by climate stressors. Under Task 1, the project focused on building capacity of local stakeholders in the monitoring and implementation of conservation actions to protect, among other species and habitats, sea turtles and mangroves.

Known as a "keystone species," sea turtles play an integral role in ocean and coastal ecosystems by supporting healthy seagrass and coral reefs and maintaining a balanced

PHOTO: Project team members release a sea turtle into the water in the *Parque Sipacate Naranjo* on the Pacific Coast. (Credit: Sergio Izquierdo/USAID Guatemala Biodiversity Project)

food web and nutrient cycle. Since egg incubation temperatures greatly influence the sex of hatched sea turtles, in the Pacific Coast, the project implemented a sea turtle nest temperature monitoring protocol to identify egg incubation temperatures in several sea turtle hatcheries. The project trained 30 individuals from various organizations on sea turtle nest monitoring practices and the use of temperature dataloggers. Nest temperature monitoring efforts were completed with the use of temperature dataloggers and determined that high temperatures in the nests would lead to more female hatchlings. Key to maintaining a healthy sea turtle population, the project collaborated with sea turtle hatcheries to modify incubation conditions, including the

use of shade and cool water, so that temperatures would be conducive to an equal proportion of female and male hatchlings.

Among other key functions, mangrove forests filter pollution, protect shorelines from erosion and storm surge, sequester carbon, and provide a habitat for a variety of animal species. Due to the valuable ecosystem services provided by mangrove forests, the project named mangrove and wetland monitoring and management a key conservation objective in intervention sites on the Pacific Coast. Deforestation for construction and firewood and habitat conversion for shrimp farming and salt production are all major threats to mangrove ecosystems. In recognition of their role in community livelihoods, the project established monitoring plots in two of the Monterrico and Hawaii protected areas to allow periodic monitoring of the level of species growth. Information derived from these monitoring plots informed the appropriate share of extraction for communities. In addition, the project developed Mangrove Forest Management Plans for Monterrico and Hawaii Multiple Use Zones and trained project stakeholders, CECON, ARCAS, and CONAP, on the use of the plan.

To ensure sustainability of actions taken to protect sea turtle egg hatching initiatives and mangrove ecosystems, the project transferred monitoring activities to local partners, including CECON, ARCAS, *Centro de Conservación Marina*-AGHN, and CONAP. This transfer of capacities included training, equipment, technical assistance, and the establishment of follow-up agreements and commitments.

TASK 2

# SUPPORT NATIONAL AND SUB-NATIONAL POLICY AND LEGISLATIVE REFORMS

## CONTEXT AND CHALLENGES

Guatemala's legal and regulatory framework for environmental issues has long been characterized by analysts as contradictory and confusing. The policies and laws governing environmental issues, including those specifically related to biodiversity, were developed in a siloed effort from the rest of the national legislation, often causing them to not complement, or completely contradict, the national framework. Further, the entire legal framework is based on a paradigm of command and control, which presupposes that the national government has the coercive and economic power to exercise governance that could redirect human activities at the local level**.** In Guatemala, this paradigm is not functional for two main reasons: low capacity and economic bargaining power at the national level and local opposition to decisions that were made at the national level without consulting sub-national actors. The declaratory stance and lack of consultation by national actors on certain issues are particularly challenging when local economic and social interests are upset. These conditions are further complicated by a rural context where poverty and illegal economies remain realities that provoke a scenario where culturally laws are not respected. The fragmented politics between national and local actors hinders essential progress as it heavily affects relationships, incentives, and possibilities for policy implementation.

## APPROACH

Responding to challenges in inconsistent laws and policies, lack of coordination between national and sub-national actors, and weak enforcement of existing laws, Task 2 was guided by two learning questions:

1. Are key authorities actively participating in the dialogues and are they committed to the proposed changes?
2. Can the project team identify lessons learned and best practices in time to ensure that the process of developing regulatory proposals can reach enactment and implementation?

To support the Guatemalan government's prioritization of national and sub-national policy and legislative and regulatory reform geared towards improving governance in protected areas, the project conducted an APEA that included an in-depth diagnostic of laws and regulations governing protected areas and the institutional capacities of key regulatory agencies. Under Task 2, the project worked closely with CONAP, CECON, WCS, and sub-national actors to implement three lines of intervention that address the key findings:

1. Completing analysis to strengthen SIGAP based on legislative and regulatory reforms
2. Developing the Legal, Policy and Reform Strategy (LPRS) to refine pathways to and priorities among reforms
3. Continuing local and national dialogues to involve key stakeholders in building new governance models or strengthening current models

## KEY OUTCOMES

A central theme of the project was to contribute to improved management and governance of the SIGAP and interventions in all three intervention sites. The project used a thinking and working politically approach, completing an APEA to identify institutional and systematic vulnerabilities and design pathways to strengthen institutions and systems dedicated to protected areas governance. The project focused on improving regulatory frameworks and instruments, creating collaborative spaces for dialogue, and connecting Guatemalan actors with international opportunities to support needed reforms and updates to policies and regulations governing natural resource use, leading to improved enforcement of existing laws.

### IMPROVING REGULATORY FRAMEWORKS AND INSTRUMENTS

Institutional frameworks and operating parameters are a core component of strengthening institutional capacities and systems. The project helped develop, revise, and, in some cases, support the formal adoption by CONAP's Executive Secretariat of 17 policy and normative instruments to enhance the governance and management of protected areas, including:

> ***Logramos fortalecer la institucionalida del sistema de áreas protegidas, algo fundamental para conservar nuestra biodiversidad como país.***
>
> **— CARLOS MARTÍNEZ, EXECUTIVE SECRETARY, CONAP**

*The LPRS,* which defines the regulatory framework to be updated for better governance of SIGAP and roadmaps for its implementation. The project engaged a diverse group of stakeholders, including the Balam Association, to contribute to the conceptual document for the LPRS by analyzing conceptual frameworks, reforms, and barriers, designing strategies and protocols, defining instruments, and developing planning documents. A key instrument to strengthen SIGAP, the LPRS defines protocols for the completion of technical studies, master plans, and operational plans; provides guidance on improved participation of local actors; outlines practices in efficient budgetary spending; and other key changes that enhance the governance of SIGAP.

*SIGAP's Governance Strengthening Plan* identifies actions to encourage the participation of diverse actors and sectors of society in biodiversity management and promotes shared governance models. Fundamental to this plan is the recognition that CONAP policies

were designed in the 1980s based on frameworks from other countries that are not compatible to Guatemala's reality. For example, Guatemala's national framework has historically included command-and-control regulations that require strong governance systems (i.e., effective policy instruments, human and financial resources, etc.) to impose penalties if laws are broken; all of which are challenges faced by CONAP. The project supported SIGAP's governance system through development and revisions of regulations that support a paradigm shift to democratic governance, incorporating conservation incentives, an ecosystem-focused approach, and the voices of diverse actors, to improve protected areas governance. This shift to a more democratic approach to protected areas management unites efforts by government institutions and civil society and represents a significant change from traditional command-and-control hierarchies to a system of alliances and delegated authorities.

Among other normative instruments that advance a more democratic form of governance, the project:

1. *Supported the formal adoption of the Human Settlements in Protected Areas Policy, overseen by CONAP, by CONAP's Executive Secretariat.* Illegal human settlements are a main threat to conservation targets in the MBR, as well as other areas of biological importance in Guatemala. The Human Settlements for Protected Areas Policy was initially conceived and drafted in 1997 between CONAP, departmental governments and other actors and remained in draft form at project start. Through technical assistance and consultation, the project provided critical policy inputs and community engagement that finally completed and disseminated the Human Settlements in Protected Areas Policy. Project inputs supported CONAP to incorporate and define in the Human Settlements in Protected Areas Policy instruments that are used to develop conservation agreements between rural communities and CONAP. Often marrying conservation actions in declared protected areas and mechanisms for productive activities, the instruments outlined in the Human Settlements in Protected Areas Policy support the effective reduction of conflict between communities and authorities.

   This policy has the potential to serve as one of the most powerful territorial management tools in Guatemala due to the engagement of national and sub-national actors in its development. The collaborative development of this policy represents a historic shift from siloed, national-level decisions to collaborative, multi-level engagement that demonstrates to local actors that national actors can be reached and a path on how their voices can be heard.

2. *Developed the Handbook for Social Participation, elevating indigenous communities' voices.* A complement to the Human Settlements in Protected Areas Policy, the project, in coordination with CONAP and Balam Association, developed a Handbook for Social Participation in SIGAP. This handbook serves as a policy

instrument that facilitates the participation of indigenous peoples, incorporating a gender and social inclusion lens, in the management of SIGAP.

*Facilitating the revision of terms under a conservation agreement between CONAP and the indigenous community of Paso Caballos in Laguna del Tigre National Park in MBR.* The project provided legal assistance and transportation services to facilitate the signing of an amendment to a conservation agreement signed in 1997 between the indigenous community of *Paso Caballos* and CONAP. This amendment will be effective for a period of three years and ended nearly 25 years of negotiation between the two actors. A mechanism designed to conserve 6,400 hectares of biologically significant land into a management unit overseen by the community, the amendment between the community and CONAP was signed in February 2019. The amendment operationalized financial support systems that are novel for the conservation of the Laguna del Tigre National Park, such as funds from the Roundtable on Sustainable Palm Oil, a debt swamp with the U.S. government, and other systems, and shed light on strategies to successfully negotiate agreements focused on improving local governance mechanisms. The amendment also included revised terms that approve sustainable productive activities within the area covered by the agreement and incorporates forest fire prevention and control activities to be completed by the indigenous community. Further information on support provided to the community is detailed under Task 4.

