

# SUSTAINABLE DEVELOPMENT PLAN

## CHIQUIBUL-MOUNTAIN PINE RIDGE-CARACOL COMPLEX



ECONOMIC  
DEVELOPMENT  
COUNCIL



Inter-American  
Development Bank





## Message from the Prime Minister, Rt. Hon. Dean Oliver Barrow



We face an unprecedented economic downturn as a result of the Novel Coronavirus Pandemic. At the same time, we also confront increasing pressure on many of Belize's pristine natural assets from unsustainable use and external factors, including climate change and illegal incursions. Regarding the latter, Government stands unwavering in its commitment to implement mechanisms for adequately managing and safeguarding our nation's rich biodiversity. For many years Belize's biodiversity has been a basis of our economic development through the forestry sector, helping us to transition our economy to one that is built, among other things, on a vibrant tourism sector and energy self-sufficiency. Moreover, it has contributed to water security and access to communities across the country. Therefore, the sustainable development and effective governance of Belize's largest remaining contiguous bioregion block, the Chiquibul-Mountain Pine Ridge-Caracol Complex (CMCC), is critical to the overall preservation of this region's invaluable ecosystem services.

This Sustainable Development Plan builds on the Government's continuing commitment to ensuring the sustainable use of our biodiversity as detailed in the Growth and Sustainable Development Plan. This bold and innovative master plan offers us the opportunity for Belize to pioneer a landscape management approach to its protected areas, setting a notable example for our region and beyond. It is a concrete effort from the communities, development professionals, and policymakers in clearly identifying the challenges we face and charting a new era for sustainable growth. It holds all of us to a wide range of forward-looking targets and ambitious commitments while providing for meaningful and effective collaboration. This master plan provides the overarching planning framework that will guide future development of the CMCC.

The targets and actions of this master plan have been built on six pillars: economic opportunities for local livelihoods; water resources protection; biodiversity conservation; safety and security; land use planning; and inclusive governance as the building blocks to achieving our vision for the area in the next fifteen years. These objectives have laid out a clear national approach to the sustainable use of our biodiversity. The plan envisages a robust governance framework and enhanced collaboration and communication among the Government, private sector and communities. Together, they are to be stewards of biodiversity management.

We are grateful to the Inter-American Development Bank for its continuous support in assisting us in driving Belize's development forward. I acknowledge the tremendous work by the Public-Private Desk, Technical Secretariat for the Economic Development Council, and the team of consultants, who, with the support from various Ministries and agencies, have produced this plan. More importantly, I commend the support and active participation from the communities, civil society, and private sector throughout the development of the plan.

On this basis, I have every confidence that together we will achieve economic development while protecting our rich biodiversity for the wellbeing of generations to come.



Right Honourable Dean Oliver Barrow  
Prime Minister of Belize



# Acknowledgements

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- Belize National Spatial Data Infrastructure (BNSDI)
- Belize Tourism Board
- Belize Water Services Limited
- Biodiversity and Environmental Resource Data System of Belize (BERDS)
- British Army Training and Support Unit Belize (BATSUB)
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- Friends for Conservation and Development
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## Executive summary

In the green mountains of western Belize lies the Chiquibul-Mountain Pine Ridge-Caracol Complex (CMCC), an area of unique biological and cultural value. Located within the Cayo District, the CMCC incorporates the largest block of contiguous tropical broadleaf forest in Central America and areas of cultural significance like the Caracol Archaeological Reserve. Rich with waterfalls, cave systems, archeological sites, and cultural heritage, it is part of the Maya Mountain Massif, which has been described as a storehouse for biodiversity. These mountains are also an important source of water for both Belizeans and Guatemalans, supporting communities, agriculture, energy, and tourism.

The gateway to the CMCC is through the road network from Georgeville and Santa Elena to Caracol, which is the main route for tourists and other visitors to the region. Ongoing improvements to the Caracol Road will make the area more accessible to visitors and open up opportunities for jobs and other economic growth in the area. However, these developments have raised concerns that poorly thought-out road improvement plans (and the economic activities that follow them) would likely endanger the primary values of the area—the Mayan cultural heritage, energy production potential, water supply for downstream communities, eco-tourism, and other natural benefits that make the region so unique. Furthermore, the 2020 coronavirus pandemic has had a significant impact on tourism across Belize, making it clear that local communities should not depend solely on expanding tourism for their future prosperity. Therefore, the region needs a proactive sustainable development plan to balance the creation of economic opportunities with the protection of the natural resources on which its prosperity depends.

To address this challenge, the Office of the Prime Minister (OPM), with support from the Inter-American Development Bank (IDB), Stanford University's Natural Capital Project (NatCap), and the University of Belize Environmental Research Institute (UB ERI), has engaged in an innovative process to design a Sustainable Development Plan (SDP) for Chiquibul-Mountain Pine Ridge-Caracol Complex.

This SDP is the culmination of a nearly two-year collaborative effort to design an integrated management framework for the CMCC region, that involved: (1) stakeholder engagement; (2) literature review, data acquisition, and mapping of ecosystem services and values; and (3) ecosystem-based spatial planning. A total of 205 individuals representing 74 communities, government departments, statutory bodies, non-governmental organizations and associations, private sector entities and others were involved in every stage of SDP development through a variety of engagement and outreach activities.

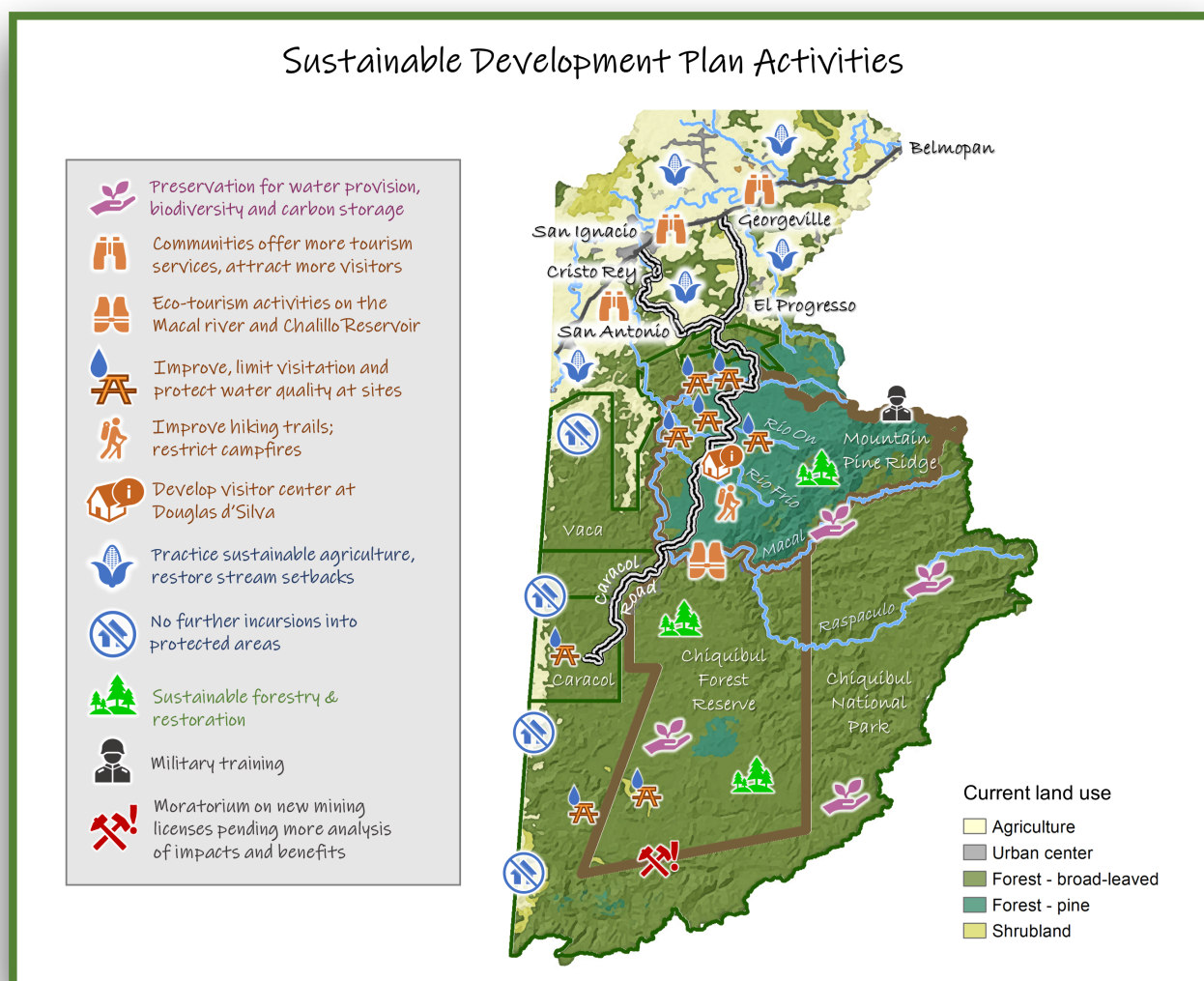
State-of-the-art modeling and mapping were conducted using the Natural Capital Project's InVEST toolkit, to understand how the natural areas of the CMCC benefit communities, businesses, and the economy of Belize. These analyses included both the direct economic benefit as well as the benefits of regulating services like providing clean and abundant water. A comprehensive trade-off assessment was done to understand the social, environmental, and economic consequences of different development options. The result of this stakeholder-driven process is a vision for sustainable development of the region and a set of recommended activities to get there.



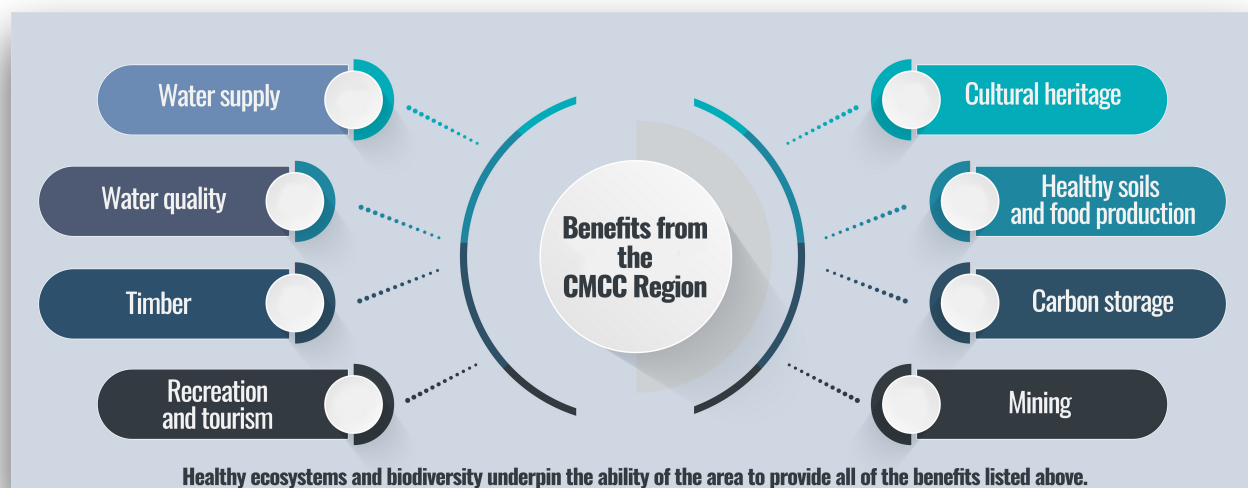
The SDP's final selection of sustainable development activities balances the best available scientific data and results from state-of-the-art modeling of the social, environmental, and economic consequences of different development choices with the needs and expectations of a representative stakeholder group engaged in a transparent consultation process.

***The fundamental goal of the Sustainable Development Plan, then, is to facilitate the improved management of ecosystems in the CMCC so as to maintain their integrity while ensuring the delivery of ecosystem service benefits for present and future generations of Belizeans and the global community.***

The aims of the SDP are threefold: (i) to focus management activities that are already being undertaken, ensuring these are integrated; (ii) to highlight additional activities and actions that could be undertaken to help meet the challenge of ensuring a sustainable future; and (iii) to provide a roadmap for the phased implementation of a governance structure to ensure its success. **The result is a vision for a vibrant region where healthy ecosystems support—and are supported by—thriving local communities and a prosperous economy.**



## A Vision for Sustainable Development to 2035



## Summary of policy and governance recommendations

In order to provide an enabling environment for the initial and long-term governance approach within the CMCC, the following are specific policy recommendations:

- Cabinet Directive to replace the current separate Protected Area designations and to establish a single CMCC Protected Landscape designation through the passage of an Order under the National Protected Areas System Act of 2015. A Statutory Instrument will also be necessary to create the governance, administration and management framework to apply to the new area.
- Cabinet Directive, separately or as part of the above, should also outline:
  - A comprehensive land tenure assessment
  - A prohibition on land de-reservation, future sales and land-transfers of **public lands** within the CMCC Protected Landscape
  - Institutionalization of the recommended zoning scheme, including a special management area designation under the Lands Act for the area outside the CMCC
  - Enforcement of the National Protected Areas System Act #7 of 2015 which prohibits extractive activities within National Parks in the CMCC.
- Cabinet Directive assigning the National Biodiversity Office (NBIO) under the Ministry of Fisheries, Forestry, Environment and Sustainable Development as the overall coordinating entity for the phased implementation of the SDP. This includes formalization and empowerment of NBIO's legal mandate, institutionalization of NBIO into the GoB Public Service, and allocation of resources.
- Development of a sound legal and policy framework to guide biodiversity management.
- Development of an integrated financial strategy and resource mobilization plan for the CMCC, drawing on ongoing work through PACT to outline a public-private partnership framework that allows for increased private sector participation.
- Conduct assessments of community and institutional capacity to strengthen collaborative governance, establish a framework for community participation, and to empower communities to manage and share benefits of the CMCC at the site and system level.



These policy interventions will ensure that all stakeholders have an active and equal role in participation and decision making for the CMCC Protected Landscape. ***The successful landscape governance of the CMCC region will embody the following key design principles of governance: (i) collaborative, inclusive and polycentric, (ii) deliberate and legitimate, (iii) transparent and accountable, and (iv) multilayered.***

Within the 15-year implementation period, three timeframes were defined to organize the recommended activities:

***Short-term strategy (up to 5 years - 2025)***

Paving the way: improvement of the main recreation and tourism sites and implementation of the governance processes and management plans necessary to make the next steps a success.

***Medium-term strategy (6-10 years - 2030)***

Implementation and monitoring: New products and services in the tourism, agriculture, education and research sectors are developed, and capacity is increased. Sustainable practices in agriculture and forestry are progressing.

***Long-term strategy (11-15 years - 2035)***

Cementing the vision: All protected areas are effectively managed allowing both the protection of habitats at risk and the development of nature-based activities. Agriculture and wild product harvesting practices are sustainable. A long-term inclusive governance framework is in place along with sustainable financing mechanisms.

The implementation of the recommended activities in the SDP will be the responsibility of various institutions, who will proceed using the framework presented here as a master plan to align their activities. Table 4 lists the recommendations from the SDP organized by objective, and gives the responsible agency, key partners, and timeframe for completion. The CMCC will contribute to a nature-based economy that provides opportunities for Belizean communities to live healthy and productive lives, protects cultural heritage, and preserves the natural capital and environmental resources that are the basis for our prosperity.

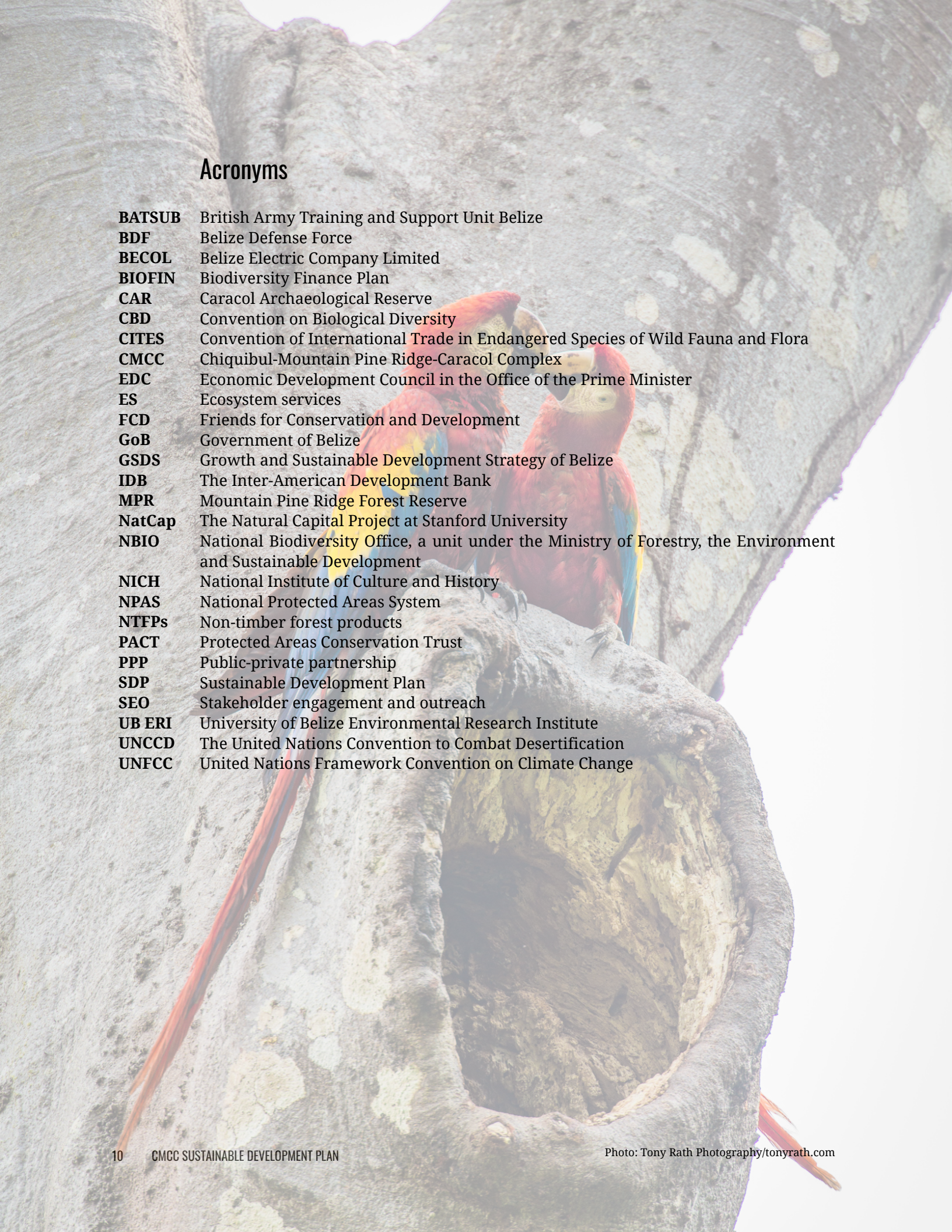


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## Acronyms

Two red parrots are perched on a large, weathered tree trunk. The tree trunk has a large, hollowed-out section in the center. The parrots are facing each other, with one slightly behind the other. The background is a soft, out-of-focus natural setting.

<b>BATSUB</b>	British Army Training and Support Unit Belize
<b>BDF</b>	Belize Defense Force
<b>BECOL</b>	Belize Electric Company Limited
<b>BIOFIN</b>	Biodiversity Finance Plan
<b>CAR</b>	Caracol Archaeological Reserve
<b>CBD</b>	Convention on Biological Diversity
<b>CITES</b>	Convention of International Trade in Endangered Species of Wild Fauna and Flora
<b>CMCC</b>	Chiquibul-Mountain Pine Ridge-Caracol Complex
<b>EDC</b>	Economic Development Council in the Office of the Prime Minister
<b>ES</b>	Ecosystem services
<b>FCD</b>	Friends for Conservation and Development
<b>GoB</b>	Government of Belize
<b>GSDS</b>	Growth and Sustainable Development Strategy of Belize
<b>IDB</b>	The Inter-American Development Bank
<b>MPR</b>	Mountain Pine Ridge Forest Reserve
<b>NatCap</b>	The Natural Capital Project at Stanford University
<b>NBIO</b>	National Biodiversity Office, a unit under the Ministry of Forestry, the Environment and Sustainable Development
<b>NICH</b>	National Institute of Culture and History
<b>NPAS</b>	National Protected Areas System
<b>NTFPs</b>	Non-timber forest products
<b>PACT</b>	Protected Areas Conservation Trust
<b>PPP</b>	Public-private partnership
<b>SDP</b>	Sustainable Development Plan
<b>SEO</b>	Stakeholder engagement and outreach
<b>UB ERI</b>	University of Belize Environmental Research Institute
<b>UNCCD</b>	The United Nations Convention to Combat Desertification
<b>UNFCC</b>	United Nations Framework Convention on Climate Change



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# 1. Introduction



# 1. Introduction

## 1.1 Overview of the CMCC landscape, communities, resources

The Chiquibul-Mountain Pine Ridge-Caracol Complex (CMCC) is an area of unique biological and cultural value, incorporating the largest block of contiguous tropical broadleaf forest in Central America and areas of cultural significance like the Caracol Archaeological Reserve. Located within Cayo District in western Belize, it is part of the Maya Mountain Massif, which has been described as a storehouse for biodiversity with at least five different forest ecosystem types, 5,000+ species of fauna and 1,355 species of flora, and is home to several rare and endangered species including the jaguar, ocelot, margay, scarlet macaw and Baird's tapir<sup>1,2</sup>. Rich with waterfalls, cave systems and archeological sites, these mountains are also an important source of water for both Belizeans and Guatemalans, supporting communities, agriculture, energy and tourism.

The Georgeville and Santa Elena Junction roads, which provide the only access to the CMCC area from the George Price Highway, connect the communities of Cristo Rey, San Antonio, El Progreso/Seven Miles, Upper and Lower Barton Creek with the surrounding area. There are also a series of secondary roads - initially established for historical forestry and timber operations - that provide access to various recreation and tourism sites within the area, with limited development for visitor access at some of the most popular sites (off-road parking, trails, covered shelters, etc.). The roads are generally unpaved within the CMCC proper and very few resources exist for their maintenance. Overall, funds to support management and monitoring in the area are limited.

Today, the major economic activities within the CMCC include tourism, timber extraction, mining, and power generation at three sites along the Macal River. Adjacent to the CMCC, agriculture is of primary importance, as well as tourism services provided by neighboring communities. Historically, timber extraction served as the primary economic driver for creation and maintenance of the Forest Reserves, but there is now a growing industry around adventure tourism. Currently an average of around 10,000 visitors/year visit the Caracol Archaeological Reserve – about 1/8 of the total visitations to San Ignacio Town<sup>3</sup>. Improvements to the Caracol road are expected to increase visitors to the region, potentially bringing jobs and economic growth to the area. But an increase in development and visitors can also impact the environmental benefits provided by the CMCC, such as water supplies and carbon storage, along with logistical considerations like waste disposal and security. The recent coronavirus pandemic in 2020, and the disruption it has caused to tourism across Belize, has made it clear that local communities should not depend solely on expanding tourism for their future prosperity. Therefore, the region needs a proactive sustainable development plan to balance the creation of economic opportunities with the protection of the natural resources on which its prosperity depends.

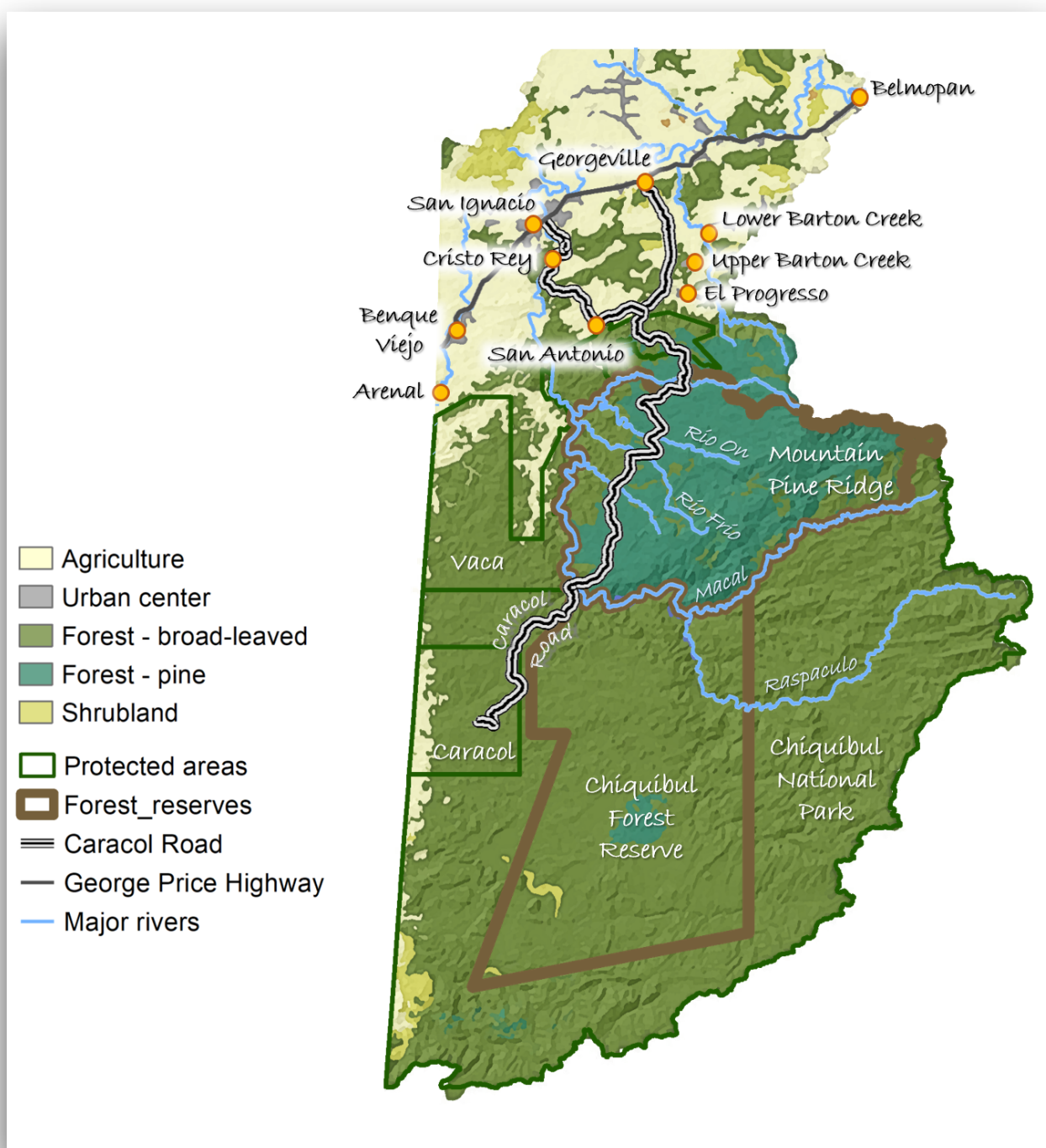
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<sup>1</sup> Kay et al. 2015. Mainstreaming Biodiversity, Ecosystem Services and Coastal Resilience in Tourism Development. Ecosystem Services Mapping and Review. University of Belize Environmental Research Institute. Nov 2015.

<sup>2</sup> Bridgewater, S.G.M. et al. 2006. A preliminary checklist of the vascular plants of the Chiquibul Forest, Belize. *Edinburgh Journal of Botany* 63(2&3): 269-321.

<sup>3</sup> Belize Tourism Board. Travel & Tourism Statistics Digest 2018.





**Figure 1.** The Chiquibul-Mountain Pine Ridge-Caracol Complex (CMCC) and its buffer areas, located in the Cayo District.

## 1.2 Motivation for and goal of the Sustainable Development Plan

Ongoing improvements to the road network from Georgeville and Santa Elena to Caracol have raised concerns about unplanned development leading to the degradation of both natural and cultural assets. If the road is improved without attention to proactive planning, there is a danger that the primary values of the area – namely its Mayan cultural heritage, energy production potential, water supply for downstream communities, eco-tourism, and other benefits – will be threatened or compromised. A proactive and inclusive approach to planning for sustainable development is needed, considering the environmental, social and economic benefits that the area provides, and how they can be preserved, and even enhanced, into the future.

The importance of the CMCC region is recognized by the people that work and play in the natural areas and live in the nearby communities, and by the multiple agencies tasked with managing different aspects of the region and its resources. Six ministries and sixteen departments have the mandate for the implementation of twenty pieces of legislation, seven subsidiary laws and regulations, nine policies, and five international conventions as it relates to activities in the CMCC. In addition, the CMCC hosts a complexity of mixed management organizations including government agencies, non-governmental organizations, private sector and international organizations. Historically, management of the CMCC region has been under the regime of sectoral planning. While sectoral planning and management are essential, the CMCC is a highly dynamic area that is connected by the flows of water and the interdependency of ecosystems over large and small spatial scales. Thus, under a sectoral planning and management regime, decisions made for one location can have significant impacts on the condition of the natural environment in that location and elsewhere.

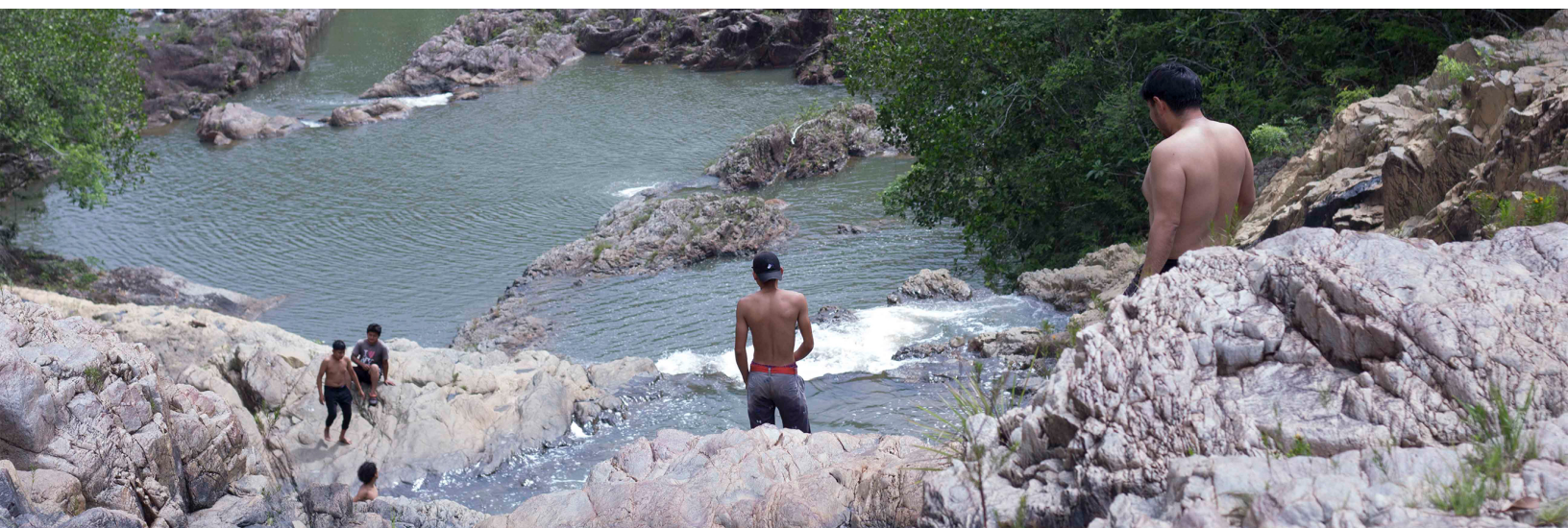
Implementing integrated management is much harder than planning for it; it can only be achieved through a collaborative decision-making process that joins the interests, knowledge and experiences of all stakeholders from civil society, the private and public sectors. This Sustainable Development Plan is the culmination of a nearly two-year collaborative effort to design such an integrated management framework for the CMCC region.

To address this challenge, the Office of the Prime Minister (OPM), with support from the Inter-American Development Bank (IDB), has engaged in an innovative process to design a Sustainable Development Plan (SDP) for Chiquibul-Mountain Pine Ridge-Caracol Complex. ***The fundamental goal of the Sustainable Development Plan is to facilitate the improved management of ecosystems in the CMCC so as to maintain their integrity while ensuring the delivery of ecosystem service benefits for present and future generations of Belizeans and the global community.***

A defining feature of the SDP is that it seeks to balance economic development needs with conservation in a spatially defined area with a specified timeline of activities to achieve the integrated vision. For the plan to be effective, it must include a proactive and adaptive approach to address development issues that go beyond departmental mandates and jurisdictions, it must specify a timeframe over which certain objectives and targets must be met, and it should be aligned with the country's long-term development goals as highlighted in the Horizon 2030: National Development Framework for Belize and the Growth and Sustainable Development Strategy.

This SDP was prepared with a fifteen-year vision of sustainable resource use and management. The specific issues and themes addressed herein, and the proposed action steps, are the outcomes of stakeholder involvement throughout its development. Thus, this SDP addresses and reflects people’s real concerns and views, as much as possible.

The aims of the SDP are threefold: (i) to focus management activities that are already being undertaken, ensuring these are integrated; (ii) to highlight additional activities and actions that could be undertaken to help meet the challenge of ensuring a sustainable future; and (iii) to provide a roadmap for the phased implementation of a governance structure to ensure its success. The result is a vision for a vibrant region where healthy ecosystems support—and are supported by—thriving local communities and a prosperous economy.





## 1.3 Key pillars of the plan



The goal of the SDP is to provide a comprehensive framework for guiding decision-making and investment over the next fifteen years by addressing six key pillars that underpin long-term prosperity:

**Economic opportunities** that provide sustainable livelihoods for the people that work in the CMCC and live in the surrounding communities. These can be sustained by the development of a diverse and creative mix of agricultural, forestry and nature-based tourism activities, along with training and capacity-building programs to support local enterprises and foster the ability of Belizeans to make the best of their wealth of natural and cultural resources.

**Water resources protection** ensures that generations of Belizeans and visitors to the CMCC region will continue to have abundant fresh flowing water that is fundamental to people's health, well-being, economic prosperity, and enjoyment of the area. This can be achieved through management plans that center water protection, enforcement of low-impact development standards in sensitive areas, and new funding models such as Payments for Ecosystem Services mechanisms that provide sustainable funding for management of watersheds.

**Biodiversity preservation** is fundamental to ensure that the CMCC's natural areas continue providing benefits to surrounding communities far into the future. This can be done by understanding and respecting the carrying capacity of natural attractions, by restricting activities in key habitats, by the strategic use and control of fires, and by promoting research and education to provide the knowledge base for ongoing decision-making and management.

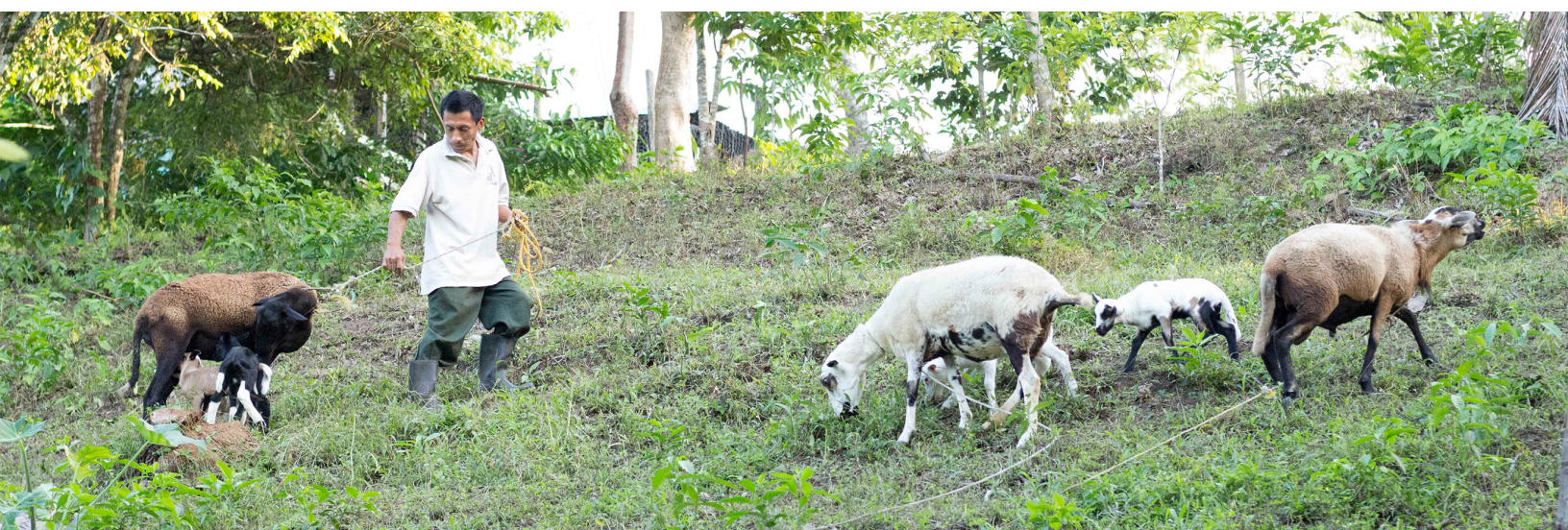
**Safety and security** ensures the health and well-being of people that visit and work in the CMCC and live in the surrounding communities, and is a necessary precondition to attract visitors that will contribute positively to the local economy. It also includes securing the international border. These efforts can be sustained by supporting and expanding monitoring and control posts along the border, improving communications and emergency response systems, monitoring and enforcing traffic safety, security training and capacity building of communities and co-management agreements.



**Land use planning and enforcement** are important to ensure that economic development activities are sustainable and to prevent the exploitation of natural resources. It can be enforced by defining and monitoring the types of actions that can be undertaken in different development zones.

**Inclusive governance** ensures that development of the CMCC will effectively serve and engage all stakeholders, and that institutions, policies, processes and services are accessible, accountable and responsive to all members of society. This can be achieved by implementing best practices for community participation and broad representation of stakeholder groups in the governance of the CMCC region.

These six key pillars, identified by the stakeholders, represent the areas seen as most important for the development of the CMCC.





## 2. Design of the plan



## 2. Design of the plan

### 2.1 Approach

The Government of Belize through the Economic Development Council Technical Secretariat, Public Private Desk, with the support of the Inter-American Development Bank, coordinated the development of the SDP with technical support for data collection, modeling, stakeholder engagement, and institutional assessment from the Natural Capital Project at Stanford University (NatCap), the University of Belize Environmental Research Institute (UB ERI), and Dr. Kenrick Williams.

The development of the SDP involved three key activities: (1) stakeholder engagement; (2) literature review, data acquisition, and mapping of ecosystem services and values; and (3) ecosystem-based spatial planning. A total of 205 individuals representing 74 communities, government departments, statutory bodies, non-governmental organizations and associations, private sector entities and others were involved in the development of the SDP through a variety of engagement and outreach activities (see 2.2. *Stakeholder engagement and participatory plan design*). A comprehensive review of peer reviewed literature and relevant reports was complemented by an intensive period of data acquisition with support from local and national-level agencies and international researchers. State-of-the-art modeling and mapping were then used to understand how the natural areas of the CMCC benefit communities, businesses, and the economy of Belize, through direct economic benefit as well as through regulating services like providing clean and abundant water (see 2.3. *Mapping ecosystem services*). Finally, a comprehensive trade-off assessment was done to understand the social, environmental, and economic consequences of different development options, and results were presented to assist stakeholders in selecting their preferred development scenario (see 2.4. *Assessment of trade-offs and spatial planning*).

Because of the complexity of connections between land management, development options, community benefits, and socio-economic values, the assessment of trade-offs for different development options incorporates qualitative information, quantitative information on biophysical changes, and quantitative information on economic values. The result of this planning process is a vision for sustainable development of the region and a set of recommended activities to get there (see *Section 3*).

In every step of the process, stakeholder participation has been critical, especially for data acquisition, ecosystem service mapping and the spatial planning process. Each of these steps is described in detail below.



## 2.2 Stakeholder engagement and participatory plan design

Development of the SDP for the Chiquibul-Mountain Pine Ridge-Caracol Complex (CMCC) was supported by the implementation of a Stakeholder Engagement and Outreach (SEO) Strategy and Plan. The SEO Strategy and Plan was designed by the University of Belize Environmental Research Institute (UB ERI) with the support and input of the Economic Development Council (EDC) in the Office of the Prime Minister, the Inter-American Development Bank Group (IDB) and The Natural Capital Project at Stanford University (NatCap). The design of the SEO Strategy and Plan was informed by initial introductory engagements with Government, private, and non-governmental organization stakeholders as well as with the leadership of the San Ignacio/Santa Elena Town Council, and the communities of San Antonio, Georgeville, Cristo Rey, El Progreso/Seven Miles, Lower Barton Creek and Upper Barton Creek.

These engagements allowed us to introduce the project for development of the SDP to stakeholders, introduce the role as the parties responsible for stakeholder engagement and outreach and local counterpart, get an overview of ways in which these stakeholders depend on or benefit from the CMCC, and document some initial key policy and development issues relevant to them and the CMCC. Stakeholder mapping and stakeholder profiles that described the demographic characteristics of the various stakeholder groups, their current knowledge, behaviors and attitudes towards the CMCC, and preferred communication channels were then constructed to guide SEO activities.

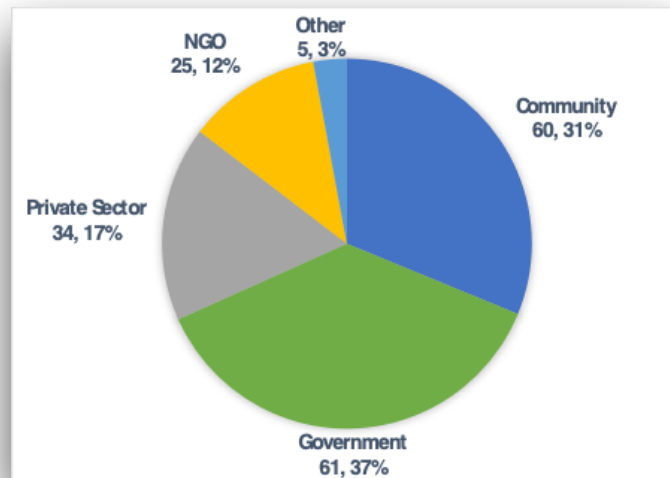
The SEO Strategy and Plan included four objectives:

1. Through iterative and consistent communication using a variety of approaches, **build trust for the process of development of the SDP** to secure the active participation in it of diverse stakeholders from all sectors.
2. Through a process of information sharing, information gathering and using multiple platforms, **achieve stakeholder consensus for priority ecosystem services** in the CMCC to form the basis for participatory modelling of development scenarios.
3. Using multiple quantitative and qualitative approaches, **identify the social values, priority policy and development issues, and potential implementation roles and contributions of stakeholders** for integration into the SDP.
4. Using communication products and messages tailored with language and/or graphics for different stakeholder audiences, **build excitement and support for the SDP** to motivate and ensure implementation by all responsible groups and individuals.