**TASK 2 IMPACT HIGHLIGHTS**

- *Establishing key policy instruments to improve SIGAP.* The project supported CONAP to improve SIGAP and address key threats to intervention sites through, among others, the development of the Handbook for Forest Stewardship in Protected Areas and the Handbook for Social Participation, and revisions of livestock, forestry, and forest fire policies and protocols.
- *Developing technical instruments for better biodiversity governance under SIGAP.* The project developed numerous technical instruments designed to improve SIGAP, including an analysis of barriers to participation, a plan for improved management, an analysis of governance models, and democratic governance training.
- *Creating spaces to advance protected areas governance.* The project established local dialogues to create spaces for debate, analysis, and identification of pragmatic and priority actions to improve protected areas' governance, as well as a vehicle for prioritizing and discussing political and regulatory reforms, promoting the participation of local people in decision-making.
- *Advancing forest fire practices and protocols.* The project closed gaps in forest fire protocols and practices, revising the National Fire Management Strategy and developing Institutional Protocols on Forest Fire Response and others, to address a key threat to Guatemala's protected areas.

*Forest fire management protocols and practices.* Forest fires are a main threat across Guatemala, but particularly to the project's SMBR and MBR intervention sites. The project supported national and sub-national protocols to improve CONAP's response to forest fires by establishing standard internal and external procedures to address declared forest fires. At the national level, the project worked with CONAP and INAB, among others, to revise the National Fire Management Strategy and develop a National Fire Protocol. At the sub-national level, the project developed Institutional Protocols on Forest Fire Response for MBR, SMBR, and the

Pacific Coast. Further, in MBR, the project developed a Threat Monitoring and Control Plan in the Zotz-Tikal-Bioltzá-Yaxhá/Nakum/Naranjo-Cahuí Protected Area Block for the 2020-2021 season, drafted a Proposal for Regulations on Agricultural Burns for approval with the municipal councils of Flores, San José, and San Andrés, and established training sessions on new protocols for the immediate detection and response to forest fires and the operation of local emergency operations centers. The project's development and rollout of these policy instruments complements fire prevention and control interventions under Task 1 and Task 3.

*Mechanisms on conservation financing and the productive sector.* The project supported critical policy instruments focused on the livestock and forestry sectors and assessed conservation financing, including:

1. Development and enactment of the CONAP Livestock Confiscation Protocol in coordination with MBR actors, such as WCS and Petén's Livestock Table. This instrument addresses a main threat to SMBR and MBR, the advance of the agricultural frontier, and will serve as a useful tool under CONAP.
2. Update of the SIGAP Forestry Manual, which governs the management of forestry activities that are allowed within protected areas in coordination with CONAP and other key actors in forest management. A key advance in forest management regulations, the SIGAP Forestry Manual applies to nearly 400,000 hectares of protected forests and has important implications for forest management reforms, such as forest concessions.
3. Assessment of barriers to and opportunities for conservation incentive systems as investment models for SIGAP, including the update of the presidential decree of the National Conservation Fund for more effective financing of SIGAP management. Proposing no less than six mechanisms that could contribute to sustainable SIGAP financing, the project explored productive activities, private investors and cooperation, the carbon capture and sequestration market, and green enterprise, among others.
4. A document that presents six proposals to improve the financial mechanisms employed by *Fondo Nacional para la Conservación de la Naturaleza* (under CONAP), including the design of a mechanism to manage money received from verified carbon units (VCUs) which encourages the further exploration of the sale of VCUs at the national level.

*Regulations for the conduct of technical studies, the implementation of master plans, and the implementation of operational plans under SIGAP*, which contribute to the procedures and protocols of SIGAP and support enhanced technical and operational efficiencies. In coordination with the Balam Association, the project developed all three regulations and submitted them to CONAP for approval in June 2021. These policy instruments, dedicated to the improved management of protected areas, update the criteria and procedures for the studies prior to the declaration of a protected area (Technical

Study), to make more efficient the elaboration and approval of master plans, as well as the annual implementation of these (Operational Plans). The most important changes include: (1) articulating the relationship between the protected area and the cultural, social, and economic context that surrounds it to ensure sustainable, cohesive management of protected areas and their surrounding areas; (2) improving coordination between CONAP and local governments in the planning of protected areas, connecting it to the plans of use of the territory and towards the financial planning of the department; and (3) prioritizing tasks for greater efficiency in planning processes. Simultaneous to the development of these regulations, the project completed a consistency analysis of SIGAP planning tools in technical studies, master plans, and operational plans and a Capability Assessment which identified institutional barriers or gaps so that CONAP can comply with the current regulatory framework for SIGAP operationalization.

### CREATING COLLABORATIVE SPACES FOR LOCAL GOVERNANCE DIALOGUE ON POLICY AND REGULATION

Creating local spaces for inter-institutional governance dialogue, the project improved coordination among government authorities to rectify some of the existing legal and regulatory contradictions via better informed and better coordinated policy reforms. Dialogues promoted consensus building on subnational and national legal and policy frameworks between the private sector, civil society, and government stakeholders.

While early project closure and restrictions related to the COVID-19 pandemic caused challenges, the project still made significant progress by establishing the:

*Monterrico Local Dialogue.* Established in May 2019 on the Pacific Coast, the Monterrico Local Dialogue brought together key actors from CECON, the Land and Natural Goods Defense Association, *Asociación de Defensores de la Tierra y Bienes Naturales*, community boards that represent the Xinca/Mestizo people, and 11 *Consejos Comunitarios de Desarrollo Urbano y Rural* community leaders that represent close to 6,000 people, among others. The project supported dialogue participants to establish guidelines to create a new governance model for the Multiple Use Reserve involving communities, draft master and operational plans and a threat reduction and economic management plan, and develop clear plans and regulations on fishing and mangrove use for communities within the Monterrico Reserve. Further, through the Monterrico Local Dialogue, the project facilitated a collaborative relationship between the municipality that borders the Monterrico Reserve and the protected area of Monterrico. This linkage connected both parties in the management of natural resources for the first time and led to the establishment of a regulation of beach use that was imposed by the municipality, outside of CONAP's mandate.

The Monterrico Local Dialogue supported an initiative by the Xinca Community Boards, recognized by the Constitutional Court and the Municipality of Taxisco, to match the protected area with the community imagery of their territory. Even though COVID-19 concerns suspended aspects of the dialogue, CECON committed to continue with the

establishment of a participatory governance structure, which holds promise for the sustainability of the dialogue.
*Dialogue in Laguna del Tigre National Park*. Through engagement with the Petit Committee, the project established the Laguna del Tigre National Park Dialogue in November 2018 in MBR, which included key actors from WCS, *Centro Universitario de Petén de la Universidad de San Carlos de Guatemala* (CUDEP), United Nations High Commissioner for Refugees, Balam Association, and CECON, among others. The Petit Committee aimed to lobby the Executive Secretariat of CONAP to establish more formal linkages with local actors and improve governance structures within the national park and surrounding areas. In support of this mission, the project signed a collaborative agreement committed to "out of the box thinking" to address community challenges with CONAP and defined a roadmap to address governance shortfalls in the territory and principles under which proposals will be made to promote solutions.

Advancing the roadmap established in coordination with dialogue members, the project completed four studies focused on: (1) status of conservation areas, (2) costs of relocation of and technical assistance for communities, (3) the linkage between the livelihoods of park inhabitants and improved park governance, and (4) a roadmap to improve local governance, including outlining potential changes to MBR's declaratory law. These studies play a critical role in the Petit Committee's lobbying efforts to CONAP, as they contribute to CONAP's ability to address threats to national parks such as illegal human settlements.

*El Bloque ("The Block") Dialogue in MBR.* Established in April 2019 in MBR, The Block Dialogue included a diverse group of actors, including representatives from CONAP, IDAEH, CECON, CUDEP, WCS, and *Fundación Pro Petén*, among others. Focused on issues in the Tikal and Yaxhá national parks, the *El Zotz* and *Cerro Cahuí* biotopes and the BioItzá indigenous reserve, the project established The Block Dialogue as an institutional forum for planning the development of policies and standards for these conservation subregions in MBR. The project supported the mission of The Block Dialogue to reduce common threats, like forest fires, productive actions related to cattle ranching and subsistence farming, and poaching in all areas by developing the statutory act, defining the objectives and actions of the alliance and forms for the institutional governance structure. A key success to advance The Block Dialogue's mission, these statutes were formally signed by the Ministry of Culture, CONAP, the University of San Carlos de Guatemala, and the Municipality of Flores, Petén, to foster a joint working alliance.

Further, despite challenges due to the COVID-19 pandemic, the project advanced key instruments and tools, including:

1. Establishment of guidelines to strengthen the governance model with more participation from communities (farmers) and the private sector (tourism), including a threat reduction and economic plan
2. Signing of a collaborative agreement between park directors for each area

3. Signing of a collaborative agreement between CONAP and project grantee *Fundación Pro Petén* to coordinate technical assistance and the execution of cooperation projects
4. Establishment of an official agreement between CONAP, MICUDE, CECON, and Bio Itza to allow local directors to act in an institutional framework to make decisions regarding the protected areas that they manage
5. Creation of a Technical Assistance Committee, integrated by *Fundación Pro Petén*, Balam Association, and the NPV, which will manage national and international cooperation to mobilize resources for the management of protected areas and provide technical assistance to administrators

During project implementation, the project established and/or provided support to dialogues and trained 157 local and national dialogue participants from government agencies, civil society, and the private sector.

### CONNECTING GUATEMALAN ACTORS WITH INTERNATIONAL OPPORTUNITIES TO ADVANCE POLICY OBJECTIVES AND LEGAL PROTECTIONS

*Seeking declaration of the SMBR as a World Heritage Site.* The project, in conjunction with project partner FDN, developed and presented a proposal to the Ministry of Culture and Sports that formally nominates SMBR as a World Heritage Site under the United Nations Educational, Scientific, and Cultural Organization. Developed in accordance with practical guidelines for the implementation of the UNESCO World Heritage Convention, the project formed steering and scientific committees trained in UNESCO methods to support the proposal of SMBR under the Declaration of the Exceptional Universal Value of the Area. The proposal is a key step in the declaration process, as the Ministry of Culture and Sports will incorporate this proposal into the complete package submitted to UNESCO. While it is recognized that the declaration of World Heritage Sites is often a multi-year process, if selected, SMBR would receive free tourism promotions and press, eligibility for funding that supports its protection and preservation, and special protections under the Geneva Convention.

*Connecting the German Agency for International Cooperation (GIZ) – European Union's El Salvador-based Green Development Fund to the project's Pacific Coast initiatives.* The project developed and executed two collaborative agreements between the Green Development Fund and actors dedicated to the development of forest incentive initiatives on Guatemala's Pacific Coast. Signed in February 2020, one agreement focused on improved management in Monterrico and Hawaii Multi-Use Zones. The collaborative agreement focused on improving the Multi-Use Zones to incentivize co-investment in forest restoration and protected area management.

TASK 3

# BUILD CAPACITY FOR EFFECTIVE ENFORCEMENT AND PROSECUTION OF CRIMES COMMITTED WITHIN PROTECTED AREAS

## CONTEXT AND CHALLENGES

For more than three decades, Guatemala has experienced the negative effects of transnational networks that engage in the transfer of psychotropic and narcotic substances, illicit arms, wildlife, and human trafficking, smuggling of goods, money laundering, and other illicit activities. In recent years, an economic downturn has deepened inequalities, encouraging social unrest, and reigniting a heated debate over the use of protected areas. An influx of organized crime and forced recruitment increasingly pervades Guatemala's social fabric and encroaches on protected areas. Protected areas are key corridors of converging threats, as perpetrators of transnational crimes exploit remote areas to protect illicit goods transfer routes and the location of field operations. These transnational organized crime networks receive support from local partners in protected areas, including in all three of the project's target intervention sites, and accelerate the degradation of plant and animal species.

In Guatemala high levels of impunity and low levels of prosecution suggest existing justice and law enforcement structures offer only minimal, if any, deterrence to those seeking to commit these crimes. Many law enforcement and justice sector actors suffer from institutional weaknesses in monitoring, reporting, investigation, prosecution, and resolution of environmental crimes within the justice system. These weaknesses in turn pose serious challenges to governance of protected areas and biodiversity conservation, impeding the justice system's ability to effectively identify and respond to crimes and handle the resulting cases.

## APPROACH

Responding to challenges in monitoring and enforcing existing laws, regulations and management plans, as well as to investigating and prosecuting crimes committed within and around protected areas, Task 3 was guided by this learning question:

1) If key institutions commit themselves to increase their capacities through institutional strengthening roadmaps and include in their work plans the allocation of specialized personnel in the pilot areas, will they be able to comply with institutional objectives?

Driven by the project's TOC and central to the baseline APEA, the project established strategic approaches that recognize the key role of effective case handling, monitoring,

and inter-institutional coordination systems to overcoming drivers of environmental crimes. Under Task 3, the project worked closely with CONAP, Judicial Branch, the Attorney General's Office, DIRPONA - *Policía Nacional Civil*, USAC-CECON, SMBR Board of Directors, and TDA to implement five lines of intervention:

- Build the institutional capacities of entities focused on environmental justice, including improved environmental case management and restitution models for environmental damage, and support specialized training for justice and environmental sector personnel
- Define high-quality standards of investigation and prosecution of environmental crimes and other violations of the Guatemalan legal framework and criminal code through improved case management models
- Expand local participation in the legal defense of protected areas including the strengthening and consolidation of additional mechanisms for reporting environmental crimes, as well as efforts for crime prevention
- Establish specialized environmental justice units in relevant government agencies, such as the judicial branch and the public ministry
- Increase the use of innovative technologies to monitor and surveil protected areas experiencing high encroachment of organized crime

## KEY OUTCOMES

Dedicated to improving the capacities of government actors to enforce environmental regulations and the prosecution of environmental crime in protected areas, under Task 3, the project achieved key outcomes through methods to strengthen institutional capacities, to improve the enforcement and management of cases related to environmental crimes, and by employing innovative technologies to enhance monitoring practices and techniques.

### STRENGTHENING INSTITUTIONAL CAPACITY

*Developing and advancing Institutional Performance Improvement Roadmaps.* The USAID HICD methodology[1] was pivotal to the project's approach to improving institutional performance by government actors central to environmental justice. The project, through implementing partner TDA, trained select actors on the HICD methodology, gaining their buy-in and support to complete five-year Institutional Performance Improvement Roadmaps. These roadmaps were developed for CONAP, DIPRONA, the Attorney General's Office, the Judicial Branch, and CECON, and initial gaps and processes for improvement were completed for the SMBR Board of Directors. Each Institutional Performance Improvement Roadmap identified gaps between ideal performance and actual performance on environmental and protected areas-related issues and pinpointed "root causes" that must be addressed for optimal performance.

[1] USAID developed the *Human and Institutional Capacity Development Handbook: A USAID Model for Sustainable Performance Improvement* (https://pdf.usaid.gov/pdf_docs/PNADW783.pdf), which was used by the project in its support to institutions.

Root causes served as the basis for performance solution packages that were incorporated into each Institutional Performance Improvement Roadmap. All roadmaps were oriented towards intervention sites and included monitoring and evaluation by the project.

The project developed roadmaps in a highly collaborative process with participating institutions. Despite challenges faced with the COVID-19 pandemic, which delayed or ended the project's ability to support some proposed performance solutions, the project's development and follow-up on each Institutional Performance Improvement Roadmap contributed significantly to institutional capacity developments for each institution (See Exhibit 6).

**EXHIBIT 6. INSTITUTIONAL PERFORMANCE IMPROVEMENT ROADMAP**

| CONAP | |
|---|---|
| Collaborating Actors | Technical Affairs Unit, Planning Unit, Directors of central and regional units of the project intervention areas |
| Identified Areas for Improvement (Root Causes / Gaps) | • The capacity of SIGAP<br>• Biodiversity Management<br>• Integral linkage: the articulation of sectoral policies and institutions, clarifying lines of responsibility in the management of biodiversity and protected areas<br>• Inter-agency coordination<br>• Institutional modernization<br>• Intra-institutional coordination<br>• Policy and regulatory framework |
| Performance Solutions Package | • Standardized monitoring protocols<br>• Improved the Environmental Education Plan<br>• Operationalized the SNIBgt<br>• Reactivated and strengthened the Monitoring System for the Management of Protected Areas of SIGAP – *Sistema de Monitoreo del Manejo en Áreas Protegidas*<br>• Optimized permit processes and verification and monitoring<br>• Strengthened institution in budget revision, coordination among technical and administrative teams, institutional strategic plan, standard operation procedures development, and evaluation<br>• Designed, strengthened, and disseminated mechanisms of consolidation, coordination, and intra-institutional information<br>• Strengthened legal compliance in protected areas<br>• Updated technical-legal mechanisms of CONAP<br>• Designed reforms to strengthen local governance models<br>• Enhanced prevention of environmental crime and citizen participation in the protection of biodiversity and protected areas<br>• Strengthened forest fire prevention and control actions |
| Key Outcomes | • Operationalized and expanded the SNIBgt biodiversity information system<br>• Trained 132 park rangers from CONAP, CECON, and FDN<br>• Established an online training platform<br>• Trained forest firefighters on the prevention and control of forest fires<br>• Developed policy instruments for the management of protected areas<br>• Provided legal technical assistance for the extension of community forestry concessions in the MBR<br>• Supported wildfire response protocol and national fire management policy |

| DIPRONA | |
|---|---|
| Collaborating Actors | Head of Division, Officers in charge of planning, Officers of delegations close to the project intervention areas |
| Identified Areas for Improvement (Root Causes / Gaps) | • Coordination<br>• Presence<br>• Legal certainty of proceedings<br>• Research |
| Performance Solutions Package | • Improved research capabilities, capacities for liaising with local actors, and planning<br>• Enhanced capabilities for presence in areas and checkpoints on roads and other areas<br>• Provided computer resources |
| Key Outcomes | • Supported improved planning processes and communication of results<br>• Provided computer equipment, furniture, and equipment for crime prevention and investigation<br>• Improved maps for patrol planning in areas with higher levels of crime |
| **Attorney General's Office** | |
| Collaborating Actors | Prosecutor of the Crimes Against the Environment Section, Agents, Tax Assistants |
| Identified Areas for Improvement (Root Causes / Gaps) | • Research capabilities<br>• Interinstitutional coordination<br>• Complaint mechanisms<br>• Lack of coverage in key regions |
| Performance Solutions Package | • Provided tools and personnel for research<br>• Supported coordination spaces<br>• Disseminated complaint mechanisms<br>• Expanded tax agencies |
| Key Outcomes | • Supported the creation of an analysis unit, 12 tools for criminal investigation, four investigation manuals, and numerous instructions for prosecutors<br>• Provided support to the signing of a pact for environmental justice that coordinates 23 governmental and non-governmental entities<br>• Supported creation of two prosecutor's offices in Escuintla and Zacapa |
| **Judicial Branch** | |
| Collaborating Actors | Judges specialized in environmental crime |
| Identified Areas for Improvement (Root Causes / Gaps) | • Case management, coordination with other courts and actors<br>• Capacity building of judges<br>• Expansion of court coverage |
| Performance Solutions Package | • Strengthened the management model<br>• Trained judicial and auxiliary officials<br>• Created environmental courts |
| Key Outcomes | • Developed management models for courts based in Zacapa, Izabal, and Petén<br>• Completed virtual training sessions for judicial and auxiliary officials<br>• Created a specialized court with oversight in four departments located on the country's eastern coast |
| **CECON** | |
| Collaborating Actors | Management, Planning Unit, Unit Directors |
| Identified Areas for Improvement (Root Causes / Gaps) | • Extension<br>• Research<br>• Institutional Development – Regulations<br>• Sustainable local economic development<br>• Governance and Citizen Participation |

| | |
|---|---|
| Performance Solutions Package | • CECON Educational Program<br>• Biodiversity research policy and information management<br>• Management of information produced as a result of investigations<br>• Analysis of socio-environmental conflict in Laguna del Tigre National Park and Protected Biotope Laguna del Tigre-Río Escondido |
| Key Outcomes | • Supported, with the institutional endorsement of CECON/USAC, planning and execution of the training module for park rangers<br>• Assisted turtle, mangrove, and fishing monitoring activities<br>• Established dialogue tables in the Pacific Coast and MBR, as well as assistance to address changes in Laguna del Tigre National Park |
| **SMBR Board of Directors*** | |
| Collaborating Actors | Members of the Board of Directors |
| Key Outcomes | • Proposed rules of procedure for meetings of the Board of Directors of the RBSM<br>• Completed a strategy for SMBR's approach to illicit activities. |

*This intervention was disrupted by COVID-19 and early project closure, but the project was able to complete an initial gap analysis and key outcomes.