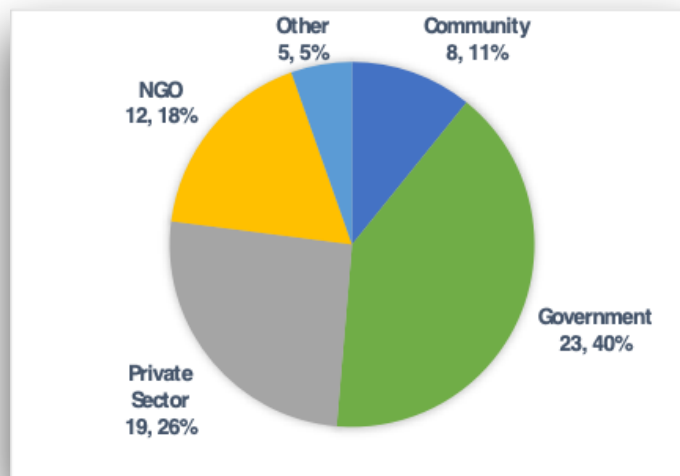
These objectives were achieved through a variety of engagement and outreach activities. These included one on one introductory meetings with key individual stakeholders or leaders of communities and organizations; structured focus group sessions, particularly with organizations or departments already involved in the management of the CMCC, and with communities; structured interviews and surveys, training sessions for members of the CMCC SDP Technical Working Group; electronic information sharing; and three main stakeholder workshops that served as the primary consensus building tool for SDP products as they were being generated.



A total of 205 individuals representing 74 communities, government departments, statutory bodies, non-governmental organizations and associations, private sector entities and others were reached out to and engaged into participating in one or more of the activities listed above. Figure 2 illustrates the number and percentage of individual stakeholders in the CMCC SDP process by sector. Civil Society groups including communities and non-governmental organizations (NGOs) accounted for 43 percent of individuals engaged, government entities accounted for 37 percent of stakeholders engaged; private sector and other groups accounted for 15 percent of stakeholders engaged.



**Figure 2.** The number and percentage of individual stakeholders engaged in the SDP development process by sector.



**Figure 3.** The number and percentage of stakeholder groups or organizations engaged in the SDP development process by sector.

Figure 3 illustrates the number and percentage of stakeholder groups or organizations engaged in the CMCC SDP process by sector. Civil Society including communities and non-governmental organizations (NGOs) accounted for 29 percent of stakeholder groups engaged, government departments accounted for 40 percent of stakeholder groups engaged; private sector and other groups accounted for the remaining 31 percent of stakeholder groups engaged. In terms of the communities engaged, these included the communities of Georgeville, Cristo Rey, San Antonio, El Progreso/Seven Miles, Upper and Lower Barton Creek as well as the twin towns of San Ignacio and Santa Elena. Government departments and groups engaged were distributed across 15 ministries and seven (7) statutory bodies.

A Technical Working Group provided technical support to the project and a Project Steering Committee, comprised of the Chief Executive Officers of the relevant Ministries, provided technical, economic and political guidance. However, it was the three main stakeholder workshops organized by the CMCC SDP team, comprised of the EDC, IDB, NatCap and UB ERI, that were the primary consensus building tool for SDP products as they were being generated.

The primary objective of the first workshop was to build consensus amongst stakeholders across sectors on the priority ecosystem services (ES) or benefits of the CMCC as well as key policy and development issues. Workshop 2 focused on the mapping and construction of scenarios or potential development options for the CMCC by the stakeholders, and the third and final workshop focused on the presentation of the development options for the CMCC that were constructed based on data analysis and modeling by the NatCap team integrated with the vision for development of the area that the stakeholders came up with in the second workshop. Participants were given the opportunity to provide feedback on which of the options was the preferred scenario, and feedback from all groups was considered in the selection of the ecosystem-based development activities for inclusion in the SDP. Table 1 below summarizes the participation of stakeholders by individuals and groups by sector for each of the three CMCC SDP workshops.

**Table 1.** Stakeholder participation in each of three stakeholder consultation workshops held as part of the process for developing the SDP for the CMCC.

Workshop	No. of Participants Government		No. of Participants Community		No. of Participants NGO		No. of Participants Private Sector		Total No. of Participants Other		Total Participants per Workshop	
	Indiv	Grp	Indiv	Grp	Indiv	Grp	Indiv	Grp	Indiv	Grp	Indiv	Grp
1	16	5	11	10	7	3	10	7	1	1	45	26
2	13	9	10	6	6	4	4	4	1	1	35	24
3	20	19	36	4	5	5	8	7	5	4	74	39

\*Indiv=Individuals; Grp=Groups

## 2.3 Mapping ecosystem services and values

### *(A) Benefits from the CMCC region*

**Ecosystem services** are the benefits that people obtain from nature. Natural capital is the stock of natural assets (such as forests, water bodies, and soils) that can be used, sometimes together with other assets (such as technology or human know-how) to produce ecosystem goods and services that provide benefits to individuals, businesses, and communities. Ecosystem services, therefore, are the benefits that flow from the stock of natural capital in an area. The goal of an ecosystem services assessment is to identify the important ways that ecosystems are benefitting people in order to trace those flows back to the natural capital in particular places that provide those services. That way, communities and decision makers can plan for how to manage those ecosystems (the natural capital) sustainably in order to safeguard the flow of important services far into the future. This is essentially an "ecosystem-services approach" -- a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way by balancing development goals with the multiple benefits provided by nature, to guide investments in both infrastructure and conservation in order to achieve sustainability goals.

Participants in the SDP process identified the benefits that they receive from natural areas in the CMCC, as well as economic opportunities and development pressures. Stakeholders identified four main economic opportunities which also represent development pressures in the CMCC area:

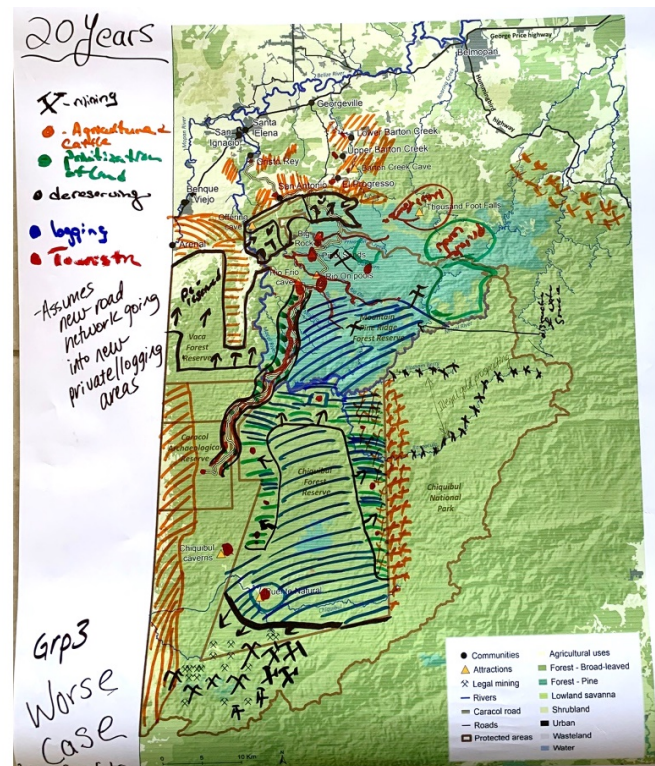
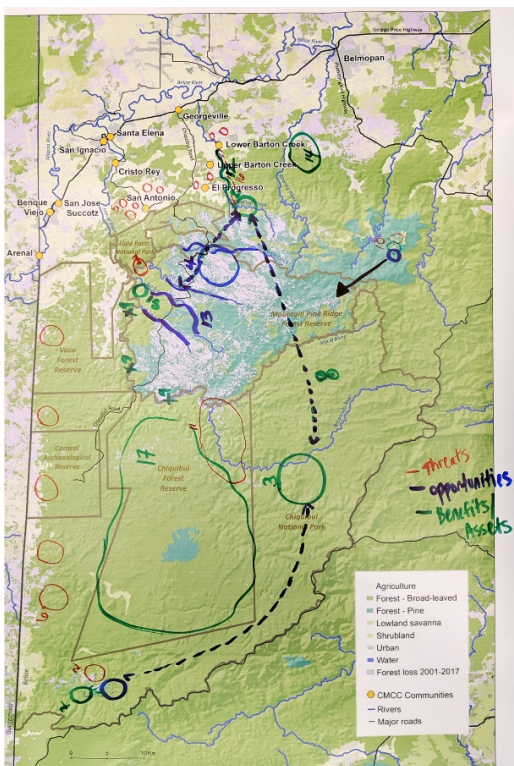
- **Agriculture** - Important and widespread around neighboring communities, agriculture could expand or intensify with increased visitation to the CMCC area in the future.
- **Tourism** - Eco-tourism is expected to increase, as the improved Caracol road brings easier access to Caracol Archeological Reserve and Mountain Pine Ridge.
- **Timber** - Sustainable timber harvesting is currently done in Mountain Pine Ridge and Chiquibul Forest Reserve and will likely continue into the future.
- **Mining** - Concessions are currently located in Chiquibul Forest Reserve and Chiquibul National Park.

Participants also described and located the benefits that they receive from the natural resources in the CMCC and its buffer area:

- **Water supply** - Local communities, agriculture and businesses get their water from streams that originate within the protected areas, particularly Mountain Pine Ridge.
- **Water quality** - Natural forests filter some of the fertilizer and erosion from agriculture, as well as pollutants from mining and erosion from illegal timber harvesting, which can impact the quality of water for drinking and recreation.
- **Timber production** - Sustainable timber harvesting provides both building materials and income, while maintaining healthy forests.

- **Recreation and tourism** - Caracol Archeological Reserve, as well as popular water sites like the Rio On Pools, and eco-tourism adventures, draw visitors who contribute to the local economy.
- **Healthy soils and food production** - Agricultural production in the buffer communities is important for local food supply and to meet demands of a growing tourism sector.
- **Carbon storage** - The healthy forests of the CMCC store large amounts of carbon that helps mitigate the effects of climate change.

Further, **healthy ecosystems and biodiversity** underpin the ability of the area to provide all of the benefits listed above.



*Examples of maps produced by workshop attendees, identifying threats, opportunities, benefits, assets and future possibilities.*



## *(B) Modeling approach*

Using the information provided by workshop participants and partners, along with state-of-the-art software tools (InVEST), the planning team modeled and mapped which places in the CMCC are providing services now, and estimated how those benefits - both social and economic - may change as a result of future development related to the improved Caracol road.

Significant research was undertaken to acquire data on the geography, ecosystems, land management practices and policies in the region, including both spatial and non-spatial data. The planning team collaborated with several partner agencies to collect physiographic, climatological, biological, infrastructural, geopolitical, economic, cultural and social data related to the CMCC region. Every effort was made to acquire the best available data and to validate them with local experts. In addition, information on existing businesses and important locations provided by participants in the SDP workshops (such as water supply points for communities or recreation sites) were digitized, and used to analyze how future development might impact the benefits flowing to these sites.

The results provided quantitative, spatial information about the different ecosystem services of greatest interest:

- **Water supply** - Which parts of the CMCC provide water to the greatest number of communities, recreation sites, resorts and dams, and how might the quantity of water change with development?
- **Water quality** - Where are erosion and nitrogen pollution produced? Where do they impact water quality for downstream uses? How might pollution levels change if agriculture, tourism and mining expand?
- **Timber production** - How much timber may be harvested sustainably, and does that change with future development?
- **Recreation and tourism** - How are recreation sites impacted by water supply and quality? And if those sites are further developed, how might that affect the water supply and quality for other uses downstream?
- **Carbon storage** - How much carbon is currently stored in the CMCC's forests, and how might that change if agriculture, tourism and mining expand?

Because water supply and quality are so important, the modeling analysis included the entire watershed that contributes water to the Belize River at Belmopan, which includes the CMCC but also portions of Guatemala (Figure 4). The headwaters of the Mopan River originate in the CMCC before flowing into Guatemala, where the river travels north and then flows back into Belize before being joined by the Macal River. This means that Guatemalans also receive many of the same water supply benefits flowing from the CMCC region, and that they also have an impact on water-related services. Since this SDP is concerned with management of the Belize portion of the watershed, only that portion is shown in the maps in this report.



**Figure 4.** Study area (outlined in yellow) used for data collection and modeling to evaluate baseline ecosystem services and trade-offs of development options.

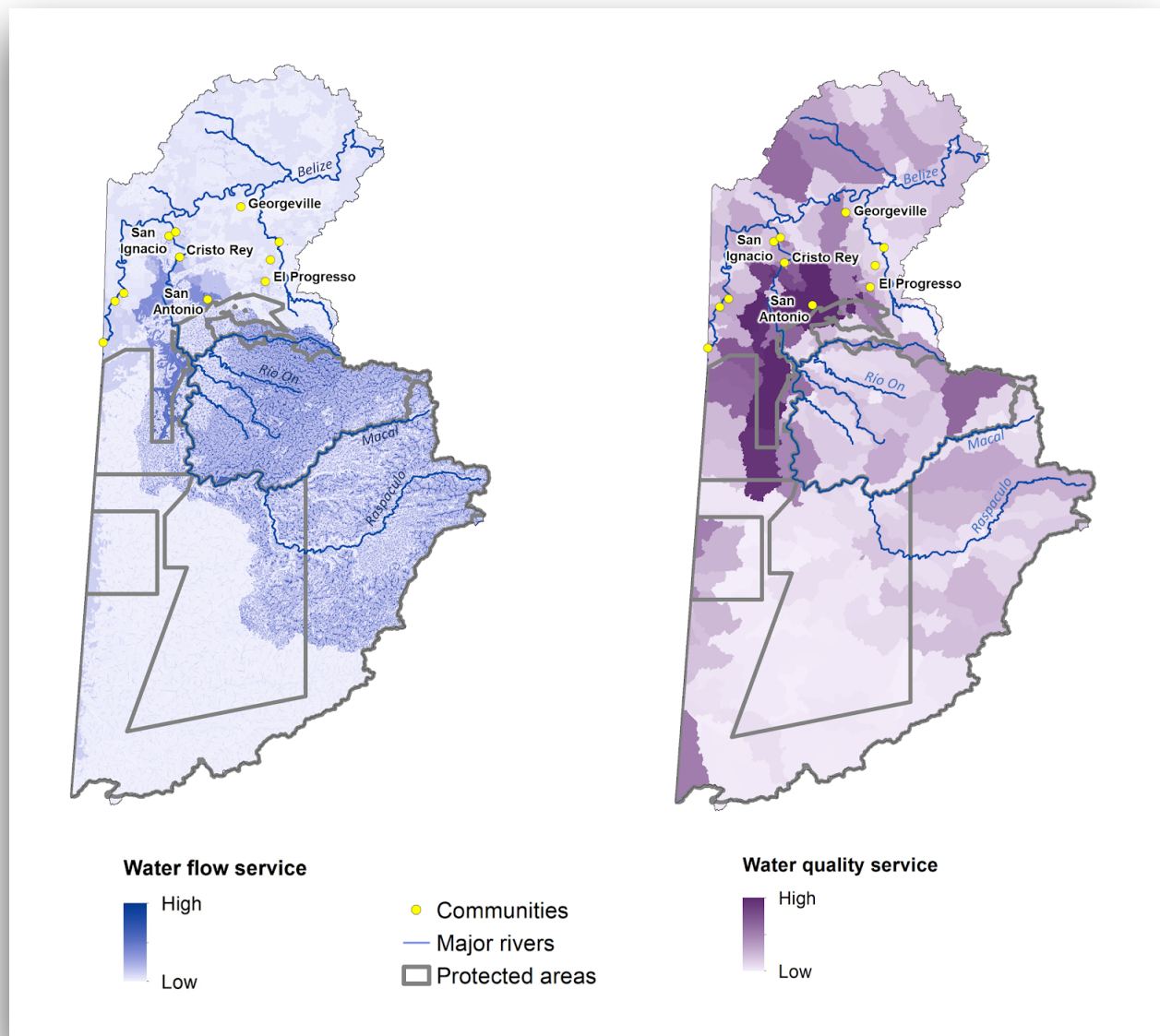


### *(C) Ecosystem service values*

The ecosystem service benefits coming from the CMCC and its buffer zone contribute to the economic prosperity of the region in many ways. Figure 5 through Figure 9 show the results of an ecosystem services assessment of the CMCC region. These maps highlight areas that are currently providing critical benefits to the downstream communities, to Belizean and international tourists, to the Belizean economy, and even to the people of Guatemala. Some areas, in particular the Mountain Pine Ridge Forest Reserve, areas around the buffer communities, and the eastern portions of the Chiquibul Forest Reserve and National Park, are providing many different benefits for different sectors, and sometimes from potentially conflicting uses. For example, timber production, agricultural production, tourism, and water protection areas overlap in these places. Therefore, the SDP will balance these competing uses through an integrated management framework.



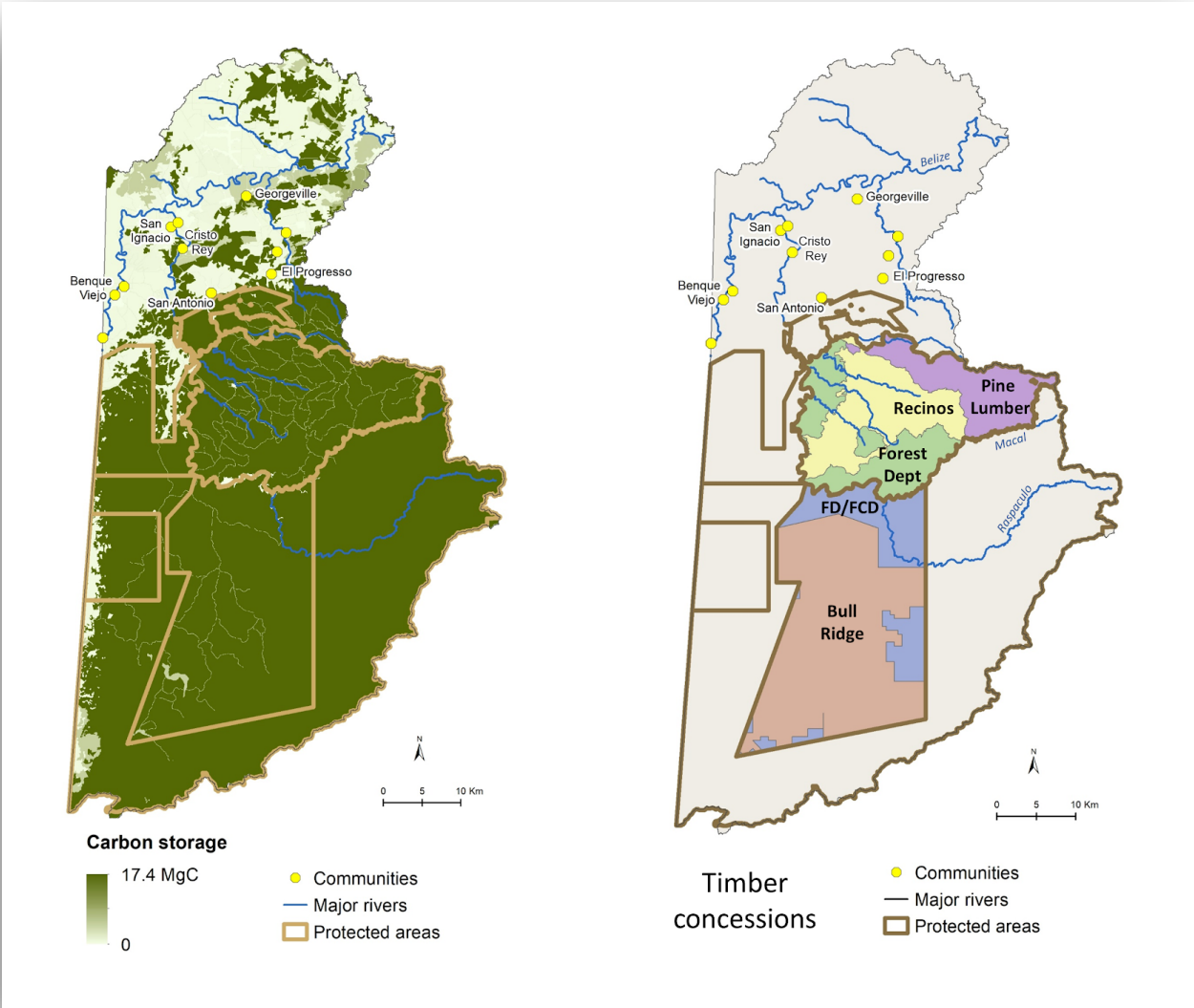
## WATER FLOW AND QUALITY



**Figure 5.** Water flow and water quality services provided by the CMCC area. Areas in darker colors are places where the landscape is providing a higher level of water flow or water purification services for the most downstream uses.