*Investing in the capacity of government actors.* Central to the project's HICD methodology and its focus on building more effective environmental law enforcement, the project strengthened the technical capabilities of park rangers and other government officials. Under Task 3, the project completed more than 15 training sessions to 454 public servants. The project also provided equipment and tools, such as manuals, protocols, and guides to environmental and justice institutions responsible for monitoring and enforcing law enforcement within protected areas.

The project achieved key outcomes by:

- *Improving the effectiveness of park rangers*. Park rangers are the backbone of the protected area system, they clock the most field time of any environmental institution in the country and are common first responders at environmental crime scenes. They are also principal educators to local communities on conservation practices and assets to the biological monitoring of species.
    - *Park Rangers School*. The project, in coordination with CONAP and CECON, trained a total of 134 park rangers (four of them female) in SMBR and the Pacific Coast. The "Park Rangers School," a week-long program developed by the project, covered first aid, biological monitoring, patrolling methods, knowledge of local biodiversity in each area, legal information regarding biodiversity, the role of park rangers in deterring and addressing environmental crimes, and specific functions and processes of the park ranger activities.
    - *Outfitting park rangers.* The project collaborated with CONAP to outfit more than 500 park rangers with new outfit kits; each kit contained protective clothing and footwear and pocket guides with basic information on their role and responsibilities.

- *Establishing the CONAP virtual training platform.* Due to challenges faced by the COVID-19 pandemic and the important adherence to health security measures, the project established a virtual training platform for the use of CONAP. The project technical assistance and procurement of software supported CONAP to provide training sessions to its staff and partners.
- *Improving capacities of the Escuela de Estudios Judiciales and the Unidad de Capacitación del Ministerio Público de Guatemala.* The project (virtually) trained a total of 199 justice operators, including 26 aspiring judges, 57 public servants from the Attorney General's Office, and 36 judges and appellate judges on subjects including environmental management, environmental law, and the handling of environmental crime cases. Training sessions were designed to increase the awareness of environmental crimes, better preparing them to identify illicit activities.
- *Developing instruments to improve capacities.* Dedicated to sustainability, the project completed the following instruments to improve investigative processes, compliance guidelines, patrolling, and standardized practices and procedures:
    - Produced seven instruments (diagnostics, manual, guides, and protocols) focusing on increasing institutional capacities to report, investigate, prosecute, and adjudicate environmental crime cases
    - Completed assessments of six high-profile environmental crimes in priority landscapes for justice authorities

**TASK 3 IMPACT HIGHLIGHTS**

- *Uniting key actors in the fight against environmental crime.* In coordination with the Attorney General's Office, the project supported the development of the plan to action and its accompanying roadmap under the "Unidos por la Justicia Ambiental" declaration. Informing key actions to improve environmental crime enforcement and management over 24 months, the declaration was ratified with the confirmed support of 23 environmental and justice sector institutions and civil society organizations in October 2019.
- *Advancing specialized environmental courts and offices.* In September 2019, the project signed a Memorandum of Understanding with the Guatemalan Supreme Court, which included a detailed plan to establish and capacitate a specialized environmental court in the department of Zacapa. Of further support to the judicial system, the project supported the Attorney General's Office to create Prosecutor's Offices in Zacapa and Escuintla and an Analysis Unit in the Environmental Prosecutor's Office.
- *Advancing environmental forensics.* The project supported initial steps toward the establishment of an environmental forensic laboratory under INACIF, completing a diagnostic of requirements for the laboratory and providing specialized forensic instruments that will play critical roles in identifying and prosecuting environmental crimes such as water contamination.
- *Coordinating low-altitude overflights*. The project led low-altitude overflights that identified illegal settlements, illegal timber extraction routes, illegal hunting, trafficking of wildlife species, encroachment of livestock on protected areas and other illicit activities, informing conservation actions, and crime enforcement and management.

- Developed three proposals for case management models for specialized environmental courts, in support of the strengthening of existing judiciaries by the judicial branch
- Generated 14 maps of territorial constituency to be used by DIPRONA delegations to improve the planning of crime prevention and combat activities

## IMPROVING THE ENFORCEMENT AND MANAGEMENT OF CASES RELATED TO ENVIRONMENTAL CRIMES

*Establishing an action plan for environmental justice – the "Unidos por la Justicia Ambiental" Declaration.* Armed with the environmental justice baseline developed and presented by the project, the Attorney General's Office established a two-year plan to address identified deficiencies in the enforcement and management of environmental crimes. The project worked with the Attorney General's Office to establish the plan, which included the publishing of a public call to action on its institutional social media account. The Attorney General's Office established a High-Level Technical Discussion Roundtable, consisting of 23 environmental and justice sector institutions and civil society organizations, which included, among others, Supreme Court Justices, the special prosecutor for environmental crimes, high-level officials from CONAP and MARN, and representatives from WCS, *Foro de Justicia Ambiental de Petén*, CECON, and FUNDAECO. The High-Level Technical Discussion Roundtable developed a declaration


PHOTO: High ranking government officials and representatives from civil society organizations participate in the signing of the "Pact for Environmental Justice." This pact was signed at a "High-Level Technical Roundtable" on April 10, 2019, with the support of the USAID/Guatemala Biodiversity Project. (Credit: Jorge Lu, USAID/Guatemala Biodiversity Project)

of purpose, a detailed plan of areas for improvement and an accompanying roadmap. The roadmap included concrete actions to be performed by participating organizations, including actions to be taken to improve the administration of penalties and fines for environmental crimes and the establishment of control posts within high-risk zones of protected areas. In October 2019, the Attorney General's Office and 23 environmental and justice sector institutions and civil society organizations ratified the "*Unidos por la Justicia Ambiental*" Declaration, declaring publicly their dedication and unity to improve the enforcement and management of environmental crimes across Guatemala.

*Expanding judicial mechanisms to address environmental crimes under the:*

- *Supreme Court.* The project signed a Memorandum of Understanding with the Supreme Court in September 2019 that established a specialized environmental court in the department of Zacapa. The project provided each court with specialized equipment and personnel trained in environmental legislation.
- *Attorney General's Office.* The project supported the Attorney General's Office to create an Analysis Unit in the Environmental Prosecutor's Office in Guatemala City as well as two prosecutor's offices in the departments of Zacapa and Escuintla. The project also supported establishing and strengthening institutional coordination with justice sector entities, administrators of protected areas, municipalities, and civil society for these new entities. The new unit and agencies will support the investigation and prosecution of common environmental crimes, such as illegal logging, wildfire arson, the extraction of fine woods, fishing for sailfish, and wildlife trafficking. The opening of the agency in Escuintla, in particular, provides closer attention to the protection of sites of abundant natural wealth, such as Sipacate-Naranjo National Park, Manchón Guamuchal, and Hawaii and Monterrico Multiple Use Zones.

*Advancing environmental forensic research and capacity.* The project supported key advancements in environmental forensics by:

> ***"Quiero agradecer el apoyo del Proyecto de Biodiversidad de USAID con el cual firmamos un memorando de entendimiento para mejorar la capacidad del Ministerio Público (Attorney General's Office) en la investigación y persecución especializada de delitos contra el ambiente."***
>
> **— CONSUELO PORRAS, GENERAL PROSECUTOR / CHIEF, ATTORNEY GENERAL'S OFFICE**

- *Laying the groundwork for an environmental forensic laboratory.* The project provided technical assistance and equipment to lay the foundations for an environmental forensic laboratory at INACIF. Recognizing the needs at project intervention sites, the project procured and disposed of equipment for environmental scientific testing

(water and soil pollution) to INACIF. A step that would be momentous in the advancement of environmental justice in Guatemala, through engagement with the INACIF, the project identified the low capacity and high opportunity of the institute. While INACIF lacked experts and logistical and technological equipment suitable for researching environmental crimes, both of which contributed to the reduced institutional capacity for response, a fully operational laboratory at INACIF would improve testing services instrumental to improving enforcement of environmental laws.

- *Advancing capacities for the forensic investigation of forest fires.* Forest fires are one of the main environmental crimes in Guatemala, by incidence and by impact. In recognition of this reality, the project coordinated with CONAP and the Attorney General's Office to improve the capacity of on-the-ground investigators and judicial representatives responsible for the criminal investigation and prosecution of wildfire crimes in Guatemala. The project developed and deployed a course titled, "*Investigación forense sobre causas que provocan los incendios forestales y análisis*" to public servants responsible for forest fire prevention and control. Developed and deployed in coordination with the Ministry for Ecological Transition and the Demographic Challenge of Spain, which provided technical assistance and trainers from their Forest Fire Defense Area, the course includes subjects on research standards and good practices, forensic investigation of wildfires, uses of tools to systematize and present information related to criminal structures, identification and management of evidence related to wildlife, as well as management of environmental damage repair, among others.

*Engaging the public in environmental justice.* To increase public understanding of environmental crimes and the role individuals can play in preventing and prosecuting offenders, the project developed a publicly accessible handbook that details the key elements of a successful environmental complaint. Public engagement in environmental justice furthers the project's strategy by amplifying the importance of environmental crime at all levels, not only to protect Guatemala's species and ecosystems but to protect the human rights of its people. The project also supported CONAP in the design of a communication campaign focused on communicators, journalists, and local populations.

## USING INNOVATIVE TECHNOLOGY TO IDENTIFY AND ADDRESS ENVIRONMENTAL CRIMES

Recent technological innovations have increased the spatial and temporal scales by which species and ecosystems can be monitored. The adoption of such technologies by agencies and organizations that monitor protected areas dramatically increases the geographic area that can be observed while simultaneously expanding the quality and quantity of data collection. When integrated into monitoring practices and techniques, innovative technologies collect valuable data that support crime enforcement and management and lead to more effective conservation strategies. The project, with the

support of implementing partners WCS and FDN, promoted the use of technologies for the monitoring of environmental crimes.

*Low-altitude aircraft overflights.* In conjunction with funding from the project, GIZ, and International Union for Conservation of Nature, and with the support of the Guatemalan Air Force, the project completed 77 low-altitude aircraft overflights in critical areas within the MBR, logging a total of 27,983 km. Engaging actors from 18 institutions, including CONAP, the Ministry of Culture and Sports, CECON, FDN, and WCS, the project led low-altitude aircraft overflights that captured photos that were studied to identify threats to protected ecosystems (e.g., land use changes, livestock, and fires) and implement mitigation measures.

Used to monitor environmental conditions and inform conservation actions, identify threats and illicit activities, and inform public advocacy and data collection, among other key outcomes, low-altitude aircraft overflights conducted by the project:

- Identified and mitigated manmade and naturally occurring forest fires.
- Assessed protected areas and other areas of influence in the Sierra de Lacandón National Park, Laguna del Tigre, Tikal, Yaxhá, Mirador-Rio Azul and the Biotopos Dos Lagunas and El Zotz National Parks.
- Uploaded tens of thousands of images to a database operated by CONAP-CEMEC for future use. In the database, all photos are visually interpreted and classified by type of threat identified in the overflights for use by CONAP-CEMEC.
- Recovered 981 hectares of invade land in the Peje Lagarto area in Laguna del Tigre National Park. The land was used for cattle ranching and the recovery was conducted in compliance with an order of the Criminal Court of First Instance of Crimes Against the Environment and Cultural Heritage of Petén. The court order was executed by the Public Ministry, DIPRONA, and CONAP, with the support of WCS, and others.

*SMART*. Designed to improve wildlife enforcement patrols and combat illegal activities using mobile software that accompanies park rangers on their monitoring routes, SMART is an open source, freely accessible system that assists in measuring and evaluating data to inform conservation actions and aid in reporting and prosecution of environmental crimes. The project procured equipment and supported the improved use of the SMART tool by CONAP and FDN to generate threat incident information in various monitoring routes, which informed CONAP strategies to address observed threats, monitor performance, and assess intervention effectiveness.

Despite mobility restrictions in the third year of implementation due to the COVID-19 pandemic, the project rolled out the use of SMART in MBR and SMBR, training rangers in its use and leading tours or patrols across land and water routes.

*Unmanned aerial vehicles (drones).* The project employed and promoted the use of drone technology as a tool to improve protected areas management and environmental crime enforcement. Under Task 1 and Task 3, the project trained 16 people from five institutions in the use of drones. Drones can scan vast, otherwise inaccessible areas at a moderate cost, making them of optimal use to monitor remote protected areas for illegal activity, fire activity or threats, and for scientific purposes. At project close, three drones were disposed to FDN and WCS to continue monitoring efforts in Guatemala's protected areas.


PHOTO: A team from the *Dirección de Protección de la Naturaleza* of the National Civil Police participate in a workshop held by the USAID/Guatemala Biodiversity Project. (Photographer: Juan Manual De la Cruz, USAID/Guatemala Biodiversity Project)

TASK 4

# ENGAGE LOCAL STAKEHOLDERS IN CONSERVATION EFFORTS

## CONTEXT AND CHALLENGES

Local stakeholder engagement is critical to mitigating many of the drivers that lead to the unsustainable use of natural resources in Guatemala. Some of the threats to biodiversity in the project's intervention sites, such as illegal capture of species and increase in land-use change for agriculture or cattle ranching, exist because local stakeholders do not have other economic alternatives to support their livelihoods. Historically, interactions between government actors and local communities have demonstrated the government's siloed approach to managing the sustainable development of local communities and managing biodiversity conservation and protected areas. Government institutions in charge of conservation strategies have either not succeeded in establishing critical links with civil society and local communities or been too institutionally weak to establish such links. While INAB has made some inroads in its development of mechanisms to engage local communities, such as the development of payment for ecosystem services schemes like PROBOSQUE in 2015, greater commitment is required to promote and implement effective policies that reflect the territorial reality between communities and nature. Significant factors remain that challenge and stifle progress, including the evolution of social, economic, and political dynamics in Guatemala in recent years, government actors that don't acknowledge the critical intersection between economic development and biodiversity conservation; and assistance projects that do not generate local capacities and that impersonate institutions and organizations in charge of protected areas. There remains a critical need to create, improve, and strengthen the link between local actors (government institutions, non-governmental support organizations, and communities) through incentives that show that the conservation of protected areas and economic development go hand in hand and are desirable for sustainability and that locals change the perception of conservation towards a positive perspective.

## APPROACH

The project's completion of the baseline APEA reenforced the vast network of stakeholders that play instrumental roles in biodiversity conservation in Guatemala and identified two pivotal aspects of engagement: the capacity of the stakeholder to cooperative with other stakeholders and the quality of that cooperation. With consideration of these two aspects, the project was guided by three learning questions:

1. Are partners increasing their capacities during the lifetime of the project to successfully maintain and replicate productive models linked to the management of protected areas upon project finalization?
2. What are the success factors for increasing supply and demand of products and services linked to conservation?

3. Can the implementation of best productive practices contribute significantly to reducing threats to biodiversity?

Much of the success of biodiversity conservation strategies and the management of protected areas rest on the support of society at all levels, especially communities in or around protected areas and areas of high biological significance. Building on models for community networking and advocacy, small- and community-based businesses dedicated to sustainable-use principles, and models for public-private partnerships, under Task 4, the project focused on four main lines of intervention:

1. Increase the capacity of micro, small and medium-size enterprises (MSMEs) and community-based organizations (CBOs) to develop sustainable products and services through organizational and operational capacity building plans
2. Incentivize conservation actions among large producers and private actors involved in productive activities that represent threats to biodiversity
3. Establish public-private partnerships to mobilize investment for biodiversity conservations
4. Develop strategic actions that result in changes in attitudes and behaviors in favor of conservation and sustainable resources management

## KEY OUTCOMES

### STRENGTHENING MICRO, SMALL AND MEDIUM ENTERPRISES AND COMMUNITY-BASED ORGANIZATIONS DEDICATED TO SUSTAINABLE, ENIVRONMENTALLY FRIENDLY PRACTICES

*Establishing alliances to improve ecotourism in Guatemala's protected areas.* To promote ecotourism in key enclaves of Guatemala's protected areas, the project established the:

1. *Alliance for Sustainable Tourism in Yaxhá-Nakum-Naranjo National Park.* Dedicated to conservation and sustainable development, the project, in coordination with ASODESTY, CONAP, the *Instituto Guatemalteco de Turismo* (INGUAT), and park authorities provided training sessions and technical assistance to the seven producers and tourism service provider organizations of the Yaxhá R. L. Marketing Cooperative to offer sustainable, eco-friendly tourism services. Of the actions completed by this alliance, the training of community members in birdwatching techniques targeted main threats to the park, including poaching and hunting, by presenting opportunities for alternative livelihoods.
2. *Nature Tourism Alliance in the Carmelita-El Mirador circuit and Puerto Arturo circuit.* The project, supported by nature tourism operators, developed a sustainable tourism business model for Puerto Arturo, a community reserve and a critically endangered fauna and flora habitat. Focused on sustainability, the project supported Carmelita Cooperative to improve their capacity to operate Puerto Arturo tourism facilities, developed training sessions in business and financial acumen, hospitality, nature photography, and digital media management, provided recommendations for improved infrastructure, developed the website

of the Puerto Arturo Site, and developed protocols for responsible wildlife observation.

3. *Alliance for the Conservation of Sipacate-Naranjo.* The project promoted the formation of a conservation alliance in Sipacate-Naranjo National Park, which is composed of representatives of the World Wildlife Fund for Nature, WCS, ICC, and Ingenio Central Magdalena organizations. With the goal to promote conservation and sustainable management, the alliance coordinated to develop a strategic map and schedule of activities to be completed from 2019 to 2021, developed a joint work plan, and developed a map of actors for the development of a sustainable tourism project focused on sea turtle conservation. Despite being affected by the COVID-19 pandemic, the project has supported the alliance's initiative, implemented by WCS and UNDP, to build capacity in community ecotourism for young people from communities of the Sipacate-Naranjo National Park. For this initiative, the project provided binoculars and bird identification field guides to equip young community members.

4. *Community Tourism in Protected Areas Working Table.* In support of CONAP and INGUAT, the project formed a community tourism in protected areas working table in the MBR. Dedicated to improving community tourism development initiatives, the working table identified five CBOs with which it would provide capacity building and equipment: ASODESTY, *Cooperativa Carmelita*, *Asociación de Turismo Cruce a Dos Aguadas*, *Comisión de Turismo de Cooperativa La Técnica Agropecuaria*, and *Comité de Turismo de Uaxactún*. These five CBOs consisted mainly of alliances promoted by the Estación Biológica Las Guacamayas and are all providers of nature and adventure tourism in protected

**TASK 4 IMPACT HIGHLIGHTS**

- *Building alliances for ecotourism.* The project supported ecotourism initiatives, connecting communities to tourism providers and MSME producers to opportunities, improving economic livelihoods in conjunction with biodiversity conservation.
- *Advancing birdwatching tourism and avifauna monitoring.* The project contributed to a renewed interest in birdwatching in Guatemala through, among other support, the promotion and training of digital applications, specialized events, alliances, and training for public servants. Birding initiatives opened rural, non-agricultural employment opportunities linked to conservation efforts.
- *Promoting sustainable livestock practices to prevent human-wildlife conflict and to advance forest conservation.* As a result of project initiatives, 31 cattle ranchers in MBR signed a letter of commitment with WCS and MAGA, confirming their dedication to the conservation of wildlife species and protected areas. This effort supports the reduction of, among other threats, forest fires and the infringement of the agricultural frontier into protected areas.
- *Connecting communities and producer's organizations with environmental incentives.* The project supported communities in MBR with payment for ecosystem services mechanisms, such as PROBOSQUES and Forests for Life, providing financial incentives for continued protections of species and ecosystems in key ecological corridors. Under PROBOSQUES, a group of 21 cattle ranchers stand to make the equivalent of $624,612 over the next 10 years for sustainable practices on their lands.

areas and sites of high biological and cultural significance. Part of the project's sustainability plan, the project linked protected areas managers and conservation and development organizations, such as CECON/USAC, ACOFOP, Balam Association, and *Fundación Defensores de la Naturaleza* with the community tourism development initiatives.