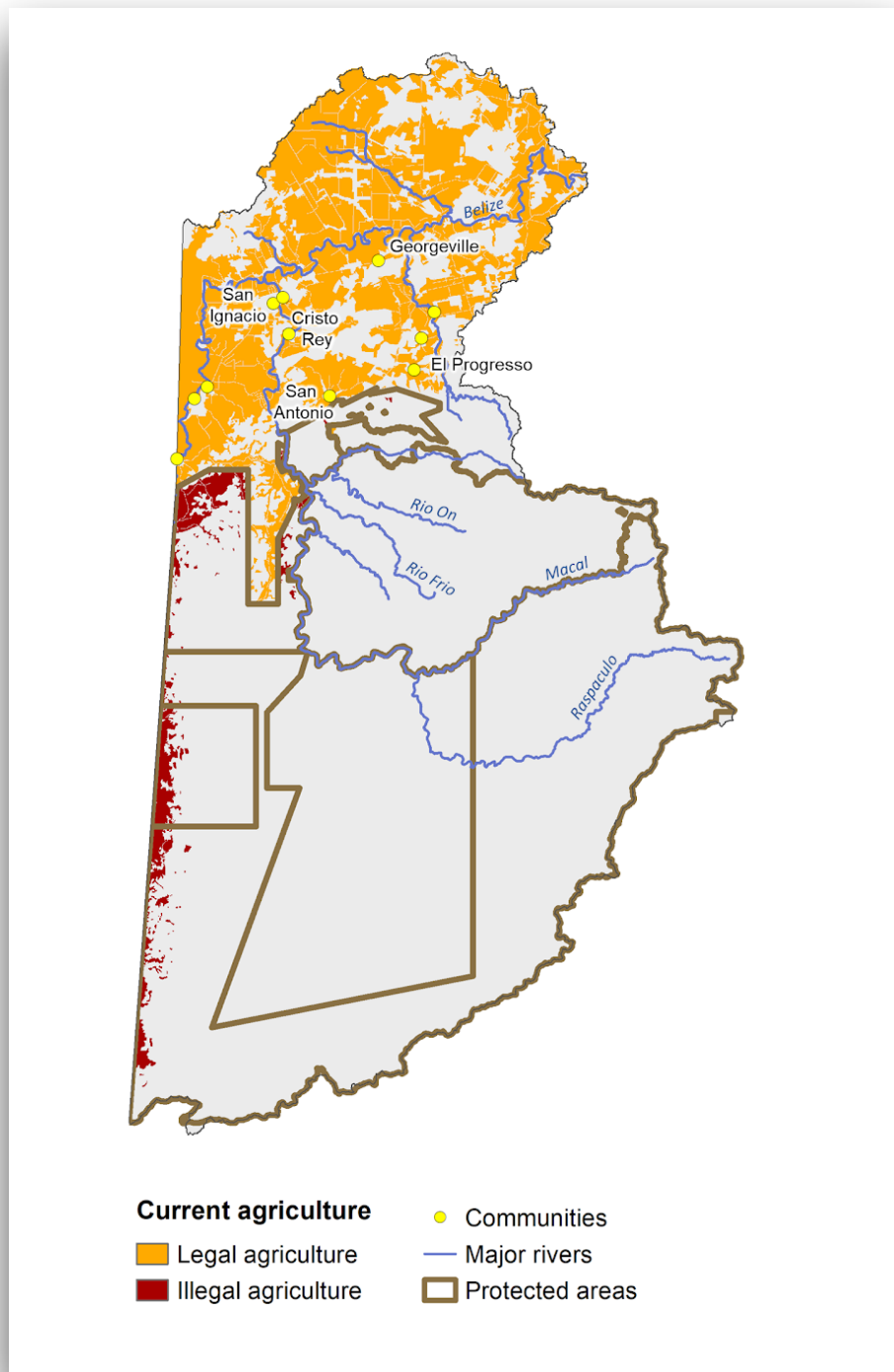


# CARBON AND TIMBER PRODUCTION



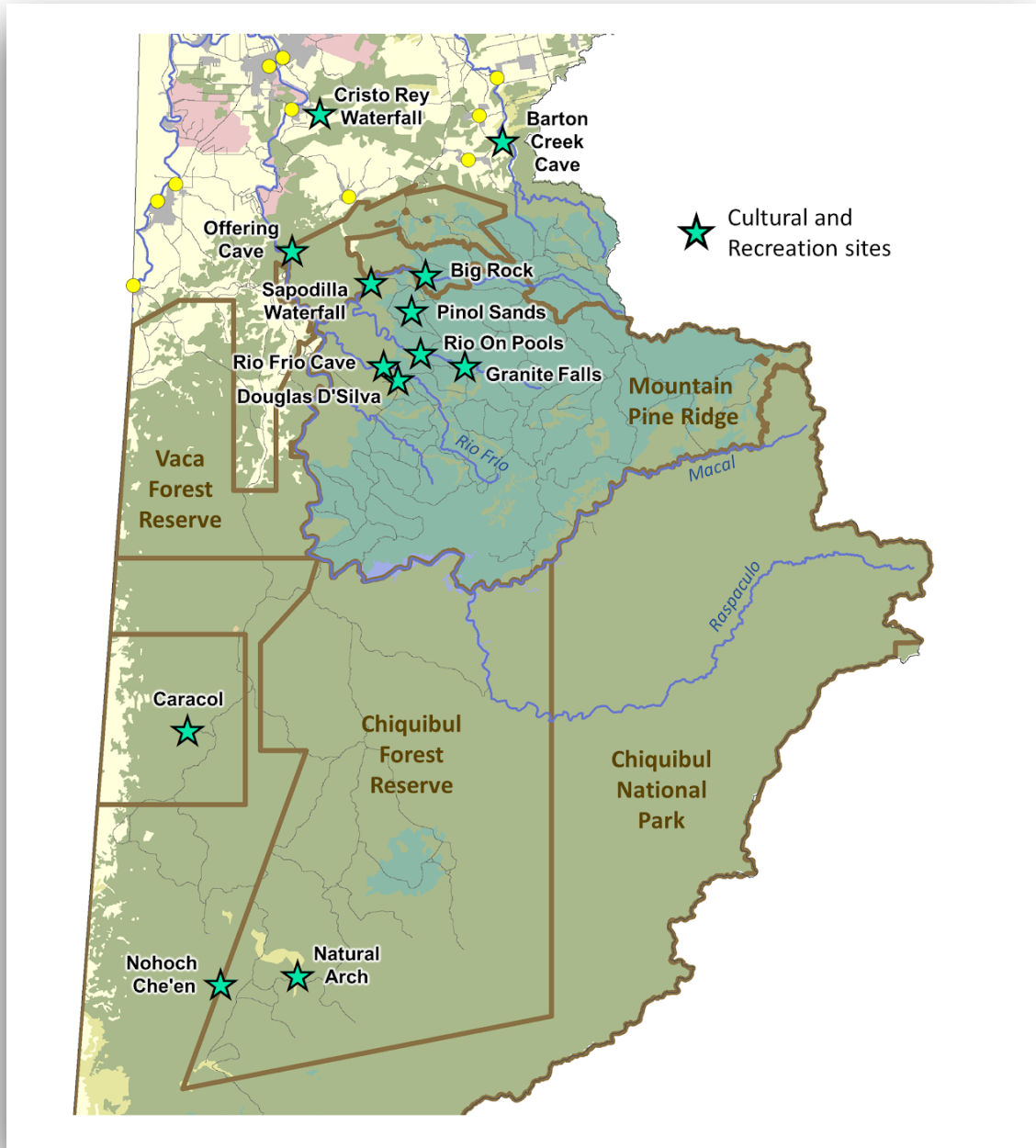
**Figure 6.** Current carbon storage levels in the CMCC, and the location of timber concessions.

## AGRICULTURAL PRODUCTION



**Figure 7.** Areas that are currently used for agriculture. Legal agriculture is shown in orange, located outside of the protected areas; illegal agriculture is shown in red, located within the protected areas.

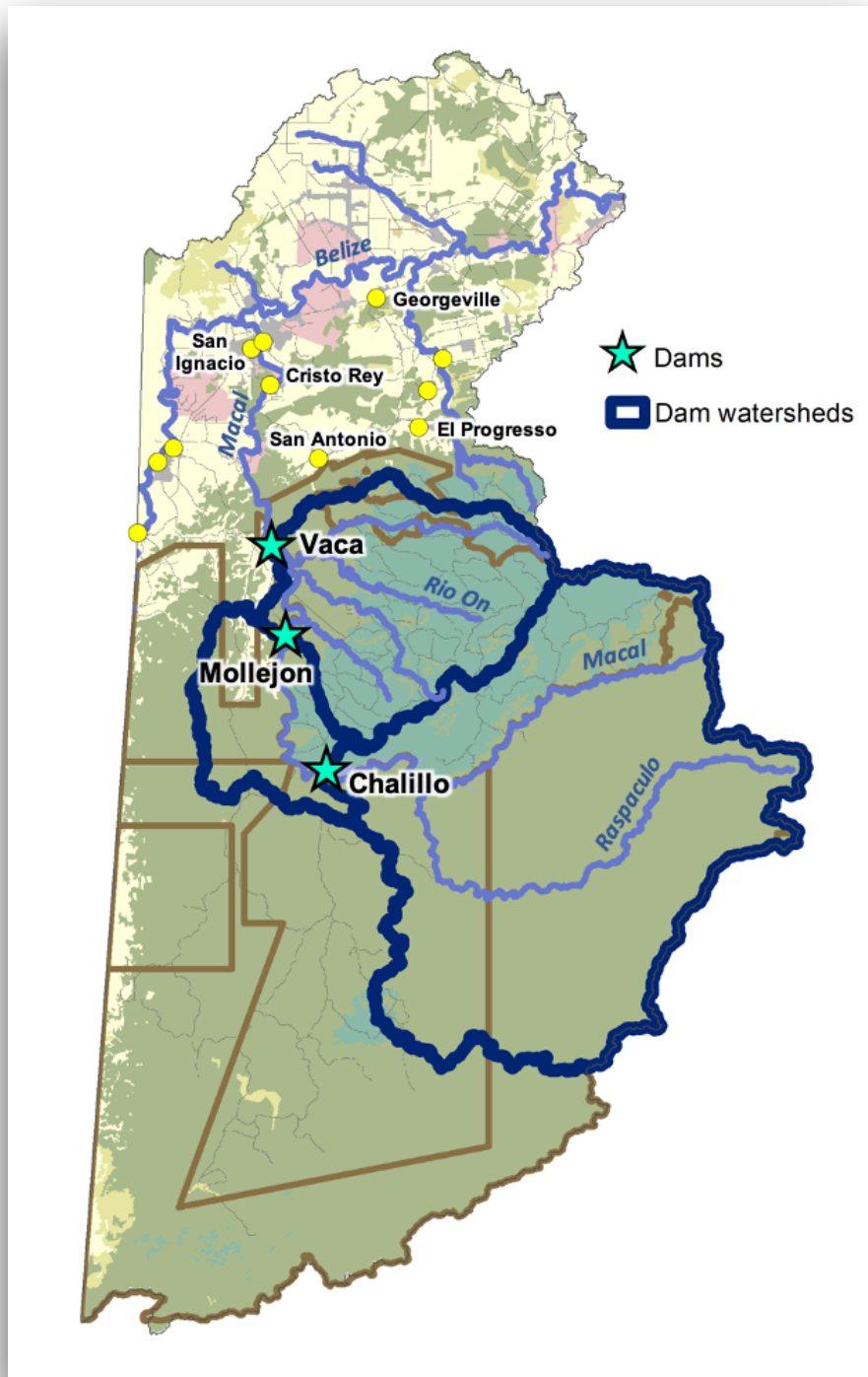
## RECREATION AND TOURISM



**Figure 8.** The cultural, recreation and tourism sites identified by stakeholders in the CMCC area. Note that Thousand Foot Falls and Actun Tunichil Muknal (ATM) cave, two other attractions in the nearby region, are located outside of the analysis area for this plan.



## HYDROPOWER



**Figure 9.** The three dams located on the Macal River, and the watersheds that provide their water supply.

After quantifying and mapping the ecosystem benefits that are provided currently, the value of these benefits coming from the CMCC and its buffer zone were estimated (Table 2). In this table, “Total Present Value” is the total value of monetary flows estimated over a 20-year time horizon. Having economic information helps to evaluate trade-offs between revenue and ecosystem health when considering different development options. For example, developing tourist sites may increase the number of visitors, who spend money in nearby communities. But that development, and the increased number of people, may also decrease downstream water quality and water supply for those same communities, potentially imposing other social and economic costs. A robust valuation of the ecosystem's provision of clean, flowing water was not possible due to data limitations, but the importance of this service to support all other uses in the region is indisputable.

The values of tourism are based on historical revenues, existing accommodations and average occupancy rates. Similarly, the values for agriculture are based on current agricultural areas, historical crop yields and prices. Hydropower values are based on historical energy production reported by BECOL. The values for timber are reported both for the active concessions, and the potential value that exists in forest reserves not currently under an active license (for example, areas managed by the Forest Department). In the case of carbon, a program to enable the government to realize the income on the carbon market has not yet been established, so the total value for carbon sequestration represents only potential values, based on the current extent of vegetation types and the carbon stored on the landscape.





**Table 2.** Estimated economic benefits from the CMCC region under current management.

Benefit	Extent or Magnitude	Value (BZD)	Total Present Value* (BZD)
Water flow	816M m <sup>3</sup> / yr	Hydropower Drinking water Recreation/tourism	Habitat & biodiversity Crop production
Water quality protection	9 communities 27 resorts 13+ recreation/tourism sites	Drinking water Recreation/tourism Habitat & biodiversity	
Tourism	27 resorts 13+ recreation/tourism sites	\$29.8M /year	\$252M to \$435M
Timber	Active concessions: 45,500 ha (broadleaf) 10,600 ha (pine) Total: 100,000 ha	\$4.5M /year (active) \$8.9M /year (potential, including inactive)	\$38M to \$66M (active) \$75 to \$129M (potential)
Carbon	40,791,000 Mt (CMCC) 51,135,000 Mt (with buffer)	\$1,457M /year (CMCC) \$1,826M /year (with buffer)	\$12,339M to 21,256M (CMCC) \$15,468M to 26,647M (with buffer)
Hydropower	Vaca, Mollejon, and Chalillo dams	\$48M /year	\$406 to \$700M
Agriculture	57,440 ha legal (CMCC & buffer) 6,475 ha illegal (in protected areas)	\$363M /year legal \$35M /year illegal	\$3,075M to \$5,297M (legal) \$297 to \$511M (illegal)

\* Present value ranges are reported using a range of typically applied discount rates, from 4% to 12%, over a 20-year time horizon. Economic valuation for water flow and water quality protection were not possible with the available data, so instead we list the sectors affected.

## 2.4 Assessment of trade-offs and spatial planning

Once the value of ecosystem benefits in the current situation was established, models were used to understand how these benefits might change with future development, to understand the trade-offs of costs versus benefits and to support spatial planning. Figure 10 shows a worst-case vision of how the area might look in 20 years without an integrated development plan; that is, it shows the costs of inaction if development proceeds unchecked. Note that the type and extent of developments in these scenarios are those envisioned by stakeholders as a possible future for the region, if development were not regulated sustainably under an integrated plan. In some cases, this includes an expansion of illegal activities that are currently not well controlled; in other cases, this represents an expansion of development that could be achieved if current rules are changed or are not adequately enforced.

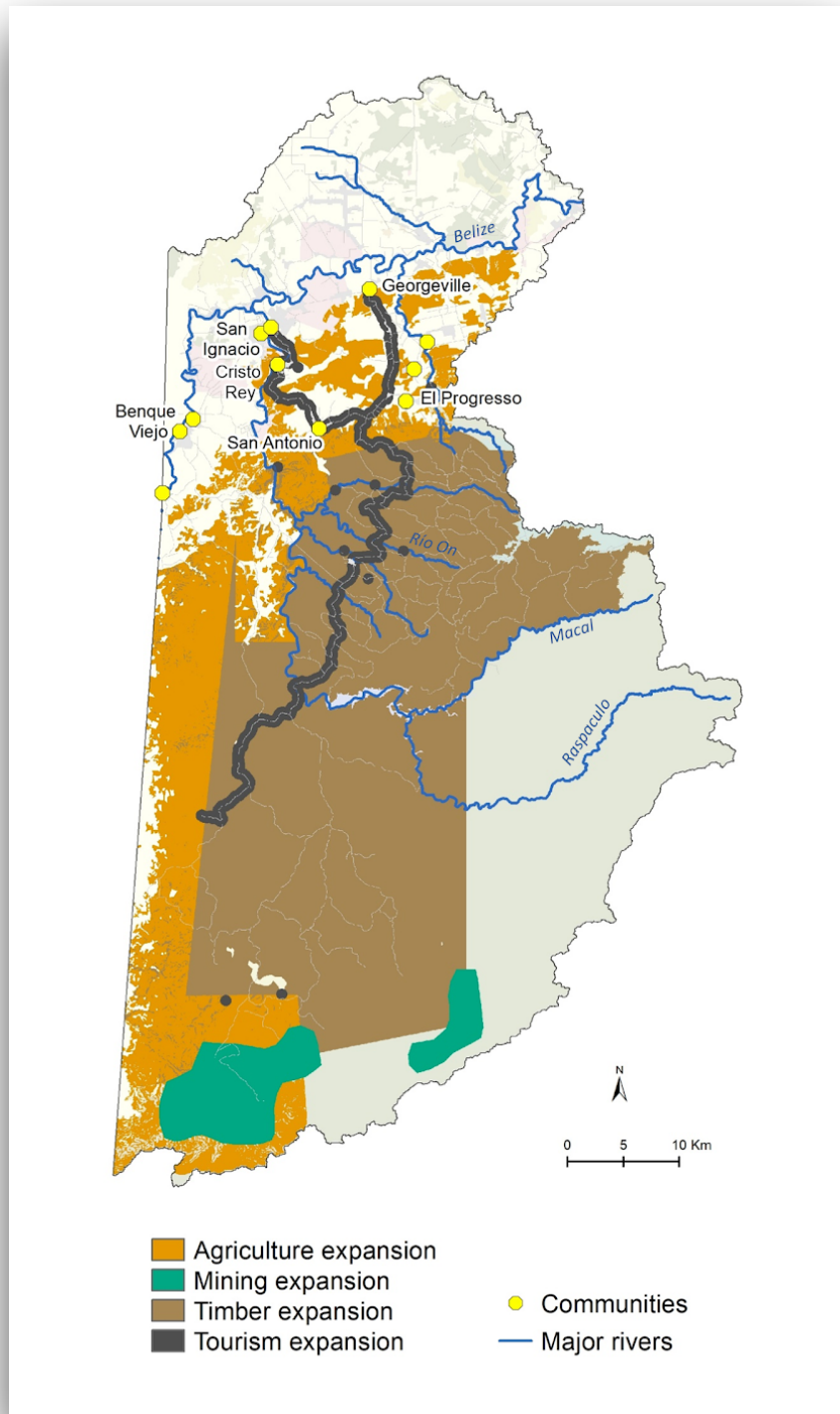
Evaluating this extensive development scenario demonstrated how different development pressures might negatively impact priority ecosystem services, in order to highlight areas that are more and less threatened as well as more or less sensitive to such development. The results highlight that if the availability of natural assets is not balanced with the demand from development sectors, it could seriously hamper potential growth. In particular, if illegal agricultural expansion is not checked within the protected areas and along the border with Guatemala, there is the potential for massive negative impacts on ecosystem services including changes in water flows, carbon storage, habitat quality, substantial negative impacts on cultural assets such as Caracol Archeological Site, and loss of corresponding revenues from timber and tourism activity. Continued expansion of illegal mining shows similar potential to damage sensitive ecosystems and threaten future economic development of eco-tourism<sup>4</sup>.

The mapping and valuation results were used to identify general places in the landscape, as well as specific sites, that are more or less sensitive to development. For example, if agricultural expansion in a particular area is likely to make water quality much worse for downstream communities, then it is recommended not to expand agriculture there, but to choose a different area that has less of an impact. Using this information, and in consultation with stakeholders, alternatives for specific development options were defined that would then be considered in the final trade-off analysis for possible inclusion in the SDP (Figure 11). These options span different sectors and are divided into more- and less-conservative options, representing a palette of choices that stakeholders could choose from.

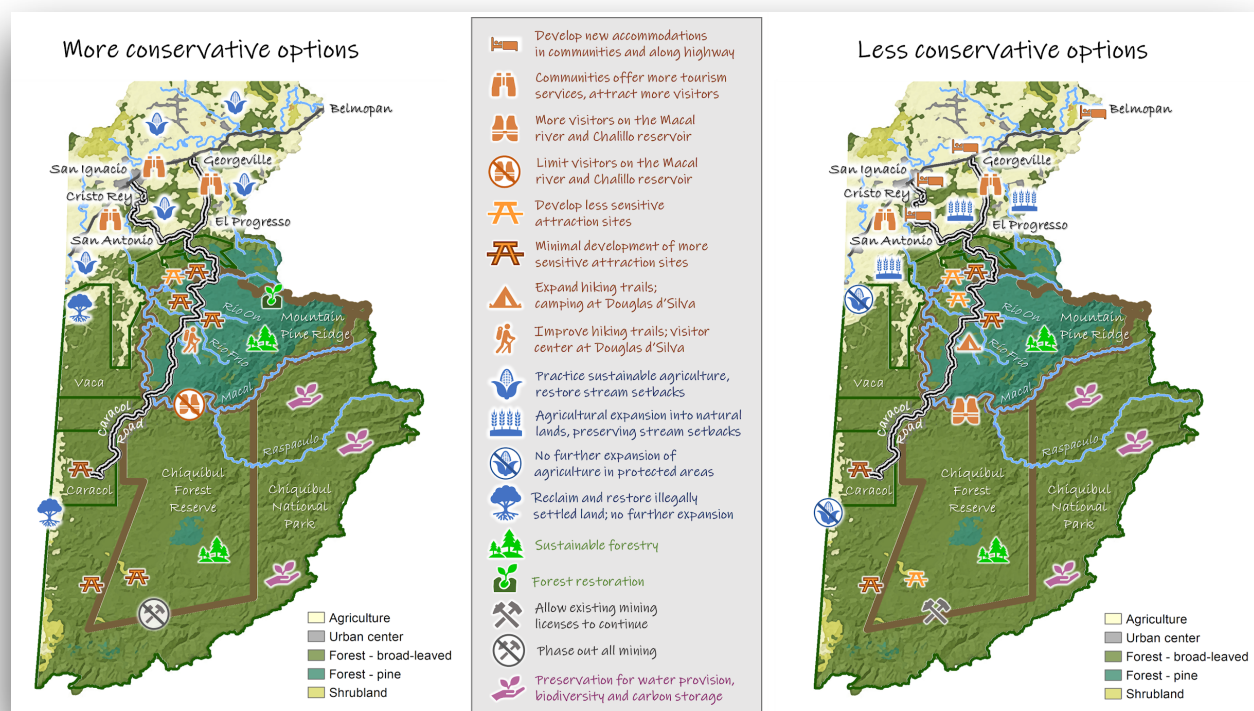
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<sup>4</sup> More details on the impacts of this scenario on ecosystem services and economic values are given in the Interim Report on Spatial Data, Models and Scenarios, The Natural Capital Project, May 2020.