*Boosting community-based birdwatching in Guatemala.* The project improved birdwatching for biological monitoring that supports conservation actions and for tourism by:

- *Promoting the use of digital applications to improve avifauna monitoring and citizen engagement.* The project led training sessions for park rangers in protected areas in the Northeast Region (departments of El Progreso, Zacapa, and Izabal) and the Verapaces Region (Alta and Baja Verapaz Departments) of MBR on the use of digital applications *eBird (*https://ebird.org/home) and *Merlin (*http://merlin.allaboutbirds.org) to monitor avifauna and how to use collected data to inform conservation actions. These digital applications allow users to create lists of birds by date, place, climate, etc.; information that can then be used by protected areas decision-makers and tourists alike. The use of digital applications connects park rangers to citizen science and monitoring, which amplifies available data on critical species and habitats.
- *Supporting the Guatemala Bird Fair.* Through an alliance with the Bird Tourism Roundtable, the project supported the organization of the 2019 Guatemala Bird Fair. An international event, it was attended by more than 200 birdwatchers and scientists from Ecuador, Mexico, United States, Canada, and Guatemala. The event engaged participants on topics such as citizen science (e.g., the digital application *eBird*), birdwatching tourism, and ecotourism entrepreneurship in the MBR. This event also trained community guides in birdwatching techniques and citizen science methodology adoption and provided key networking opportunities for ecotourism lodging and tour operators. At the Guatemala Bird Fair, the project, in conjunction with the Bird Tourism Roundtable, initiated the development of a national roadmap to increase MSMEs' and CBOs' capacities to provide tourist services and enhance commercial partnerships between national and international tour operators and touristic services providers.
    - *Amplifying the role of community guides.* Through implementing partner WCS and in coordination with Audubon Center experts, the project conducted birdwatching training sessions for community guides from ecologically significant sites in MBR, including El Bloque: Biotopes El Zotz and Cerro Cahuí, Tikal National Park, Yaxhá-Nakum-Naranjo National Park, and the BioItzá indigenous reserve. The training included the distribution of field guidebooks and binoculars, procured by the project, to community guides. Enhancing the skills and knowledge of community guides in topics such as the anatomical and physiological adaptations of birds, reproductive adaptations of

birds, and bird migration supports efforts to monitor Guatemala's vast protected areas and fosters an environment ripe for birdwatching tourism.

PHOTO: Park Rangers participate in a birdwatching training conducted by the project. (Credit: Danilo Valladares, USAID/Guatemala Biodiversity Project)

*Supporting beekeeping production as an alternative to income generation for communities in the El Zotz influence zone.* The Beekeeping Association of San Miguel La Palotada in Petén is a prime example of harmony between community producers and nature conservation sites. Building on an established relationship between the association and project partner WCS, the project provided technical assistance to an apiary school, established in 2017 with endorsement of CONAP, support from Ministerio de Agricultura, Ganadería y Alimentación (MAGA), and funding from the Overbrook project. With the project's support, this small group of beekeepers went from 44 hives that produced 490 pounds of honey in 2020 marketed locally at Q 3,822 to 52 hives that will produce 1,010 pounds of honey in 2021 to be marketed locally at Q 9,090.

The project, through implementing partner WCS, supported the participation of these producers in the strategy for ecological restoration of the landscape in the Protected Biotope, El Zotz, which is administered by CECON/USAC. Under this strategy, the project linked producers in the communities surrounding El Zotz with conservation actions that align with economic livelihood incentives. In recognition of the producers' dedication to conservation activities penned in a "Letter of Good Intent" and to further this eco-friendly enterprise, the project provided financial support to the producers, procuring a computer to facilitate marketing and sales and 104 additional hives (boxes),

which increase the number of hives from 52 to 156. Linkages between producer's associations, like the Beekeepers Association in El Zotz, and CECON/USAC represent key sustainable actions by the project and strengthen the socio-economic and cultural threads that weave throughout effective conservation management strategies for protected areas.

### IMPROVING SUSTAINABLE PRACTICES OF PRODUCERS IN INDUSTRIES WITH A HIGH ENVIRONMENTAL IMPACT

*Supporting cattle ranchers to employ improved livestock practices.* Expanding on *Jaguares para Siempre* initiatives deployed by WCS prior to project start, the project provided technical assistance, training, and equipment to small and medium-size cattle ranches in the communities of Cruce a Dos Aguadas, El Naranjo and El Caoba near the Biotope El Zotz, Yaxhá-Nakum-Naranjo and Tikal National Parks in MBR. Developed with MAGA, these initiatives raised awareness about the importance of implementing best livestock practices to prevent agricultural encroachment into protected areas and to reduce conflicts between cattle ranchers and jaguars and other carnivorous species. Among best livestock practices promoted were the monitoring of jaguar and other wildlife species through the use of environmentally friendly technologies that also promote agricultural productivity, sustainable landscape management, and the early detection of infectious diseases that can decrease herd size and are communicable to humans, like brucellosis and tuberculosis. The project also provided training on forest fire management to livestock committees and supported 21 producers from the El Caoba and Naranjo committees with their preparation of applications to enter PROBOSQUE. A payment for ecosystem services scheme, PROBOSQUE provides financial compensation for the management of hectares of protected forests under the areas of production of each producer. By project end, 10 producers were approved and operating under PROBOSQUE, and 11 producers were awaiting confirmation from INAB. The project collaborated with complementary funds from the WCS Wildlife Health Program, MAGA, the United States Fish and Wildlife Service (USFWS), Liz Claiborne Art Ortenberg Foundation, and the private donor Restaurante Pecorino in Guatemala.

Committed to the sustainability of improved livestock practices after project close, 31 producers in the communities of El Caoba and in El Naranjo signed a letter of commitment with WCS and MAGA, denoting their commitment to the conservation of the jaguar and other wildlife and to reducing threats to areas of biological importance.

*Building alliances to promote sustainable seafood and aquaculture practices on the Pacific Coast.* Working off extensive site-specific studies developed, the project provided technical support to develop business models, engaged government actors to align strategies and foster buy-in, completed workshops on sustainable production and successful business practices, and linked artisanal fishing, shrimp farming, and aquaculture producers to private sector companies.

While initiatives with artisanal producers and producer's organizations were disrupted by challenges faced due to the COVID-19 pandemic, the following key alliances were established:

1. *Alliance for the management of the Manchón-Guamuchal Wetland.* The project consolidated an alliance between the owner of *Finca Tamashan* and the Community of *Tres Cruces* to foster sustainable extensive aquaculture production in the Manchón-Guamuchal RAMSAR Site. This alliance is a critical alliance due to its strategy to reduce threats to mangroves through establishment of conservation agreements.

   Unfortunately, the prevalence of narcotrafficking in this area prohibited the signing of conservation agreements; even so, the alliance continues.

2. *Connecting artisanal fishermen to the Puerto Grande Company (ECOSAGUA).* The project signed an agreement with ECOSAGUA to promote a business model that included a value proposition in support of conservation efforts on the Pacific Coast. Despite the pandemic, which caused significant challenges to this alliance, due to project support with their financial management, ECOSAGUA was able to apply for a government loan to improve their operations.

PHOTO: *Luis Guerra of WCS installs trap chambers to determine species that attack cattle. (Credit: WCS/MAGA)*

## ENHANCING PUBLIC-PRIVATE PARTNERSHIPS

The project helped develop key partnerships with public and private institutions with interests in preserving Guatemala's diverse species and ecosystems to broaden sustainable forest and biodiversity protection.

*Connecting communities and producer's organizations to environmental incentives.* The project explored opportunities to connect community members and producer's organizations to payment for ecosystem services mechanisms that award them for employing sustainable practices that conserve biodiversity in ecologically significant areas, including:

1. *Supporting innovative mechanisms to mobilize funds under Forests for Life in Sierra de Lacandón National Park.* The project, with key implementing partner FDN, prepared a monitoring report for the Reducing Emissions from Deforestation and Forest Degradation (REDD+) Lacandón Forests for Life Project, under the Voluntary Carbon Standard and the Climate, Community and Biodiversity Alliance standards for the period 2014-2018. Using this report as a baseline to assess opportunities, the project established a strategy to connect communities with investors interested in procuring Verified Carbon Units (VCUs).

   Prior to project closure, the project conducted the carbon verification process to confirm the eligibility of communities to meet all requirements to sell VCUs and the viability of VCU sale in the provincial market. If successful, funds from the sale of carbon credits will be earmarked for the financing of *Comité de Turismo de la Cooperativa La Técnica* conservation activities and the development of participating communities.

2. *Linking cattle ranchers in MBR with payment for ecosystem services scheme, PROBOSQUE.* The project aided 21 cattle ranchers in their preparation and submission of applications to enter PROBOSQUE. The 21 cattle ranchers own 193.13 hectares of valuable land along the Yaxhá-Nakum-Naranjo and Tikal National Parks and, if accepted under the program, will receive financial compensation for employing sustainable practices to maintain the biological value of the forest.

   Prior to project closure, 10 cattle ranchers were accepted and receiving benefits and 11 were pending confirmation. If accepted, the 193.13 hectares owned by this group of 21 cattle ranchers stands to gain a total profit of Q 4,828,250 (equivalent to $624,612 using the May 2021 standard exchange rate of Q 7.73: $1) over the next 10 years for their sustainable practices.

   Linking cattle ranchers and other productive industries to programs like PROBOSQUE supports the reduction of a main threat to Guatemala's protected areas, the advance of the agricultural frontier. The success of this intervention

serves as a model for what can be achieved with existing CONAP programs through community engagement.

3. *Advancing conservation actions by the indigenous community of Paso Caballos in MBR.* An alliance between the *Paso Caballos* Community, *Consejos Comunitarios de Desarrollo*, CONAP, Solidarity, and private donors (AgroAmérica, NaturAceites, WCS) and the project, the amendment to the conservation agreement requires the *Paso Caballos* community to meet conservation standards to receive financial incentives for a duration of three years. Through WCS, the project supported the *Paso Caballos* community to commit and adhere to this amendment to the conservation agreement with CONAP through technical assistance, biodiversity information for decision-makers, and equipment and training.