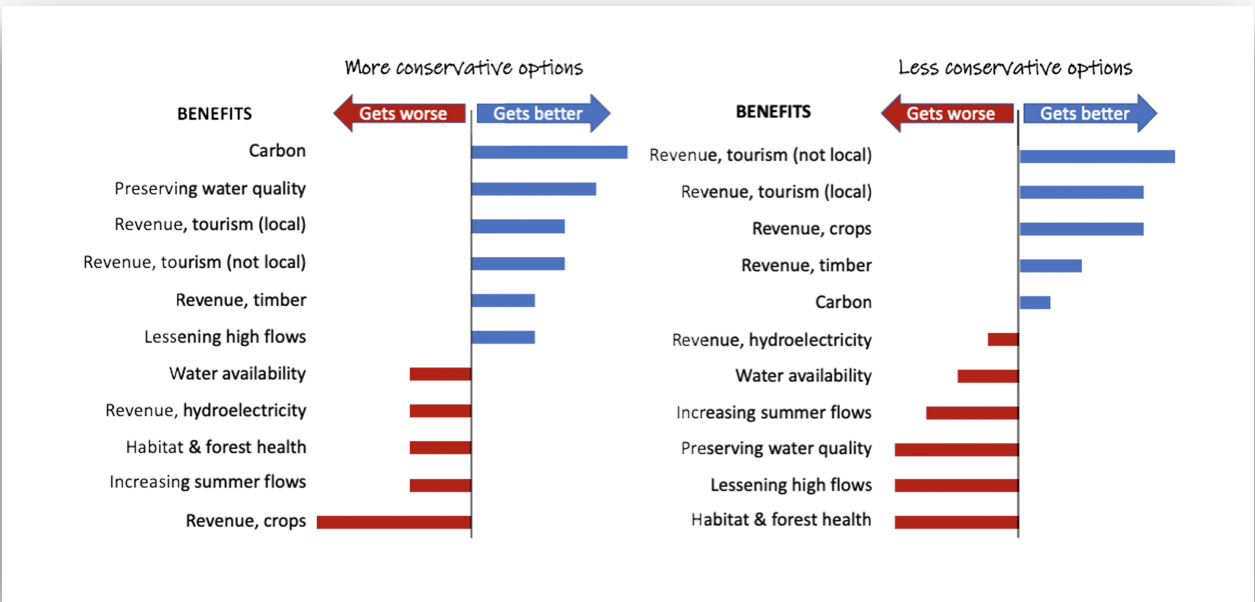


**Figure 10.** *The cost of inaction: the unconstrained development scenario.*



**Figure 11.** More- and less-conservative development alternatives, as presented to stakeholders for feedback and selection of final activities for the SDP.

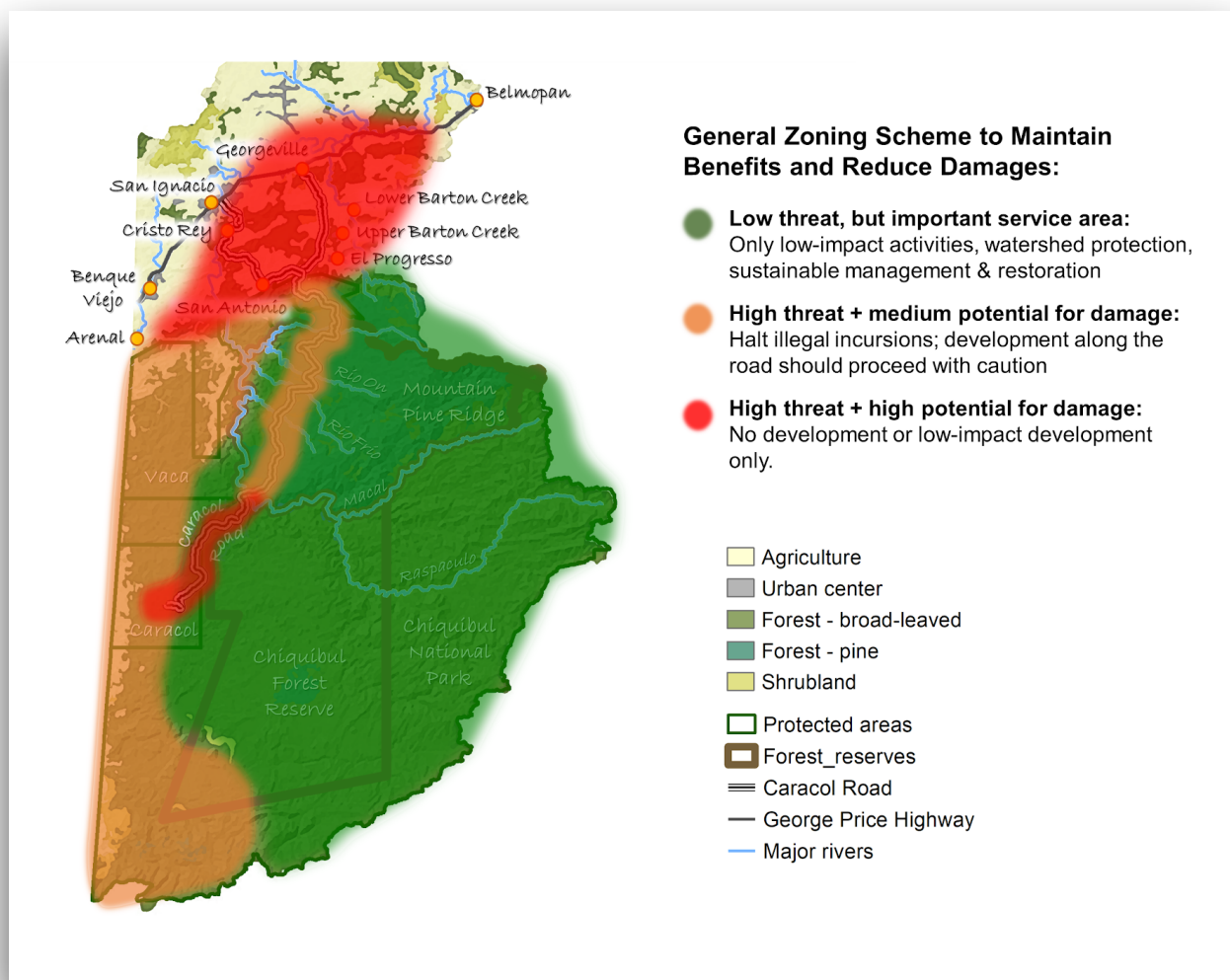
A comparison of the impacts of these two alternatives is shown in Figure 12. Overall, the conservative options help to minimize impacts and even improve the natural systems that provide benefits to the nearby communities, like water quality and income from eco-tourism. The less conservative options are more focused on economic development, increasing the income from activities while accepting some negative impacts on the environment. More detailed descriptions of the activities included in each of these scenarios, and the results of the full trade-off analysis for different sites and beneficiaries (e.g. communities, water features, dams, resorts) are given in this [table](#).



**Figure 12.** Summary of the trade-off analysis comparing the more- and less-conservative development options that were analyzed in the SDP development process.

Furthermore, the results of these analyses revealed areas under more or less pressure for development in the next 20 years, areas that are the most critical for providing ecosystem services (especially water resources protection), and areas that are the most sensitive to environmental damages from development. From this information, a general zoning scheme for the CMCC was developed, to guide the selection and implementation of activities in the future. This scheme provides a general framework for future decision-making and implementation of the recommended activities in the area by highlighting places where development pressures are highest and where developments should proceed only with caution (Figure 13).





**Figure 13.** General zoning recommendations based on development pressures and potential impacts on ecosystem services.

- **The area in green** is the most critical region for providing clean, flowing water. Nine communities, 27 resorts, and at least 10 major recreation sites depend on this area for their water, and there is not a high pressure for development there right now. Continue low-impact activities like ecotourism, hiking, nature viewing, protect these critical watersheds and continue restoring the forest wherever possible.
- **The area in orange** is under a much higher pressure for development. There are threats from both sides of the border to expand croplands and pastures in the protected areas, and there is pressure to develop tourist sites along the road. These areas do have a potential for negative impacts and so any development along the road should proceed with caution, illegal incursion should be halted and protected areas should be reclaimed and restored.
- **The areas in red** are those with both the highest development pressure and the highest potential for damages. The biggest risks are to water quality and to the ability of natural lands to soak up rainwater and help prevent flooding. Communities need to plan very carefully if and how development will happen in those red areas, paying particular attention to carrying capacity and mitigating impacts on water resources.

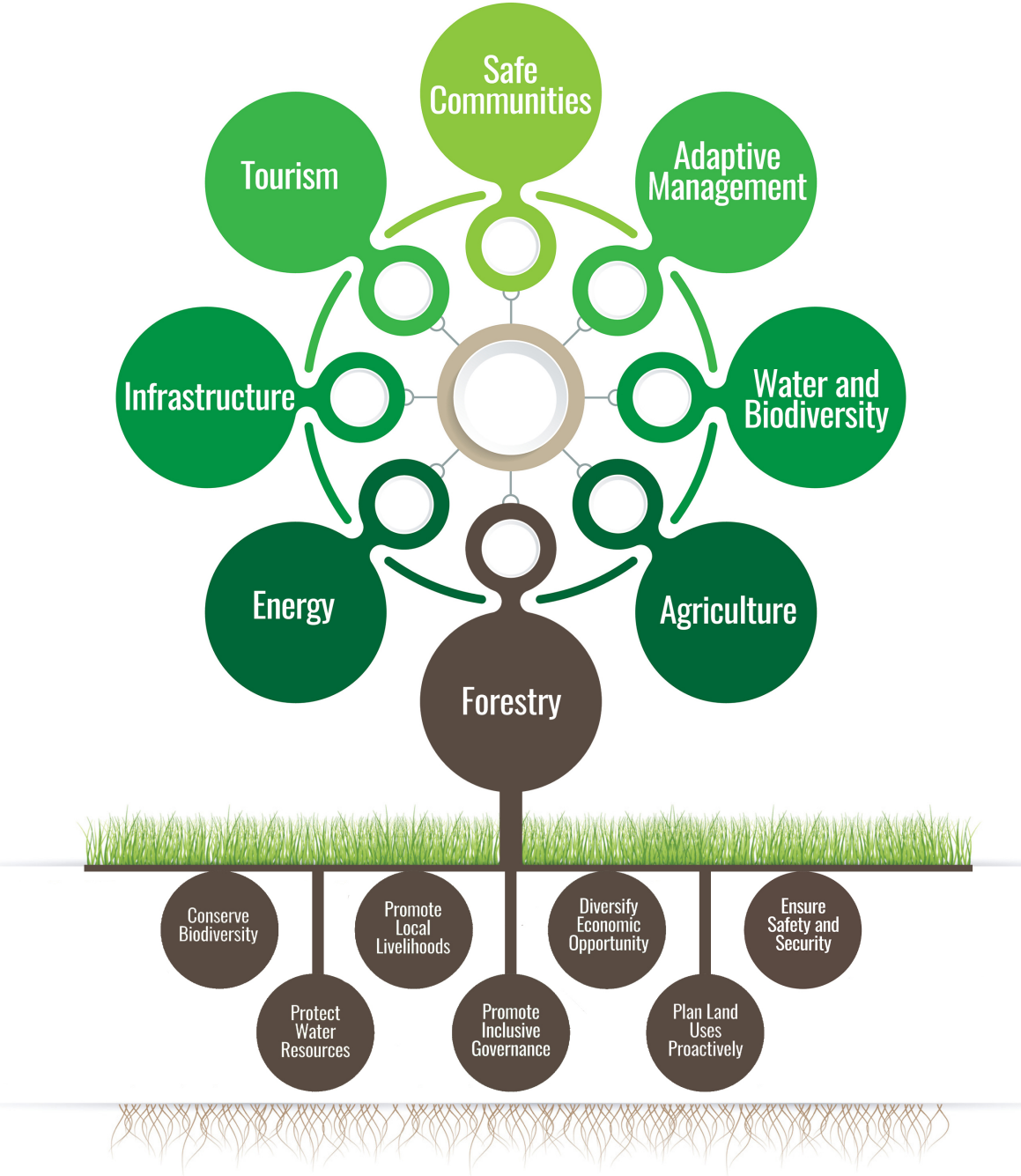


### **3. A vision for sustainable development in the CMCC region**



### 3. A vision for sustainable development in the CMCC region

The CMCC will contribute to a nature-based economy that provides opportunities for Belizean Communities to live healthy and productive lives, protects cultural heritage, and preserves the natural capital and environmental resources that are the basis for our prosperity.





## 3.1 Overview of activities

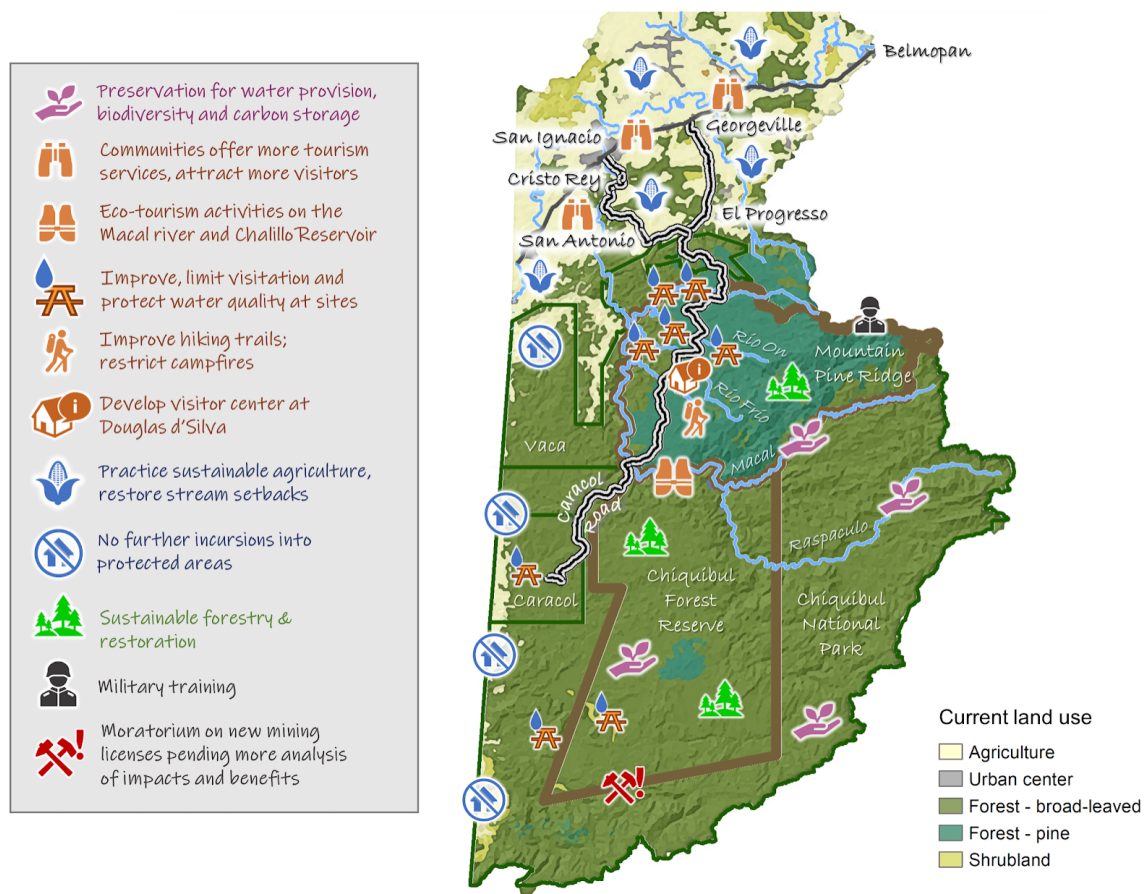
The activities recommended here form a Master Plan Framework for the development of the area, to be implemented following more detailed feasibility studies and plans, as described below. The final selection of sustainable development activities balances the best available scientific data on the social, environmental, and economic consequences of different development choices with the needs and expectations of a representative cross-section of stakeholders engaged in a transparent consultation process.

Feedback from all groups was considered in the selection of the ecosystem-based development activities for the SDP. Considering as a whole the community focus groups and the virtual workshop (which consisted primarily of government and private sector stakeholders), there was strong support for the more conservative scenario. 31% of voting workshop participants and 3 out of 4 communities (75%; Cristo Rey, San Antonio, and El Progreso/Seven Miles) were in favor of this option. A combination of activities was preferred by 58% of the 26 voting workshop participants and one community (25%; Georgeville). The final selection of activities, therefore, builds on the more conservative scenario but expands some activities to reflect the preferences expressed by proponents of a combined scenario.

The following activities assume a 15-year timeframe for implementation, based on feedback received in the stakeholder engagement process. 15 years was selected to balance the input of stakeholders with the longer-term vision that the SDP is meant to represent, as well as recognizing that 10 years may not be enough time for investments to yield a return that would justify their expense.

The combination of activities selected for inclusion in the SDP is detailed below for each sector, and summarized in Figure 14 and Table 3. Many of these activities include spatial elements, such as particular locations or regions for activities, while others relate to the process and requirements for how development will occur. The activity areas shown in Figure 14 are for illustration and do not represent the exact spatial extent of where activities will occur. The implementation of activities on the ground should be guided by these recommendations as well as the zoning recommendations shown in Figure 13. It should be further noted that the recommendations in this document are meant to be a framework to guide and align future activities amongst the various sectors. Before any activities are implemented, detailed plans must be elaborated to establish feasibility and to define implementation steps, roles and responsibilities, investment designs, financing estimates and sources.

## Sustainable Development Plan Activities



**Figure 14.** Map of recommended sustainable development activities in the CMCC region through 2035.

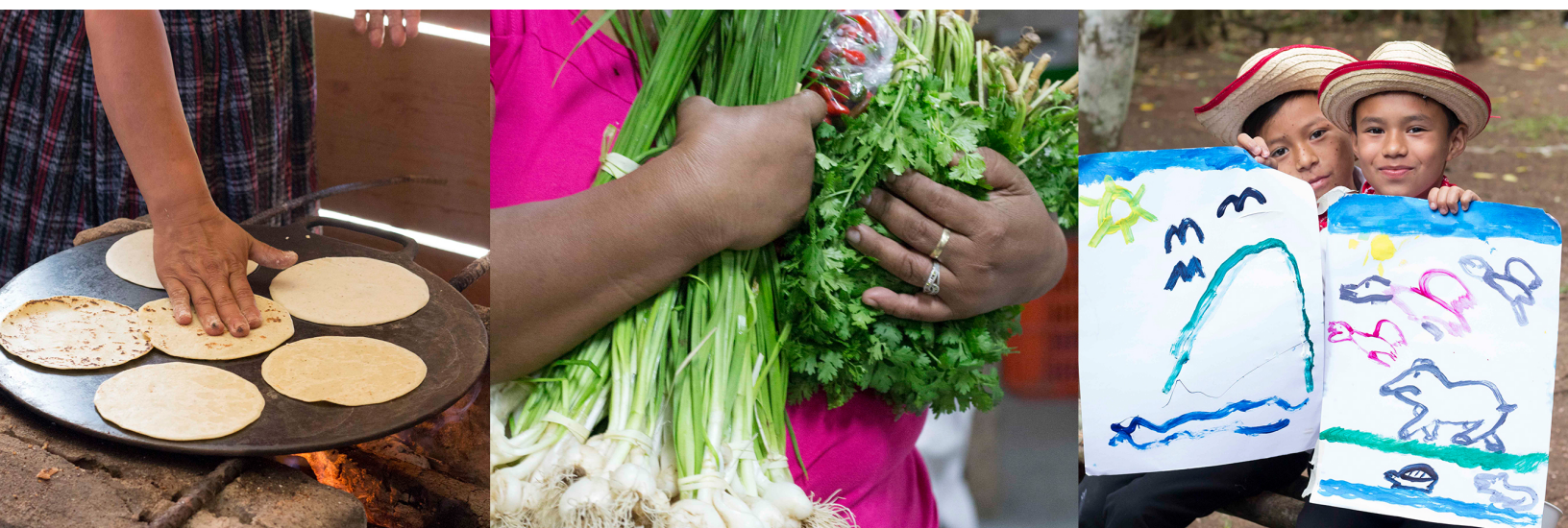
**Table 3.** Summary of proposed activities for the Sustainable Development Plan, as derived from stakeholder priorities and their feedback on an analysis of economic, social, and environmental trade-offs.

Component		Activities
<b>Water and Biodiversity Protection</b>	Land conversion within protected areas	No further expansion of private lands into protected areas; prohibit land de-reservation, future sales and land-transfers of public lands within the CMCC region.
	Payments for Ecosystem Services (PES) mechanism for water	Evaluate the feasibility of a PES for water, considering the costs, beneficiaries, willingness-to-pay for such protection, and considering the cost burden that inaction could impose on future water treatment costs. Implement if found to be feasible.
<b>Tourism</b>	Attract more visitors	Increase occupancy rate in existing hotels/resorts to 60% (50% increase over current). Encourage community involvement by promoting homestays (while adhering to licensing regimes). New accommodations should not impact on existing natural areas.
	Douglas D'Silva development	Evaluate the feasibility of developing this site to include a visitor information center, day-use picnic areas, restrooms, etc. Implement if found to be feasible and desirable.
	Develop recreation sites while managing impacts	Low-impact development in recreation sites. Limit access to the most sensitive sites and require water quality protections. Require carrying capacity studies and visitor management plans to be created before any development begins.
	Macal River	Low-impact eco-tourism activities allowed along the Macal river and in Chalillo Reservoir; monitor and control poaching in scarlet macaw breeding areas.
	Hiking and camping activities	Improve hiking trails and signage to improve access and security for low-impact hiking and camping in the Mountain Pine Ridge. Restrict the use of fires.
	Community involvement in tourism	Build capacity and incentives for communities to offer services as tour guides, cultural tourism, agro-tourism, home stays, lodging, restaurants, shops, services, etc.
	Support and promote domestic tourism	Invest in and incentivize domestic tourism to this area, to prepare for the expected drop in international tourism in the short-term due to COVID-19.
	Explore funding options	Detailed feasibility study to compare funding options and their potential to generate revenue to help support management of the area, relative to anticipated management needed to accommodate increased visitors.
	Monitor visitation and expenditures	Continue and expand efforts to track visitation and expenditures in and around the CMCC, to support development of new tourism products and management plans.



<b>Agriculture</b>	Promote sustainable agricultural practices	Incentivize and build capacity in buffer communities to promote sustainable use of croplands through appropriate crop selection, improved practices, organic agriculture, and agro-forestry. Promote crop suitability studies to make more effective use of existing croplands.
	Consolidate croplands	No new conversion of intact natural lands to croplands in high water quality service areas (see Figure 5, right panel). Any previously impacted lands converted to crop production must maintain the legally mandated stream setbacks and follow requirements for Environmental Impact Assessment.
	Prevent agriculture expansion in protected areas	Prevent any new incursions into protected areas. Maintain and/or expand control posts and restore currently impacted lands, where possible.
	Safeguard riparian buffers	Enforce legally mandated stream setbacks in existing croplands; restore vegetation buffers.
	Diversify livelihoods and business development	Encourage and build capacity for communities to offer agro-tourism, food culture, beekeeping, etc. to diversity products and livelihoods.
<b>Mining</b>		Impose a moratorium on new licenses pending a more detailed analysis of benefits and potential impacts of different mining activities, with a particular focus on water and biodiversity protection.
<b>Forestry &amp; Timber</b>	Restoration, recovery, and sustainable forest management in MPR	Forest Department and concessionaires work to actively restore bark beetle-impacted areas in MPR. Evaluate alternative funding mechanisms to direct meaningful investments into restoration.
	Active timber concessions	Continue and monitor existing concessions; allow for renewals pending licensees demonstrate that they are following sustainable timber harvest plans.
	Inactive timber concessions	Allow inactive licenses to expire and do not reissue new licenses until such time as the area is sufficiently recovered.
	Forest management plans	Broaden focus of forest management plans beyond timber production and safety to include watershed conservation, fire management, carbon sequestration and biodiversity protection. Involve private landholders in the buffer areas in fire management planning/implementation.
<b>Hydropower</b>	New dam construction	No new large hydropower dams to be constructed in the area.
	Micro-hydro	Possible, but not specifically recommended without further study on feasibility and environmental impact.

<b>Non-Timber Forest Products</b>	In collaboration with CMCC communities, develop a feasibility and marketability study to inform development of a management and permitting program for NTFPs.
	Build capacity and incentives for xate cultivation to reduce degradation in protected areas. Allow community members to harvest NTFPs but with controls on timing and quantity to ensure a sustainable harvest.
<b>Scientific research and education</b>	Continue to promote research activities at the Las Cuevas Research Station. Engage communities, businesses, universities and local schools to identify new research partnerships and facilities, and to articulate new programs to build scientific knowledge and community awareness of the natural wealth of the CMCC (for example, field trips, citizen science, education tourism, wildlife filming).



## 3.2 Activities by sector

### *(A) Forestry*

Historically, timber extraction served as the primary economic driver for creation and maintenance of the Forest Reserves, and so the timber sector – through the Forestry Department and two active private leases – remains the primary manager of much of the forests in the CMCC region. The value of timber in active concessions is estimated at BZD 4.5M per year, with another BZD 8.9M per year potential in currently inactive leases (assuming similar management practices result in similar yields in currently inactive blocks). Sustainable forestry management is fundamental to maintaining and improving the forest stocks in the region. Sustainable forestry ensures that forestry practices mimic natural patterns of disturbance and regeneration, which if sustained over time should help to regenerate the currently degraded forests in the CMCC<sup>5</sup>.

Beyond their value for timber, the remaining forest areas and riparian zones, particularly in the MPR, the Chiquibul National Park and Forest Reserve, and Caracol, contain critical natural habitat and help to safeguard the biodiversity heritage of Belize. Preservation of these biodiversity assets are critical to maintain both the natural and cultural heritage of the area, as well as preserving the adventure experience that is central to the unique tourism products offered by this region. Furthermore, there is broad consensus among stakeholders around the need to protect much of the CMCC region to safeguard critical water supplies. Natural areas and biodiversity also contribute the most to carbon storage and sequestration on the landscape.






Therefore, the overall goal for forestry development under the SDP is to maintain and restore the integrity of ecosystem structure, function, biodiversity, and connectivity of the pine and broadleaf forests through active management (including practices such as sustainable harvest and prescribed fires), working toward integrating the forests in this region into a national REDD+ system for carbon sequestration, and developing Payments for Ecosystem Services (PES) programs for water protection.

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<sup>5</sup> Bird, N.M. 1998. *Sustaining the Yield. Improved Timber Harvesting Practices in Belize, 1992-1998*. Chatham, UK: Natural Resources Institute.



**Specific recommendations include:**

-  **Restoration, recovery, and sustainable forest management in MPR:** The Forest Department and concessionaires will actively restore bark beetle-impacted areas in MPR to recover the structure, function and integrity of pine forests there. Evaluate alternative funding mechanisms to direct meaningful investments into restoration. Promote community involvement in restoration through capacity building, outreach and education programs.
-  **Continue sustainable management in active timber concessions:** Continue to monitor existing active concessions, allowing for renewal so long as licensees are following sustainable timber harvest plans.
-  **Inactive timber concessions:** Allow inactive licenses to expire and do not reissue new licenses until such time as the area is sufficiently recovered.
-  **Forest management plans:** Broaden the focus of forest and fire management plans beyond timber production and safety to include watershed conservation and biodiversity protection. Involve private landholders in the buffer areas in fire management planning and implementation.
-  **Evaluate feasibility of (and implement) a PES for water:** A conservation finance scheme that collects fees from downstream water users in the buffer communities and in Belmopan and directs these funds toward management of the upper watershed areas presents a potential source of new funding for forest management. However, the business case for such a scheme must first be developed, considering the costs, beneficiaries, willingness-to-pay for such protection, and considering the cost burden that inaction could impose on future water treatment costs. Implement if found to be feasible.



## *(B) Agriculture*






Currently, agriculture covers around 57,400 ha in the CMCC region and the buffer zone, with an additional circa 6,475 ha of illegal farms and ranches operating within the boundaries of the protected areas. The value of this sector to the local economy is estimated at BZD 363M annually (plus an additional BZD 35M from illegal farming). Agriculture is a mainstay for several of the communities in the region, and there are many opportunities to grow this sector by promoting sustainable food production, diversifying livelihoods through, for example, agroforestry projects, beekeeping, culturally specific foods, agro-tourism, etc.

However, the development of agriculture should proceed in a way that does not further infringe on protected areas or negatively impact water quality for the buffer communities and the capital city of Belmopan. The remaining natural forest along and to the east of the Macal River, between the communities of Benque Viejo and El Progreso/Seven Miles, are currently providing a critical water quality service by mitigating potential water pollution from croplands in the buffer zone (Figure 5, right panel).

Therefore, the goal for the agriculture sector under the SDP is to promote more sustainable use of existing croplands, focusing on making better use of existing lands rather than expanding into new ones, maintaining or restoring stream setbacks that safeguard water quality, and stopping illegal incursions into protected areas.



**Specific recommendations include:**

-  **Promote sustainable agriculture:** Incentivize and build capacity in buffer communities to promote sustainable use of existing agricultural lands through appropriate crop selection, improved practices, organic agriculture, and agro-forestry. Promote the use of crop suitability studies to make more effective use of existing croplands.
-  **Consolidation of croplands:** No new conversion of intact natural lands to croplands in high water quality service areas (see Figure 5, right panel). Any previously impacted lands (in these and other areas) converted to crop production must maintain the legally mandated stream setbacks and follow requirements for Environmental Impact Assessment.
-  **Prevent agriculture expansion in protected areas:** Prevent any new incursions into protected areas. Maintain and/or expand control posts and restore currently impacted lands, where possible.
-  **Safeguard riparian buffers:** Enforce legally mandated stream setbacks in existing croplands; restore vegetation buffers where necessary.
-  **Diversify livelihoods:** Incentivize and build capacity for communities to offer agro-tourism, food culture, beekeeping, etc. to diversity products and livelihoods.











### *(C) Recreation and tourism*

Tourism in the CMCC region encompasses both international and domestic tourists as well as local users of recreation sites in the surrounding communities. The recreational and tourism use of the area is a key sector, providing over BZD 29.8M of annual revenue to the buffer communities, and is a major attraction that contributes to the additional BZD 78.3M in annual revenues generated in the rest of Cayo District. While largely unrealized at the moment (limited only to visitor fees charged at the Caracol Archaeological Site), there is potential for additional revenue generation to support management activities by, for example, imposing visitor fees or through other revenue-sharing arrangements with tour operators. Additional revenue generated from tourism could provide much-needed funds for management of the natural resources of the area and thereby could benefit other sectors.

However, the current crisis with COVID-19 and the accompanying steep drop in (especially international) visitors has made the fragility of an economy built entirely on tourism very clear. This was apparent in the Third Stakeholder Workshop, where several participants mentioned the impact of COVID-19 on tourism potential. However even before the pandemic began, we heard from participants in the first two workshops the importance of diversifying the development base of the region.

Therefore, the guiding principle for tourism development will be to build on the current asset base in terms of natural sites as well as roads and infrastructure, allowing for some growth in visitation (with a goal of 150% of current) but focusing on providing a better, safer, and more enjoyable experience for visitors rather than expanding to new sites or new facilities. At the same time, development that takes place under this plan will ensure that the water resources and natural beauty of the region – the primary attractions for visitors – are maintained by ensuring sustainable development and use.




### Specific recommendations include:

-  **Offer new services and products:** Encourage more visitors to the region by offering new competitive products and services relating to eco-tourism, wildlife viewing, adventure tourism and cultural tourism.
-  **Fill up existing rooms:** Focus on increasing occupancy at existing accommodations rather than building new ones. Current rooms are only occupied on average 40% of the time, so there is room for growth without new infrastructure. Encourage community involvement by promoting homestays, while complying with licensing regimes. Homestays also offer the opportunity for community members to add-on additional services such as cooking demonstrations with local or indigenous foods, tours, etc.
-  **Involve communities:** Build capacity and incentives for communities to offer tourism services, such as guided tours based on cultural and gastronomic tourism, agro-tourism, accommodation services such as home stays, restaurants, shops, etc.
-  **Encourage domestic tourism:** Invest in and incentivize domestic tourism to the area, to prepare for the expected drop in international tourism in the short-term due to COVID-19 and to provide a more stable market for the long-term.
-  **Improve hiking trails and signage:** Improve access and security for low-impact hiking and camping in Mountain Pine Ridge. If camping is allowed then the use of fires should be restricted or prohibited to avoid wildfires, although fires may be allowed in certain locations and seasons if determined to be safe by the Forestry Department.
-  **Improve visitor experience while maintaining environmental integrity:** Only low-impact development will be undertaken in recreation sites, to improve safety and sanitation while maintaining the natural and rustic experience and minimizing environmental impacts. Limit the number of visitors allowed in the most sensitive sites, those with the highest potential for negative impacts on natural habitats<sup>6</sup>. These include Granite Falls, Rio On Pools, Caracol Archaeological Site, Natural Bridge, and Nohoch Che'en. Development at sites with a high potential to impact downstream water supplies for communities, resorts, and other recreation sites will require appropriate mitigation measures in place to minimize impacts on water quality and water flows<sup>7</sup>. These sites include: Granite Falls, Rio On Pools, Rio Frio Cave, Big Rock, Pinol Sands, and Sapodilla Waterfall.

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<sup>6</sup> These sites scored 7/10 or greater in our assessment of the potential for local environmental harm (see the Interim Report on Spatial Data, Models and Scenarios for the SDP for details on how scores were determined).

<sup>7</sup> These sites scored 7/10 or greater in our assessment of the number of downstream users potentially impacted by development there (see the Interim Report on Spatial Data, Models and Scenarios for the SDP for details on how scores were determined).

-  **Manage impacts of site development:** Given that the majority of sites mapped in this study have a high potential for either environmental damage to the surrounding area, or damage to downstream water supplies for communities and businesses, development of any recreation sites within the CMCC will require a carrying capacity evaluation and visitor management plan to be developed, in addition to any existing Environmental Impact Assessment requirements.
-  **Explore funding options:** Conduct a detailed feasibility study to compare options (for example user access fees, site or park entrance fees, revenue sharing from tourism operators, etc.) and their potential to generate revenue to help support management of the area (security, waste management, maintenance, fire control, etc.), relative to anticipated management needed to accommodate increased visitors.
-  **Monitoring visitation and expenditures:** Continue and expand efforts to track visitation at sites in and around the CMCC and tourism expenditures by site and type of activity, to support development of new tourism products, site management plans, and adaptive management.





## *(D) Hydropower*

Currently, there are three operational hydropower plants in the CMCC region: Chalillo (7 MW), Mojellon (25.2 MW), and Vaca (19 MW). Together, these facilities produce an average annual revenue of BZD 48M from energy sold. Hydropower benefits from seasonal streamflows, primarily from watersheds in the Mountain Pine Ridge and the eastern portions of Chiquibul National Park. Therefore, sustainable forest management in those areas and restoration of bark-beetle infested areas will ensure the continued production of renewable energy from the area.

However, there was consensus among stakeholders that **no new large-scale hydropower projects should be undertaken in the area**. BECOL, who operates the three hydropower dams, is currently pursuing other options for expanding capacity, such as solar power.

**Micro-hydro installations** (producing less than 100kW of electricity) are possible along many of the region's streams, and could provide a cheap source of energy for some smaller communities or resorts, but are not specifically recommended under this SDP without further study of feasibility and potential environmental impacts.





## *(E) Mining*

Mining in the CMCC consists of mining granite and gold, primarily in the southern part of the Chiquibul National Park. In addition, there is a major threat from illegal gold panning from incursions along the western border with Guatemala that Park managers currently struggle to control. Mining, particularly uncontrolled, illegal mining, has the potential to severely damage forest health and water resources for all the communities downstream (including many in Guatemala), primarily through impacts on water quality.

Despite this understanding, the continuation or possible expansion of legal mining concessions in the region continues to be a highly controversial topic, particularly since the mining areas tend to occur in the headwaters of the major rivers flowing from the area. Throughout the stakeholder workshops and focus groups that lead up to the development of alternative options, there was a strong message from participants that mining should be discontinued in the region. Of the 24 workshop participants who voted on specific activities to include, 67% voted for mining NOT to be included in the SDP while only 22% voted that mining should be considered for further expansion. Considering the feedback received from community focus groups on the different development options, three of the four communities selected the more conservative scenario (which would prohibit mining) or specifically stated that there should be no mining. Only one community (Georgeville) was in favor of expanding mining as part of the SDP. Other stakeholders in the virtual workshop stressed that not all mining activities are the same and some types of mining could be implemented with minimal impacts on headwaters, and further that sourcing aggregates to support infrastructure development in the CMCC locally could reduce overall implementation costs and should not be rejected outright.

Therefore, the overall goal for the mining sector in the SDP is first to better understand the potential impacts versus costs of mining for different materials and using different technologies, to provide a scientific basis for further decision-making. Prospective studies should consider if the revenue to be made by the country in the form of taxes, permits and royalties would justify the possible trade-offs. No new licenses or concessions should be granted until such a study is complete, and the focus should be on stopping illegal incursions to prevent further degradation and loss of valuable resources.

**Specific recommendations include:**

-  **Impose a moratorium on new licenses or concessions**, pending the completion of a more detailed analysis of benefits and potential impacts of different mining activities, with a particular focus on water and biodiversity protection.
-  **Stop illegal mining incursions:** Continue control posts along the border to prevent illegal incursions for gold panning.





## *(F) Other activities*

**Community gathering of non-timber forest products (NTFPs).** Community harvesting of medicinal plants is an important community practice that is likely to continue. A system should be enacted whereby community members may gather NTFPs, but monitoring and enforcement is in place to prevent compromising the integrity and health of the ecosystems. First, a feasibility and marketability study should be developed in collaboration with communities, to inform development of a management and permitting program for NTFPs.

**Scientific research and education:** Continue to promote research activities at the Las Cuevas Research Station. Engage communities, businesses, universities and local schools to identify new research partnerships and facilities, and to articulate new programs to build scientific knowledge and community awareness of the natural wealth of the CMCC (for example, field trips, citizen science, education tourism, wildlife filming).

**Military training activities by BATSUB and the Belize Defense Force** include control posts along the border with Guatemala, as well as live firing and bombing range in the northeastern end of the MPR. These activities will continue under the SDP, as they provide a consistent presence to reduce illegal incursions. They must be conducted using strict fire control procedures in compliance with the EIA for their activities and are inspected regularly.

**Monitoring, data management and sharing:** Build and strengthen monitoring programs that track the biological, cultural, hydro-meteorological and physical characteristics of the CMCC landscape and its waters. Many different entities currently gather data, but a centralized system of data compilation and management is needed to allow for a holistic picture and tracking of trends of the state of ecosystems and hydrologic systems through time, and to allow for course correction and adaptive management as the SDP is implemented. Develop data management and hosting platform, pursue data sharing agreements and establish protocols.



### 3.3 Cross-sectoral recommendations

A common theme across all the stakeholder engagements was that there are a lot of good regulations that exist to regulate the types and locations of activities in the CMCC area, and so **enforcement of existing norms and compliance monitoring** would be the preferred approach over enacting additional legislation.

**Maintain and expand control posts along the international border**, to prevent further land incursions into protected forest areas and cultural sites.

**Integrated fire management** plans should be developed to ensure and balance the safety and security of property and visitors, forest health, and the integrity of water resources. Capacity-building and involvement of buffer communities will be critical to expand this activity.

**Emergency and disaster response:** Communications and emergency response systems will need to be further developed to ensure the safety of visitors to the region.

**Monitor and enforce road safety:** Develop and enforce rules to ensure traffic and road safety in the CMCC and in the buffer communities along the improved CMCC access roads.

**Investments in capacity and technology** for sustainable agriculture, agroforestry, small business development for offering products and services (for international or domestic tourists), forestry, wildlife protection, security, professionalizing tourism services, governance and participatory management.

### 3.4 Strategic steps

#### *(A) Implementation timeframes*

##### ***Short-term strategy (up to 5 years - 2025)***

Paving the way: improvement of the main recreation and tourism sites and implementation of the processes and management plans necessary to make the next steps a success. Management plans, governance framework, financial and other feasibility studies, etc. Identify and scope community development and capacity building projects with communities.

##### ***Medium-term strategy (6-10 years - 2030)***

Implementation and monitoring: New products and services in the tourism, agriculture, education and research sectors are developed to support livelihoods. Capacity-building for communities for business development, sustainable agricultural practices, etc. Low-impact eco-tourism activities are implemented and standards enforced around environmentally sensitive sites, enhancing nature-based tourism opportunities. Sustainable practices in agriculture and forestry are progressing.