   Among other results, project support in the implementation of a community strategy for the control of illicit wildlife trafficking laid the groundwork for a community declaration for the eradication of this threat to biodiversity, and training sessions in fire control led to community actions to counteract the growing threat of forest fires in the core areas of the MBR. This initiative serves as another example of the project's work that could be replicated in and around protected areas across Guatemala to reduce critical threats to species and ecosystems.

*Establishing alliances for improved practices and value chains.* Central to its public-private partnerships strategy, the project established strategic alliances that connected community actors, the private sector, and other key stakeholders to green enterprise schemes. The most prominent public-private partnerships established were in ecotourism and fishing and sustainable aquaculture, including the Nature Tourism Alliance, the Alliance for Sustainable Tourism, the Alliance for the Management of Integrated Manchón Wetland-Guamuchal, and the Pacific Fishing Alliance.

## PROMOTING SOCIAL AND BEHAVIOR CHANGE

In coordination with implementing partners TDA, WCS and FDN, the project identified behaviors that negatively impact biodiversity in each priority site to develop a tailored social and behavior change strategy, centered on promoting the adoption of human behaviors geared towards biodiversity conservation, such as the protection of endangered species (e.g., sea turtles) and sustainable production practices. Infusing its local-systems approach, the project engaged the AGHN, which manages the La Aurora Zoo and the Marine Conservation Center in El Garitón Village, near the Monterrico Multi-Purpose Area. AGHN supported the development of a behavior change strategy for sea turtle egg collectors (locally known as *parlameros*) to voluntarily increase the number of turtle eggs donated to hatcheries. While early project closure means that the strategy will not be executed while the project is still operating, to ensure sustainability of progress made, AGHN has accepted the challenge of implementing the strategy with local organizations. The implementation of this behavior change strategy will contribute

to future national and local campaigns, building on progress already made by the project. Principal social and behavior change successes include:

1. *Using social media as a tool for change.* The project collaborated in the development and circulation of a social media campaign against wildlife trafficking with CONAP on Facebook.
2. *Building alliances to promote Social and Behavior Change initiatives.* Within the project's social and behavior change strategy and identified as innovative programs by project partners, the project completed activities related to citizen science and environmental awareness, such as a Citizen and Community Science Program with birdwatching tour guides that uses online platforms like eBird from Cornell University.

# CHALLENGES AND RECOMMENDATIONS FOR SUSTAINABILITY

## CHALLENGES DURING IMPLEMENTATION AND AT PROJECT CLOSE

*Government turnover.* The replacement of high-level government officials can significantly change the priorities of government entities and funding allocated for specific initiatives. Due to changes in institutional leadership of government entities, such as CONAP, INGUAT, and local government officials, the project regularly faced shifting priorities as well as the need to build new relationships within a limited period. To navigate these challenges and sustain momentum, the project worked to establish relationships at multiple levels of government and with actors at different levels within government institutions. For example, the project trained and equipped park rangers in forest fire prevention and control while also developing national and sub-national level forest fire protocols.

*Constraints to institutional funding.* While state investment in protected areas management has never been high, the COVID-19 pandemic has particularly strained public sector biodiversity funding. The 2020 national budget was reoriented to strengthen health systems, reactivate the economy, and combat food security. It is projected that budget allocations for the coming years will focus on the same issues, continuing to strain protected area institutional resourcing. During project implementation, the project addressed funding challenges by mobilizing funds and engaging civil society actors to establish a more democratic model for effective protected areas management. While budgetary limitations are challenging to overcome, the engagement of private sector actors and civil society is a critical approach to support biodiversity conservation.

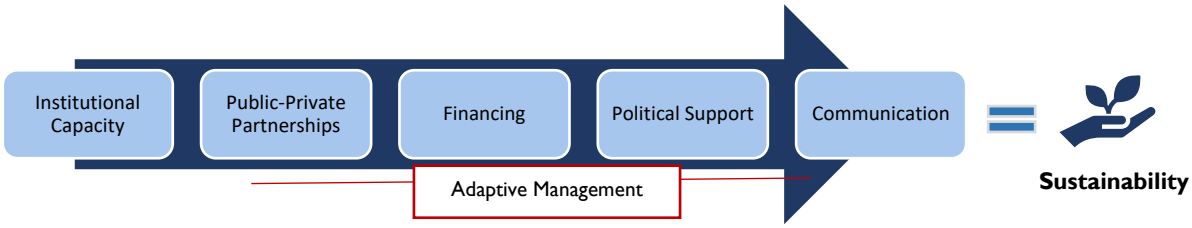
*Restrictions to travel and field implementation caused by the COVID-19 pandemic.* The COVID-19 pandemic caused significant challenges to many aspects of project implementation. One of the most significant direct limitations was its impact on staff travel and field implementation. This challenge was addressed with the enhanced use of electronic tools for training sessions, meetings, and communications and the use of cell phones to distribute messages and documents in areas of low internet connectivity. The project's field office worked deliberately and consistently to ensure continued communication and connection with organizations that do not have the means or equipment for teleworking. Even in these times of great challenges, the project found solutions to challenges with the use of virtual communication technology, developing a different culture to keep the technical team linked with organizations and partners.

*Limitations to fund mobilization.* Due to the COVID-19 pandemic, many companies faced significant financial challenges and, as a result, focused on the survival of their operations. Financial strain was especially felt by tourism companies with which the project focused its engagement. Financial challenges by companies during this period

meant that the mobilization of funds for project interventions was significantly affected. While the project was able to mobilize considerable funds from private sector actors prior to the COVID-19 pandemic, it is clear that the establishment of early alliances and identification of synergies with diverse sectors are key to sustained fund mobilization.

*Security concerns caused by illicit activities.* The project faced significant challenges in the Pacific Coast due to security concerns. While these activities were monitored closely and some activities were permitted to continue, activities like those at the Manchón-Guamuchal RAMSAR site were significantly impacted by narcotrafficking activities, which caused USAID to prohibit travel to the intervention area. Unfortunately, these challenges remain as economic challenges derived from the COVID-19 pandemic have led to an increase in organized crime and environmental crimes. Economic downturns often correlate with an increase in poaching, deforestation for the consumption of firewood, criminal burning and the advance of the agricultural frontier for crops in the rainy season, among other issues. In addition, the lack of employment opportunities presents an opportunity for criminal organizations to recruit more inhabitants in extreme poverty who play the role of human shields for the trafficking of people, wildlife, smuggling of goods, narcotics, and others and in return receive payments in cash or barter for food or inputs. It is highly probable that situations of restricted mobility and the economic impact increase the possibility that criminal groups have greater control of the territories.

**EXHIBIT 7. STRATEGIC SUSTAINABILITY PLAN ELEMENTS**




## PROJECT ACTIONS AND RECOMMENDATIONS FOR SUSTAINABILITY

The project's activities were vital to increasing the ability of the Guatemalan government and other key stakeholders to respond to threats to its species and ecosystems. Over the past three years, the project has invested significant time and resources into developing systems and human capital so that government and civil society stakeholders can carry these activities forward. In preparation for its final year of implementation, the project developed a Sustainability Plan, presented to USAID in September 2020, that outlines actions by task that contribute to sustainability of project interventions, which incorporate five strategic elements for project sustainability beyond mission financing (See Exhibit 7). The project undertook a robust handover process at project close in Year 3, tailoring activities and sustainability approaches to corresponding government partners and civil society organizations based on progress made in project interventions. Because many of the project's activities were designed and implemented in coordination with government partners and civil society organizations, the project has already

established significant local buy-in. The Guatemalan government and civil society partners have taken ownership of several activities and will invest in institutionalizing the gains made by the project but will be required to adhere to sustainability plan elements, including financing, to maintain results and impacts beyond the life of the project.

### TASK 1

Task 1 implemented critical initiatives at the national and sub-national levels that contribute to biological monitoring that is more efficient and effective. The project operationalized SNIBgt and connected it to local monitoring systems, such as CONAP's CEMEC and SMBR's Monitoring Information System, to amplify its data. Included in its support to SNIBgt, the project procured cloud storage space to increase SNIBgt's data storage and management capacity and used this procurement to demonstrate the financial amount that CONAP must incorporate into its annual budget to maintain the system. This will require continued political support and financing from the Guatemalan government and utilization of the SNIBgt Steering Committee established by the project to serve in a sustained leadership role. The continued leadership of the SNIBgt Steering Committee after project close will push forward critical discussions and oversee the development and enforcement of norms for governance and financial sustainability mechanisms after project closure. Further, the project completed capacity building activities, developed alliances, introduced innovative technologies for biological monitoring, and designed monitoring systems that engage national and sub-national government stakeholders as well as community and private sector stakeholders. Continued investment in biological monitoring approaches, including continued capacity building of national and sub-national institutions, civil society, community-based organizations, and more, employed by the project can play an integral role in biodiversity conservation efforts in Guatemala with commitment from government actors.

### TASK 2

The project's support of government partners in drafting, proposing, and adopting policy and legal instruments presented key steps toward better protected areas management in Guatemala. In particular, the project supported policies and protocols, such as updating the SIGAP Forestry Manual and developing forest fire management protocols and strategies, that will continue to guide government strategy and practices in sectors that present significant threats to protected areas. After project close, the Guatemalan government must continue to review policy and normative instruments that require updates and use collaborative processes with sub-national government actors and civil society to complete revisions that recognize the realities at the national and sub-national level.

Beyond the project's improvement of policy and legislative reforms, the project focused on consolidating participatory governance models, connecting communities to conservation incentives systems, and proposing sustainable funding models. In employing these approaches, the project focused on creating spaces to advance protected areas

governance by strengthening decision-making and conservation finance mechanisms that encourage biodiversity management and conservation with the participation of the public and private sector. Government policies, laws, and regulations, and external assistance can only go so far toward advancing an agenda for sustainable protected areas management. The Guatemalan government must be dedicated to adequately funding protected areas management, including investigating expanded use of conservation finance mechanisms and exploring innovative funding models such as a national carbon market. Open dialogue and involvement among interested parties from community-based to the national level must continue to be fostered in future programs to encourage biodiversity conservation efforts.

### TASK 3

The project dedicated significant efforts to empowering organizations within the environmental justice sphere to support conservation programs and strategies and to prosecute and convict perpetrators of environmental crimes. Under Task 3, the project worked together with national and sub-national stakeholders to achieve substantial wins that exemplify how project contributions have fostered stakeholder ownership and enhanced institutional capacities. Central to its efforts, in a highly participatory approach, the project developed five-year Institutional Performance Improvement Roadmaps for CONAP, DIPRONA, the Attorney General's Office, the Judicial Branch, and CECON, and initial inputs for SMBR Board of Directors, outlining performance gaps and approaches to address them. Using these roadmaps, these institutions will benefit from improved research capabilities; identification, prosecution, and resolution of environmental crimes; case management; and use of best practices. Gaining headway in the judicial space, the project supported the establishment of a pact for environmental justice and the development of its action plan and roadmap. Further, the project supported the creation of four new specialized justice units (Zacapa Court, Zacapa and Escuintla Prosecutor's Offices, and Analysis Unit in the Environmental Prosecutor's Office) and provided a needs assessment and initial equipment for an environmental forensic laboratory at the INACIF. These leaps forward in institutional and judicial capabilities to address environmental crimes were developed through a joint construction approach with institutions.

Even though significant progress was made, the three-year time frame of the project significantly limited the project's ability to follow through with critical initiatives under Task 3 and other project interventions. Given current political will and significant opportunities to connect national and sub-national initiatives that address environmental crimes and biodiversity conservation, more long-term support is needed for sustainable protected areas management.

### TASK 4

The project gained considerable headway in its development of public-private partnerships with particular focus on financial and environmental sustainability in ecotourism, cattle ranching, and other productive industries. Due to their awe-inspiring

natural beauty and cultural attributes, project intervention areas have been long recognized as areas with high ecotourism potential. The project developed ecotourism initiatives by combining income-generation opportunities with incentives to preserve environmental resources, developing public-private sector alliances and working groups to foster sustainable linkages between local stakeholders. Under Task 4, the project demonstrated how conservation incentives mechanisms provide sustainable alternatives for productive sectors, such as cattle ranching. To continue progress made there must be a concerted effort to:

1. Provide additional support for investment vehicles to stimulate investment in productive industries with environmentally friendly practices
2. Promote activities that demonstrate the profitability of environmentally and socially responsible behavior
3. Continue to build public-private sector alliances dedicated to conservation

# MONITORING, EVALUATION, AND LEARNING

The project made laudable progress in advancing biodiversity monitoring, policy and legislative reforms, environmental crime enforcement and prosecution, and community engagement, pushing forward the mutual goal shared by the Guatemalan and U.S. governments of improving protected areas governance. Despite the short time frame and considerable challenges faced, the project made significant progress in addressing many of the obstacles facing biodiversity conservation efforts at the national level and in and around protected areas.

The project employed CLA methodologies to support continual adaptive management that contributed to project outcomes. This section presents the project's use of CLA and its performance against indicator targets.

## COLLABORATING, LEARNING, AND ADAPTING

The project worked to co-generate knowledge and learning among implementing partners, key actors, and policymakers involved in SIGAP's management and governance.

The project used participatory mechanisms to promote learning and ensure that the technical approach remained focused on collaboration, knowledge generation, and information sharing and kept track of implementation and performance management. Internally, the staff met weekly, project leadership and the COR met biweekly, and project leadership met monthly to coordinate activities and review progress. With similar purpose, each quarter, the team conducted sessions with implementing partners. Continuous lines of communication, paired with meetings to establish agendas and coordinate actions, helped the project to establish and maintain strong relationships with project partners.

On an annual basis, the project held pause-and-reflect sessions with USAID, implementing partners, and key actors from the government of Guatemala, the private sector, CBOs, and others to discuss learning questions and review and analyze results chains and progress towards project goals. The knowledge gained from these sessions, informed adaptive management decisions and annual work plans.

In its final stage, by mid-June 2021, the project held a final workshop to analyze project experiences, further discuss efforts for sustainability of project interventions, and make recommendations for future activities aimed at improving Guatemala's biodiversity conservation. Some key lines of thoughts from this workshop are included under the previous section, Project Actions and Recommendations for Sustainability.

## PERFORMANCE AGAINST INDICATOR TARGETS

This sub-section presents the principal outputs and impacts at the end of Year 3 of the project. The targets include cumulative targets through Year 3 of the project in

accordance with the revised contract end date. Despite funding uncertainties, the COVID-19 pandemic, and early project closure, the project exceeded most established targets set for Year 3 and passed some targets set for Year 5.

Exhibit 8 provides a summary of the project's performance against its indicators during the contracting period. Of the 14 project indicators (seven standard and seven custom), the project measured progress against 12 project indicators and achieved an average of 140 percent performance against its cumulative Year 3 targets. By the end of the performance period, eight of its 14 indicator targets had been surpassed. Of particular note are the following:

1. The significant area (951,347 hectares) brought under improved natural resource management (204 percent achievement) reflects the project's critical actions to improve the use of SMART, forest fire prevention and control, and forestry management.
2. The project's contributions to reduced emissions amount to more than 996,989 metric tons of CO2 emissions (121 percent achievement).
3. The number of people with improved economic benefits derived from sustainable natural resource management or biodiversity conservation (3,404 people) significantly surpassed the target (227 percent), demonstrating the project's critical effort to marry biodiversity conservation with productive activities that promote community engagement and sustainability.
4. The project more than doubled (283 percent) the number of laws, policies, or regulations that address biodiversity conservation or other environmental themes officially proposed, adopted, or implemented. A substantial feat that includes:
    - Updating the SIGAP Forestry Manual, which governs the management of forest activities that are permitted in protected areas and supports CONAP's ability to respond to main threats in Guatemala's protected forests (e.g., the advance of the agricultural frontier, forests fires, and illegal logging)
    - Regulations for technical studies, master plans, and operations plans in SIGAP, dedicated to improving the efficiencies and planning of SIGAP.
    - The establishment of a Social Participation Handbook for SIGAP, a critical policy instrument to improve the participation of and interaction with indigenous peoples, incorporating a gender and social inclusion lens into the management of SIGAP.
    - The establishment of Institutional Protocols of Forest Fires Response at the national level and in all pilot intervention areas, further supported by a project-developed National Fire Management Strategy.

## EXHIBIT 8. PROJECT INDICATORS, TARGETS, AND PERFORMANCE

| INDICATOR | CUMULATIVE TARGET THRU YEAR 3 | ACHIEVEMENT AGAINST TARGET | |
|---|---|---|---|
| | | YEAR 3 END | PERCENT |
| **GOAL-LEVEL INDICATORS** | | | |
| EG.10.2-1. Number of hectares of biologically significant areas showing improved biophysical conditions as a result of U.S. government assistance. | 175,150 | 265,894 | 152% |
| EG.10.2-2. Number of hectares of biologically significant areas under improved natural resource management as a result of U.S. government assistance. | 467,378 | 951,347 | 204% |
| EG.13-6. GHG emissions, estimated in metric tons of CO2 equivalent, reduced, sequestered, or avoided through sustainable landscapes activities supported by U.S. government assistance. | 825,488 | 996,989 | 121% |
| **RESULT-LEVEL INDICATORS** | | | |
| Custom 1. Number of institutions with improved capacity for natural resources management and/or biodiversity conservation supported by U.S. government assistance (customized indicator based on the EG.11-2) | 32 | 34 | 106% |
| Custom 2. Number of institutions using biodiversity information or implementing threat-reducing actions to improve biodiversity conservation as supported by U.S. government assistance (customized indicator based on the EG.11-6)* | 40 | 34 | 85% |
| Custom 3. Percentage of environmental crime cases that reach the accusation stage in prioritized institutions.* | 6% | - | - |
| Custom 4. Amount of investment mobilized (in USD) for the natural resources management and biodiversity conservation as result of the U.S. government assistance (customized indicator based on the EG.13-4).* | $650,000 | $636,205 | 98% |
| Custom 5. Percentage of target audience that changes unsustainable behavior in favor of sustainable biodiversity conservation.* | 10% | - | - |
| EG.10.2-4. Number of people trained in sustainable natural resources management and/or biodiversity conservation as a result of U.S. government assistance.* | 2,650 | 2,279 | 86% |
| EG.10.2-5. Number of laws, policies, or regulations that address biodiversity conservation or other environmental themes officially proposed, adopted, or implemented as a result of U.S. government assistance. | 6 | 17 | 283% |
| EG.10.2-6. Number of people that apply improved conservation law enforcement practices, as a result of U.S. government assistance.* | 400 | 276 | 69% |
| EG.10.2-3. Number of people with improved economic benefits derived from sustainable natural resource management or biodiversity conservation as a result of U.S. government assistance. | 1,500 | 3,404 | 227% |

| INDICATOR | CUMULATIVE TARGET THRU YEAR 3 | ACHIEVEMENT AGAINST TARGET | |
|---|---|---|---|
| | | YEAR 3 END | PERCENT |
| **CROSSCUTTING INDICATORS** | | | |
| Custom 6. Percentage of female participants in U.S. government-assisted programs designed to improve biodiversity conservation and/or sustainable natural resource management (customized indicator based on the GNDR-2) | 25% | 29% | 116% |
| Custom 7. Percentage of participants in U.S. government-assisted programs designed to improve biodiversity conservation and/or sustainable natural resource management who are youth (15-29) (customized indicator based on the YOUTH-3) | 20% | 27% | 135% |

**Due to the COVID-19 pandemic, the project had to suspend some activities in Year 3 of implementation, which affected the project's ability to achieve certain indicators.*

**U.S. Agency for International Development**
1300 Pennsylvania Avenue, NW
Washington, D.C. 20523
Tel.: (202) 712-0000
Fax: (202) 216-3524
www.usaid.gov