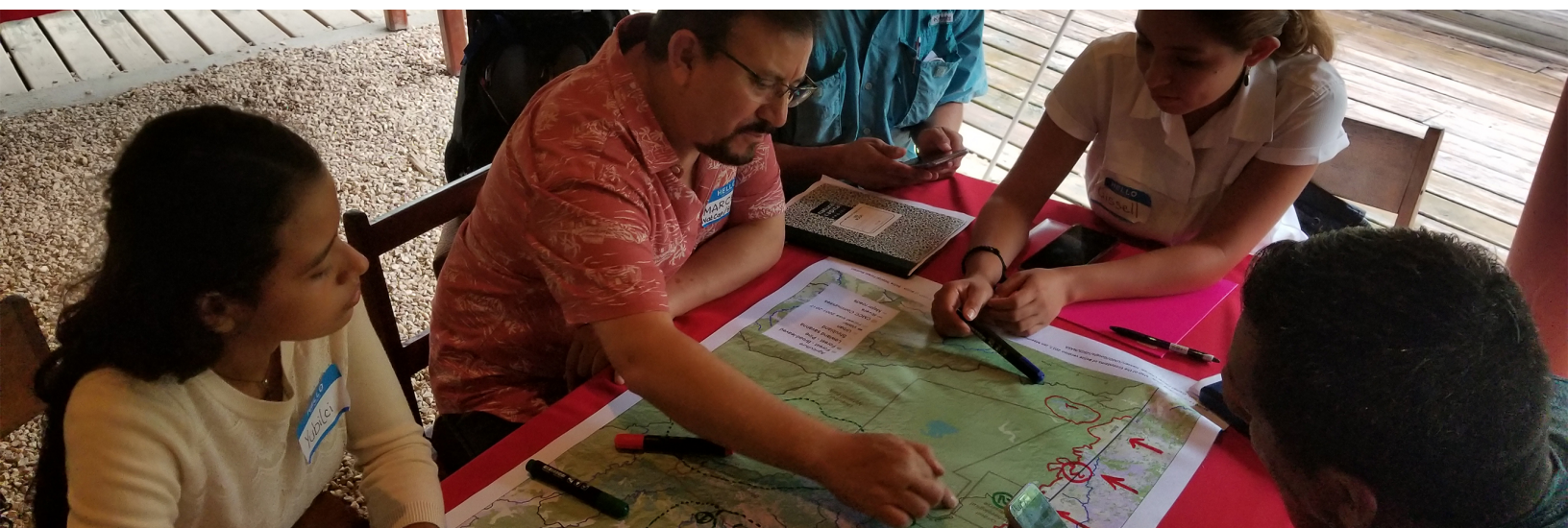
##### ***Long-term strategy (11-15 years - 2035)***

Cementing the vision: All protected areas are effectively managed, allowing both the protection of habitats at risk and the development of nature-based activities. Agriculture and wild product harvesting practices are sustainable.



## *(B) Key recommendations and responsibilities*

The implementation of the recommended activities in the SDP will be the responsibility of various institutions, who will proceed using the framework presented here as a master plan to align their activities. Table 4 lists the recommendations from the SDP organized by objective, and gives the responsible agency, key partners, and timeframe for completion.





**Table 4. Key recommendations, lead agencies, key partners, and timeframe for next steps in SDP implementation.**

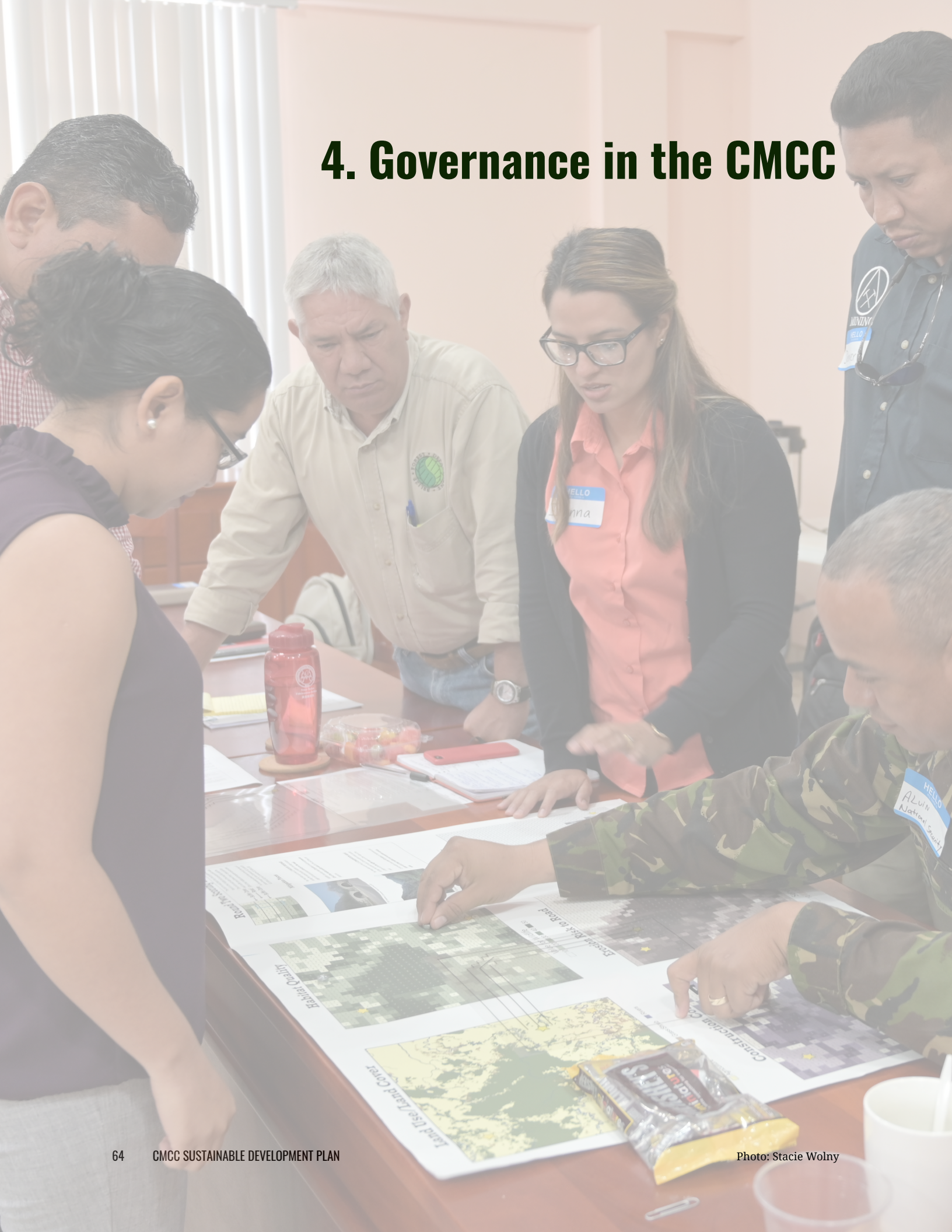
Areas	Objective	Recommendations	Lead Agency(s)	Key Partners	Timeframe
Water and Biodiversity Protection	Financial sustainability for water source area protection	Feasibility study for Payments for Ecosystem Services (PES) mechanism. Also see line 10 (Promote integrated watershed management plans. of infrastructure).	Ministry of Natural Resources (Hydrology Unit), National Biodiversity Office	Department of Environment, Forestry Department, Ministry of Finance	Short-term (up to 5 years - 2025)
	Watershed management	Develop and implement integrated watershed management plans. Also see line 10 (Promote integrated Forest management) and 42 (Preserve integrity of infrastructure).	Ministry of Natural Resources (Hydrology Unit)	Department of Environment, Forestry Department, Friends for Conservation and Development, University of Belize, Communities	Short-term (up to 5 years - 2025)
	Biodiversity management	Continue to monitor and control poaching in scarlet macaw breeding areas. Perform gap analysis to determine priority areas for biodiversity research. Develop new research activities at the Las Cuevas Research Station in collaboration with universities, communities, local schools, etc. Engage communities, businesses, universities and local schools to articulate new programs and/or new research facilities to build scientific knowledge and community awareness of the natural wealth of the CMCC.	Friends for Conservation and Development	Forestry Department, Protected Areas Conservation Trust, National Biodiversity Office	Ongoing
	Restoration, recovery, and sustainable forest management in MPR	Develop a plan to restore bark beetle-impacted areas in MPR.	National Biodiversity Office, Forestry Department	Forestry Department, Friends for Conservation and Development, University of Belize, Communities	Short-term (up to 5 years - 2025)
Forestry	Sustainable management in active timber concessions	Allow for renewals if licensees submit sustainable timber harvest plans.	Forestry Department	Private Concessionaires, Communities	Short-term (up to 5 years - 2025)
	Consolidate timber concessions and promote restoration	Allow inactive licenses to expire and do not reissue new licenses until such time as the area is sufficiently recovered.	Forestry Department		Long-term (11-15 years - 2035)
	Promote integrated forest management	Broaden focus of forest and fire management plans beyond timber production and safety to include watershed conservation and biodiversity protection.	Forestry Department	Private Concessionaires, Communities	Long-term (11-15 years - 2035)
	Promote non-timber forest products (NTFPs)	Conduct feasibility study for the harvesting of NTFPs.	Forestry Department		Short-term (up to 5 years - 2025)
Tourism	Increase tourism benefits and community involvement	Build capacity and incentives for communities to harvest NTFPs but with controls on timing and quantity to ensure a sustainable harvest.	Forestry Department	Ministry of Labour, Local Government and Rural Development, Friends for Conservation and Development, Communities	Short-term (up to 5 years - 2025)
		Develop a Marketing Strategy for the area in order to increase occupancy rate in existing hotels/resorts to 60% (50% increase over current).	Ministry of Tourism and Civil Aviation	Belize Tourism Board, Belize Hotel Association and Belize Tourism Industry Association	Short-term (up to 5 years - 2025)
		Encourage community involvement by promoting homestays. New accommodations should not impact on existing natural areas.	Ministry of Tourism and Civil Aviation	Belize Tourism Board, Belize Hotel Association and Belize Tourism Industry Association, Communities	Medium-term (6-10 years - 2030)
		Build capacity and incentives for communities to offer services as tour guides, cultural tourism, agro-tourism, home stays, lodging, restaurants, shops, services, etc. Support and promote domestic tourism.	Ministry of Tourism and Civil Aviation	Belize Tourism Board, Belize Tourism Industry Association, National Institute of Culture and History and Ministry of Education	Medium-term (6-10 years - 2030)
			Ministry of Tourism and Civil Aviation	Belize Tourism Board, Belize Tourism Industry Association, National Institute of Culture and History and Belize Hotel Association, Communities	Short-term (up to 5 years - 2025)
	Minimize risk and impacts to natural assets	Conduct carrying capacity studies and visitor management plans before any development begins.	Forestry Department, National Biodiversity Office, National Institute of Culture and History	Ministry of Tourism and Civil Aviation, Protected Areas Conservation Trust	Short-term (up to 5 years - 2025)
		Limit access to the most sensitive sites, and require water quality protections.	Forestry Department, National Biodiversity Office, National Institute of Culture and History	Ministry of Tourism and Civil Aviation, Ministry of Culture, Communities	Short-term (up to 5 years - 2025)
		Implement policy to restrict fires on site based on fire management plan.	Forestry Department, Ministry of Tourism and Civil Aviation	Belize Tourism Industry and Association, Cayo Tour Guide Association, Communities	Short-term (up to 5 years - 2025)
	Improve visitor user experience	Douglas D'Silva development into visitor information centre with day-use picnic areas, restroom.	Forestry Department	Private Concessionaires, Communities	Medium-term (6-10 years - 2030)
		Improve and restore recreation sites infrastructure while managing impacts.	Forestry Department, Ministry of Tourism and Civil Aviation	Belize Tourism Board, Protected Areas Conservation Trust, Friends for Conservation and Development	Short-term (up to 5 years - 2025)
	Diversify tourism products	Promote low-impact eco-tourism activities along the Macal river and in Chalillo Reservoir.	Ministry of Tourism and Civil Aviation	Belize Tourism Board, Belize Tourism Industry Association, Cayo Tour Guides Association, Communities	Long-term (11-15 years - 2035)
		Improve hiking trails and signage to improve access and security for low-impact hiking and camping in the Mountain Pine Ridge.	Forestry Department	Ministry of Tourism and Civil Aviation, Belize Tourism Board, Protected Areas Conservation Trust	Short-term (up to 5 years - 2025)
Monitor visitation and expenditures		Developing birding areas and bird watching tours that minimize impacts on birds and the environment.	Ministry of Tourism and Civil Aviation	Belize Tourism Board, Belize Tourism Industry Association, Cayo Tour Guide Association, Belize Bird Conservancy, Friends for Conservation and Development, Belize Audubon Society	Short-term (up to 5 years - 2025)
		Continue and expand efforts to track visitation at sites in and around the CMCC and tourism expenditures by site and type of activity, to support development of new tourism products, site management plans, and adaptive management.	Protected Area Conservation Trust	Ministry of Tourism and Civil Aviation, Forest Department	Short-term (up to 5 years - 2025)
	Improve financial sustainability for operational management of recreational sites	Conduct a feasibility study to compare funding options and their potential to generate revenue to help support management of the tourism sites, relative to anticipated management needed to accommodate increased visitors.	Protected Area Conservation Trust	Ministry of Tourism and Civil Aviation, Forestry Department	Short-term (up to 5 years - 2025)

Areas	Objective	Recommendations	Lead Agency(s)	Key Partners	Timeframe
Agriculture	Promote sustainable agricultural practices	Incentivize and build capacity in buffer communities to promote sustainable use of existing agricultural land.	Ministry of Agriculture	Forestry Department, Friends for Conservation and Development, Communities	Short-term (up to 5 years - 2025)
		Support and promote the use of crop suitability studies to make more effective use of existing croplands.	Ministry of Agriculture	Communities	Short-term (up to 5 years - 2025)
		Prevent and ban new conversion of intact natural lands in high water quality service areas to croplands.	Ministry of Agriculture	Forestry Department, National Biodiversity Office	Short-term (up to 5 years - 2025)
		Support cross-border community level activities in promoting sustainable agricultural practices.	Ministry of Agriculture, Friends for Conservation and Development	Forestry Department, National Biodiversity Office, Friends for Vaca	Short-term (up to 5 years - 2025)
	Prevent and consolidate agriculture expansion in protected areas	Maintain and/or expand control posts and restore currently impacted lands, where possible.	Ministry of National Security, Ministry of Agriculture	Forestry Department, National Biodiversity Office, Friends for Conservation and Development, Communities	Medium-term (6-10 years - 2030)
Agriculture	Enforce riparian buffers	Enforce the legally mandated stream setbacks and requirements for Environmental Impact Assessment in existing cropland.	Ministry of Natural Resources, Department of Environment	Forestry Department, National Biodiversity Office, Friends for Conservation and Development, Communities	Short-term (up to 5 years - 2025)
		Work with landholders to restore vegetation buffers where necessary.	Ministry of Agriculture, Friends for Conservation and Development	Forestry Department, National Biodiversity Office, Protected Areas Conservation Trust, Ministry of Natural Resources, Communities	Medium-term (6-10 years - 2030)
	Diversify agriculture products and business development	Encourage and build capacity for communities to offer agro-tourism, food culture, beekeeping, etc. to diversity products and livelihoods.	Ministry of Agriculture, Friends for Conservation and Development	Ministry of Labour, Local Government and Rural Development, Forestry Department, National Biodiversity Office, Protected Areas Conservation Trust	Short-term (up to 5 years - 2025)
		Expand agriculture extension services to the buffer communities.	Ministry of Agriculture	University of Belize	Short-term (up to 5 years - 2025)
Mining	Minimize risk and impacts to natural assets	Partner with local institutions to develop programs that support agricultural business development.	Ministry of Agriculture	Belize Trade and Investment Development Service (BELTRAIDE), Ministry of Labour, Local Government and Rural Development, Communities	Short-term (up to 5 years - 2025)
		Impose a moratorium on new licenses pending a more detailed analysis of benefits (e.g. revenue in the form of taxes, permits and royalties) versus potential impacts of different mining activities, with a particular focus on water and biodiversity protection.	Ministry of Natural Resources	National Biodiversity Office	Short-term (up to 5 years - 2025)
Energy	Maintain existing hydropower sites	Improve monitoring presence and continue control posts along the border to prevent illegal incursions for gold panning.	Forestry Department, Ministry of National Security, Friends for Conservation and Development	Ministry of Natural Resources, National Biodiversity Office	Medium-term (6-10 years - 2030)
	Evaluate alternative options	Support existing sites and ban new large-scale hydropower projects within the area.	Public Utilities Commission	Ministry of Public Service, Energy and Public Utilities	Short-term (up to 5 years - 2025)
	Improve connectivity and accessibility	Conduct a feasibility and environmental impact to determine alternative options such as micro-hydropower.	Ministry of Public Service, Energy and Public Utilities, Public Utilities Commission	Department of Environment, Belize Electricity Limited, Belize Electric Company Limited	Short-term (up to 5 years - 2025)
Infrastructure	Improve waste management	Improve roads to recreational sites and other areas deemed necessary.	Ministry of Tourism and Civil Aviation, National Biodiversity Office, Forestry Department	Ministry of Works, Private Concessionaires	Short-term (up to 5 years - 2025)
	Preserve integrity of infrastructures	Install and maintain signage throughout the area.	National Biodiversity Office, Forestry Department, National Institute of Culture and History	Ministry of Tourism and Civil Aviation, Ministry of Works, Protected Areas Conservation Trust, Friends for Conservation and Development	Short-term (up to 5 years - 2025)
		Develop a sustainable management plan for waste disposal and collection.	Belize Solid Waste Management Authority	Forestry Department, National Biodiversity Office, Protected Areas Conservation Trust, Communities	Short-term (up to 5 years - 2025)
		Maintain road drainages, water catchments and erosion control features of major roads.	Forestry Department, National Biodiversity Office, National Institute of Culture and History	Ministry of Works, Protected Areas Conservation Trust	Ongoing
		Maintain Caracol Road infrastructure.	Ministry of Works	Forestry Department, National Biodiversity Office, Protected Areas Conservation Trust	Medium-term (6-10 years - 2030)
		Develop a plan for infrastructure maintenance including financial mechanism.	Ministry of Works	Forestry Department, National Biodiversity Office, Protected Areas Conservation Trust	Short-term (up to 5 years - 2025)

Areas	Objective	Recommendations	Lead Agency(s)	Key Partners	Timeframe
Safety and Security	Improve visitor safety	Determine and delineate public and restricted areas through proper signage as guided by the Management Plan of the area.	Forestry Department, National Biodiversity Office	Protected Areas Conservation Trust, Cayo Tour Guide Association	Short-term (up to 5 years - 2025)
	Improve emergency and disaster response	Monitor and enforce road safety. Invest in improving communications and emergency response systems.	Ministry of Transport Forestry Department, National Biodiversity Office	Protected Areas Conservation Trust	Ongoing Medium-term (6-10 years - 2030)
	Support and improve security measures	Develop a emergency plan for the area including crisis management.	Forestry Department, Ministry of Tourism and Civil Aviation	National Biodiversity Office, Protected Areas Conservation Trust, National Emergency Management Organization, Ministry of Health, Cayo Tour Guide Association	Short-term (up to 5 years - 2025)
	Consolidate military use	Maintain and expand control posts along the border and throughout the area.	Ministry of National Security	Forestry Department, BATSUB, Friends for Conservation and Development, Protected Areas Conservation Trust, National Biodiversity Office	Short-term (up to 5 years - 2025)
	Prevent illegal activities within the protected areas	Limit activities of BATSUB and the BDF outside the impact area designated for heavy military activity. Maintain and expand control posts along the international border, to prevent further land incursions into protected forest areas and cultural sites.	Ministry of National Security	Department of Environment, Forestry Department	Short-term (up to 5 years - 2025)
Monitoring and Adaptive Management	Establish data repository	Develop data repository and hosting platform, pursue data sharing agreements and establish protocols.	Ministry of Natural Resources	Forestry Department, BATSUB, Friends for Conservation and Development, Protected Areas Conservation Trust, National Biodiversity Office	Short-term (up to 5 years - 2025)
	Long-term visitor tracking	Establish a visitor tracking system.	Ministry of Culture, National Institute of Culture and History	University of Belize	Short-term (up to 5 years - 2025)
	Strengthen monitoring systems	Build and strengthen monitoring programs that track the biological, cultural, hydro-meteorological and physical characteristics of the CMCC landscape and its waters.	National Biodiversity Office, Forestry Department, National Institute of Culture and History	University of Belize	Short-term (up to 5 years - 2025)
Governance/ Management	Land integrity	establishment of the CMCC Landscape/Corridor through the passage of a Statutory Instrument under the National Protected Areas System Act of 2015. conduct a comprehensive assessment of land tenure within the CMCC Landscape/Corridor. Modify Legal framework to ban privatisation and de-reservation of land within protected areas.	National Biodiversity Office	Forestry Department, Protected Areas Conservation Trust,	Short-term (up to 5 years - 2025)
	Land use planning and enforcement	Enforcement of the National Protected Areas System Act #7 of 2015 which prohibits extractive activities such as mining for minerals and oil exploration within National Parks found within the CMCC Landscape/Corridor. Provide required legal enforcement for the implementation of SDP land use zoning and planning.	Ministry of Natural Resources	Forestry Department, National Biodiversity Office, Protected Areas Conservation Trust, Ministry of Natural Resources, Attorney General Ministry	Short-term (up to 5 years - 2025) Medium-term (6-10 years - 2030)
	Strengthen local governance	Elaborate mechanisms for strengthening capacity in local governance for communities located in the vicinity of the CMCC.	Ministry of Natural Resources, National Biodiversity Office	Forestry Department, Protected Areas Conservation Trust, NICH	Short-term (up to 5 years - 2025)
	Integrated and inclusive governance mechanism	Conduct an Institutional Capacity Assessment inclusive of the public expenditure appraisal, public budgeting and public investment management systems to determine the overarching governance mechanism for the area. Establish a cohesive Legal and Policy framework including legislative amendments.	Ministry of Labour, Local Government and Rural Development National Biodiversity Office	NAVCO, DAVCO, Communities	Short-term (up to 5 years - 2025)
		Outline a Public-Private Partnerships Framework for operational management of sites, in close coordination with the protected areas concession contracts developed by PACT. Conduct a Financial Needs Assessment and establish a finance plan including resource mobilization action plan.	National Biodiversity Office	Forestry Department, National Institute of Culture and History, Attorney General Ministry	Short-term (up to 5 years - 2025)
			Protected Area Conservation Trust, Belize Infrastructure Limited	National Biodiversity Office, Forestry Department	Short-term (up to 5 years - 2025)
			National Biodiversity Office	Forestry Department, Protected Areas Conservation Trust, National Institute for Culture and History	Short-term (up to 5 years - 2025)
	Institutional framework for short-term strategy implementation of the SDP	Delineate and strengthen the National Biodiversity Office as the Coordinating Entity with legal mandate and human resources. Hire necessary staff for implementing agency and provide required resources.	Office of the Prime Minister, Ministry of Fisheries, Forestry, Environment and Sustainable Development National Biodiversity Office	National Biodiversity office	Short-term (up to 5 years - 2025)
			National Biodiversity Office	Ministry of Finance	Short-term (up to 5 years - 2025)



## 4. Governance in the CMCC



## 4. Governance in the CMCC

The CMCC has been an integral region for development in Belize historically. With careful planning and management, it can continue to support economic activity while maintaining critical ecosystem services and functionality. However, any development of the CMCC must also bring into consideration the existing and potential management and governance for the area to ensure cohesive and sustainable planning that safeguards the environmental, social and cultural integrity of the area.

Governance is the emergence of interactions at various scales and levels in decision-making, power-sharing, and individual and collective action in resource use<sup>8</sup>. In essence, it allows for the determination of how power and responsibilities are exercised, how decisions are taken, and how citizens or other stakeholders are incorporated. Governance of Protected Areas includes:

- i. Establishing the perimeter of the area;
- ii. Establishing the long-term vision and main management objectives in relation to local livelihoods;
- iii. Establishing zoning systems and management rules;
- iv. Sanctioning of management plans, legal instruments and standards;
- v. Determining roles for stakeholders and supporting human and financial resources allocation; and
- vi. Establishing monitoring and evaluation mechanisms to ensure adaptive management.

In contrast, management focuses on the details for activities, resources and actions necessary to achieve the vision and objectives. To its credit, the CMCC has evolved a polycentric decision-making framework wherein there are cross-level and cross-scale partnerships in the governance process. The inclusion of co-management partners, private sector, and multi-ministerial presence in the CMCC provides a general framework for good governance going forward.

In addressing the challenges inherent in the existing governance system, the proposed governance framework for the future sustainable development of the CMCC will need to take an integrated landscape, social-ecological systems approach that is multi-functional, multi-dimensional, multi-stakeholder and adaptive. It should provide for a unified vision for the CMCC, build transparency and accountability, build financial and institutional capacity, allow for adaptive learning, and resolve trade-offs between social and ecological objectives, among others.

In order to propose a phased approach for adapting landscape management for the CMCC, an audit was conducted of the policy and institutional context in order to assess gaps and to make recommendations for an integrated social-ecological systems approach to governance<sup>9</sup>. The assessment took a landscape-level approach, which pursues decision making that addresses overlapping claims and conflicting interests in the landscape rather than focusing on sectoral objectives or individual actors' goals.

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<sup>8</sup> Lebel, L., J. M. Anderies, B. Campbell, C. Folke, S. Hatfield-Dodds, T. P. Hughes, and J. Wilson. 2006. Governance and the capacity to manage resilience in regional social-ecological systems. *Ecology and Society* 11(1): 19.

<sup>9</sup> Williams, K. 2019. Governance Assessment: Chiquibul-Mountain Pine Ridge Caracol Complex. Final Project Report. October 2019.

## 4.1 Policy and institutional mapping

Six ministries and sixteen departments have the mandate for the implementation of twenty pieces of legislation, seven subsidiary laws and regulations, nine policies, and five international conventions relating to activities in the CMCC. In addition, the CMCC hosts a complexity of mixed management agreements that include government agencies, non-governmental organizations, private sector and international organizations as outlined below:

### **Government Agencies**

- Ministry of Fisheries, Forestry, Environment and Sustainable Development
- National Institute of Culture and History (NICH)
- Ministry of Natural Resources
- Ministry of Works
- Ministry of Tourism and Civil Aviation
- Ministry of National Security

### **Non-Governmental Organization**

- Friends for Conservation and Development

### **Private Sector (Licensee/Concessionaires)**

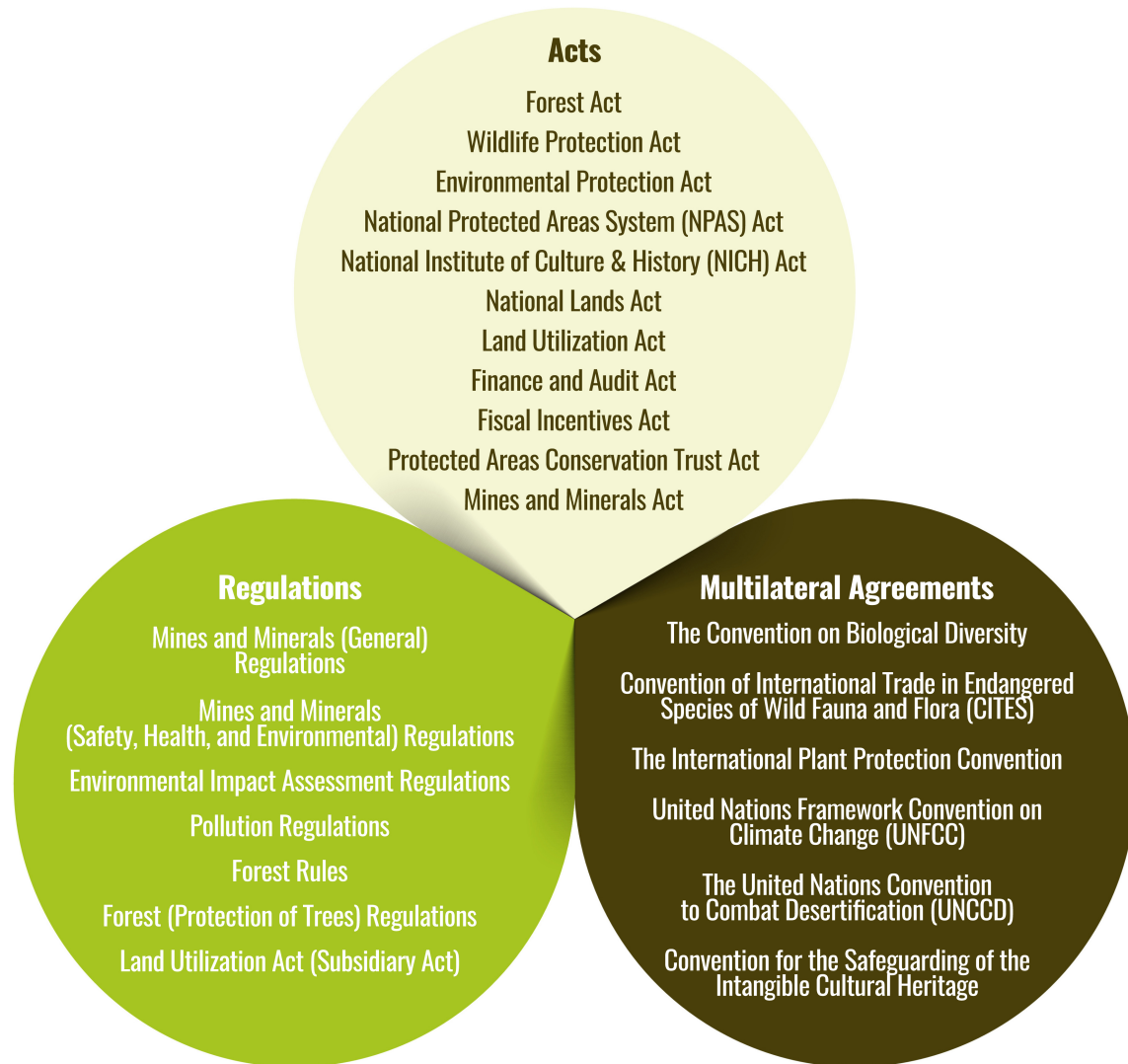
- Pine Lumber Co. Ltd
- Bull Ridge Co. Ltd.
- Tourism Concessionaires

### **Support Organizations**

- International Organizations



## POLICIES AND LEGISLATIONS



## 4.2 Challenges for governance in the CMCC

The long history of occupation of the CMCC and multidimensional nature of its various uses have engendered a series of challenges. Herein, an evaluation of the challenges within the social, environmental, economic, and institutional systems is provided (Table 5). Note that the analysis takes a protected areas management perspective, given this has been the principal use and management regime historically in the CMCC.

**Table 5.** Summary of governance challenges within the social, environmental, economic, and institutional systems of the CMCC.

Economic System	
Protected areas finance	Protected areas management in the CMCC is largely financed through public allocation to the Forest Department and through grants from PACT and other agencies to the Forest Department and FCD. Therefore, a significant financial gap for effective management of protected areas in the CMCC exists.
Mechanisms for integrated financial sustainability	Within the CMCC, no legal mechanism currently exists for leading and supporting consolidated financial sustainability of its management regime; instead, management entities are concerned with individual financial sustainability. The challenge is that existing agencies involved in governance within the CMCC – the Forest Department, NICH, FCD, private concessionaires - do not have the authority for the collection and reinvestment of potential funds. To effectively collect and reinvest these fees into management activities in the CMCC, a legal vehicle is required that would create such a special fund and enable the collection, allocation, and disbursement of revenues.

Environmental System	
Ecosystem representation and connectivity	Currently protected areas are managed as individual protected areas, operating on a theoretical basis of defined boundaries. On the ground, however, protected areas are integrated social- ecological systems which collectively provide ecosystem services.
Unsustainable activities	There are several unsustainable activities occurring within the CMCC, both legal and illegal. They include illegal hunting and fishing, unsustainable and illegal logging, agricultural incursions and archaeological looting <sup>10, 11, 12</sup> .
Forest fires and fire management	Currently, there is no clear integrated strategy being implemented for fire management in the CMCC. There is, however, a wildland fire management policy and strategy for Belize with the “long term goal of strengthening public policy related to forest fire management” <sup>13</sup> which can serve as a guiding document in establishing such localized strategy. On the ground, each agency, public and private, engages in fire management to protect their individual assets. Fire management in the CMCC is an example of effective public-private cooperation exhibited through strong collaboration between the Forest Department and private sector entities as well as support from donor agencies. Further, the Government of Belize and the Government of Guatemala have recently drafted a bi-national management plan that coordinates actions for the prevention and control of forest fires along the Belize/Guatemala border.
Reforestation	Reforestation has been an ongoing policy of the government which ensures government’s commitment to restoring degraded forest, through planting or seeding on non-forested land. As a part of the efforts to restore the forest within protected areas of the CMCC, the Forest Department has identified critical areas within the MPR that require reforestation efforts.
Mining	The mining of minerals is also occurring within the CMCC; however, limited assessments have been carried out to determine whether or not these activities are sustainable – either environmentally or economically <sup>10</sup> .
Water resources	Three major dams sit on the Chiquibul and Mopan Rivers within the Belizean boundaries of the catchment. In the upper reaches of the catchment in Guatemala, deforestation, land degradation, habitat fragmentation and pollution are the primary anthropogenic impacts <sup>14</sup> .



<b>Social System</b>	
Stakeholder/community participation	Within the CMCC there are gaps and weaknesses in communication with the local communities. No official mechanism exists through which communities can participate in decision-making, despite the communities' dependence on the natural resources in the area.
Limited community organization	There are currently few active community-based organizations or non-government organizations in the CMCC buffer communities to represent community interests. As such, there is no holistic, representative framework to represent community interests in the governance or management of the CMCC.
Limited socio-economic benefits to local communities	Currently, there are limited opportunities for communities to derive socio-economic benefits from the CMCC. Tourism is the only undertaking that provides some benefit to the surrounding communities, typically in the form of spill-offs when domestic or international tourists are passing through the villages en route to the MPR or the Caracol Archeological Site.
Safety and security issues inside the CMCC	In terms of human safety and security inside the CMCC, there is no formal medical facility or designated agency within the CMCC that actively ensures visitor safety and security. BDF maintains a presence in the area and are responsible for national security along the border. However, it is quite difficult for them to increase their on-the-ground presence in order to heighten enforcement activities at the different tourist sites.
Real estate speculation and development	The CMCC, particularly the Mountain Pine Ridge area, has been targeted for community development for decades. Land tenure in the area is often unclear. Development of infrastructure, such as the Caracol road, has increased land speculation within the CMCC. Furthermore, there are conflicting land uses - for instance, BDF and BATSUB military training, along with communities developing within the same areas that the soldiers once used.

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<sup>10</sup> Walker, Z. and P. Walker. 2008. Technical Assessment of the Management Capacities of the Maya Mountain Massif.

<sup>11</sup> Arevalo, B. and D. Chan. 2015. Reducing Illegal Trafficking of Timber in the Chiquibul Forest through a Consolidated Bi-national Effort. Friends for Conservation and Development. San Jose Succotz, Belize.

<sup>12</sup> Arevalo, B. and D. Chan. 2015. An Assessment of Xate Populations in the Chiquibul Forest. Friends for Conservation and Development. San Jose Succotz, Belize.

<sup>13</sup> Sabido, O. and E. Green. 2009. Wildland fire management policy and strategy for Belize. The Nature Conservancy and the Forest Department. Belmopan, Belize.

<sup>14</sup> Karper, J. and E. Boles. 2004. Human Impact Mapping of the Mopan and Chiquibul Rivers within Guatemala and Belize With Comments on Riparian Forest Ecology, Conservation and Restoration.

<b>Institutional System</b>	
Low capacity for governance and law enforcement	Challenges exist in operational, technical and administrative capacities. An assessment of current weakness in the Forest Department, as part of their strategic planning process, indicated that weaknesses include limited resources and gaps in technical capacity for sustainable forest management and law enforcement, limited coordinating, cooperation, and communication, and inadequate organizational budgetary allocation. Other threats include political interference through such actions as issuance of licenses, discretionary approval by decision makers, and weak interagency coordination <sup>15</sup> .
Fragmented priorities	Currently, the CMCC has five different, active management organizations in the area. Each of these five agencies largely pursue their individual mandates, with neither mechanisms nor incentives to align and coordinate efforts.
Weak co-management framework	The co-management operational framework provides for the government to enter into co-management agreements with a local NGO, local community or other agency for, among other things, protected areas management, research, and resource mobilization. Currently, protected areas co-management in Belize is done by limited term, non-binding agreements. However, there are no official co-management agreements of this kind in place since all agreements expired in 2017. Furthermore, there are no regulations governing such agreements. Co-managing agencies, such as FCD, are currently operating using a short-term Letter of Consent from the Ministry of Forestry, Fisheries, the Environment and Sustainable Development.
Absence of an integrated collaborative framework	Given the fragmented approach in operationalizing governance in the CMCC, several individual co-management agreements exist between agencies active in the CMCC. This may result in duplication of management activities and underutilization of resources.
Disjointed management approaches	The disjointed nature of management is clearly seen in monitoring and enforcement approaches in the CMCC. Monitoring and enforcement operations by agencies within the CMCC, for instance, are carried out more at the site level with the goal of fulfilling individual agency and protected area objectives. There is limited collaboration and no framework for targeted monitoring and enforcement that would allow for sharing of information and resources.
Weak management planning framework	Presently, two of the four protected areas in the CMCC (MPR and CAR) do not have a management plan in place. In the case of the MPR, a forest management plan exists as part of Pine Lumber Co. Ltd 's long-term forest license. However, this plan only considers sustainable timber management in the concession area, and not overarching ecosystems management for the whole of the MPR.
Limited collaboration with the private sector	Within the CMCC, no apparent private sector collaboration exists that could improve financial sustainability of protected areas in the CMCC. The major constraint to tourism/hotel concessions is the issue of weak legal security of protected areas, with the constant threat of de-reservation and weak co-management tenure <sup>16, 17</sup> . This can affect the attraction of investment, as concession holders typically seek long-term security for their investments <sup>16</sup> .

<sup>15</sup> Forestry Department. 2018. Forest Department Action Plan. Government of Belize - Forest Department. Belmopan. Belize.

## 4.3 Way forward

This initial institutional assessment paints a clear picture of the players, their roles, responsibilities, strengths, and weaknesses in regard to the management of the CMCC region. However, this is only a first step toward a full understanding of the institutional reality. Further in-depth assessments are required to inform the design of an inclusive governance approach with appropriate management arrangements for the long-term implementation of the SDP.

Experiences from management in other protected areas has shown that resistance to change and weak institutional capacity are recurring challenges in achieving overall sustainability. A phased implementation of the SDP – including in the development of its governance structure – is crucial to manage any resistance to change, to allow for lessons to be learned in the early phases, and to ensure a solid foundation for the long-term viability of the area. Therefore, a phased implementation of the governance structure for the SDP is outlined below.

In addition, this approach will allow time to design (or to adapt and apply to the Belizean context) a Public Expenditure Performance Index and Institutional Capacity Index that enable the assessment of entities and sectors within the CMCC area, in terms of their performance, organizational capacity, planning, budgeting, and financial management, among others. The application of such indices in the initial phase will contribute to the design of a long-term governance structure for the next phase, including defining the overarching agency responsible for the administration of resources and, above all, to generate results within the framework of good and inclusive public policy and management. ***The goal for the long term is that the CMCC Protected Landscape governance structure reflects a comprehensive landscape management approach, one that embodies the following key design principles: (i) collaborative, inclusive and polycentric, (ii) deliberate and legitimate, (iii) transparent and accountable, and (iv) multilayered.***

Governance of the CMCC must, in principle and in practice, operate within a sustainable development framework. Such a framework will incorporate the environmental, social, institutional, political, and economic tenets of sustainable development. Further, it will carefully consider trade-offs, with no single dimension taking priority over the other. A useful policy and institutional baseline exists, in the form of existing ecosystem-based approaches to development, protected areas management, tourism, and collaborative and adaptive governance institutions.

There are, however, critical policy and institutional gaps that require strengthening to enable long-term sustainable development of the CMCC. Critically important is the sanctioning and support of the CMCC SDP at the highest level of government. The intent of the following recommendations and phased institutional framework, therefore, is to provide a detailed roadmap for establishing a phased approach to governance that is all-encompassing and supports the implementation of the SDP.

<sup>16</sup> Walker, Z. and P. Walker. 2008. Technical Assessment of the Management Capacities of the Maya Mountain Massif.

<sup>17</sup> Williams, K. 2017. An Assessment of Enabling Environment for Investments in Protected Area in Belize. Ministry of Forestry, Fisheries, the Environment, and Sustainable Development. Government of Belize: Belmopan, Belize.



## *(A) Phased implementation of the SDP*

The phased approach is comprised of two phases: Phase I (short-medium term) and Phase II (long-term). Integral to the success of Phase I is the reclassification of the Chiquibul-Mountain Pine Ridge-Caracol Complex region as a Protected Landscape, as provided by the National Protected Areas System Act. This reclassification will allow the region to:

- maintain a balanced interaction of nature and culture;
- contribute to broad-scale conservation;
- provide opportunities for well-being and socio-economic activity through recreation and tourism, forestry, energy etc.;
- provide natural products and environmental services;
- provide a framework for active involvement by the community in management;
- act as a model of sustainability so that lessons can be learned for wider application.

In doing so, the CMCC Protected Landscape status would allow for the legal designation of a coordinating entity and strengthen the institution to execute its functions. In this case, building on the existing institutional structure, the National Biodiversity Office (NBIO) would have a legal mandate to coordinate and oversee the implementation of the SDP within the CMCC Protected Landscape. The CMCC Protected Landscape would then be managed on the basis of the recommended zones (Figure 13). Therefore, to support implementation of the CMCC SDP in the short-term, an adequate legal and institutional framework is necessary.

In order to provide an enabling environment for management, Phase I also includes building capacity of the coordinating entity, managing institutions, communities, and other actors in biodiversity management. Under a protected landscape approach, people are stewards of the resources, so it is vital that the integration of communities and NGOs be guided by a sound framework to establish their role and involvement in decision making processes. An in-depth assessment will be required to design such a framework. In the interim, an advisory council comprised of the various entities and communities will be established to support the NBIO and to build confidence and trust among the stakeholders. This phase will provide the foundation for achieving the key design principles of landscape governance. In addition, the SDP recommends that further assessments and studies to be conducted in Phase I in order to inform the establishment of a revenue mechanism and communication mechanisms for the area in the long-term. The success of the SDP implementation for the CMCC is conditional on the development of mechanisms that will financially support the CMCC coordinating entity and managing entities to effectively carry out their programs and projects.

In the long-term (Phase II), the governance structure will comprise a legally sanctioned Council or Board of Trustees responsible for the coordination and management of the CMCC Protected Landscape including management of revenue and assets. The entity will be an autonomous body under the Ministry with responsibility for Environment and supported by a secretariat such as NBIO. While the application of this governance structure is novel within the CMCC, similar structures have been applied in the management of Belize's marine protected areas, such as Hol Chan Marine Reserve, as well as in neighboring Mexico and Guatemala. Human, financial and technical assessments conducted in Phase I will be used to test the viability of adapting this approach and detailing the steps for implementation.

Overall, these changes will facilitate achieving the goal for an inclusive landscape governance structure for the consolidated CMCC Protected Landscape in the long-term. The success of the phased approach at the CMCC Protected Landscape level will provide an opportunity to pilot a governance approach that could be applied in the management of Belize's protected areas system.

## *(B) Institutional framework*

The following recommendations reflect the necessary strategic steps required to accomplish governance at each phase of the SDP's implementation.

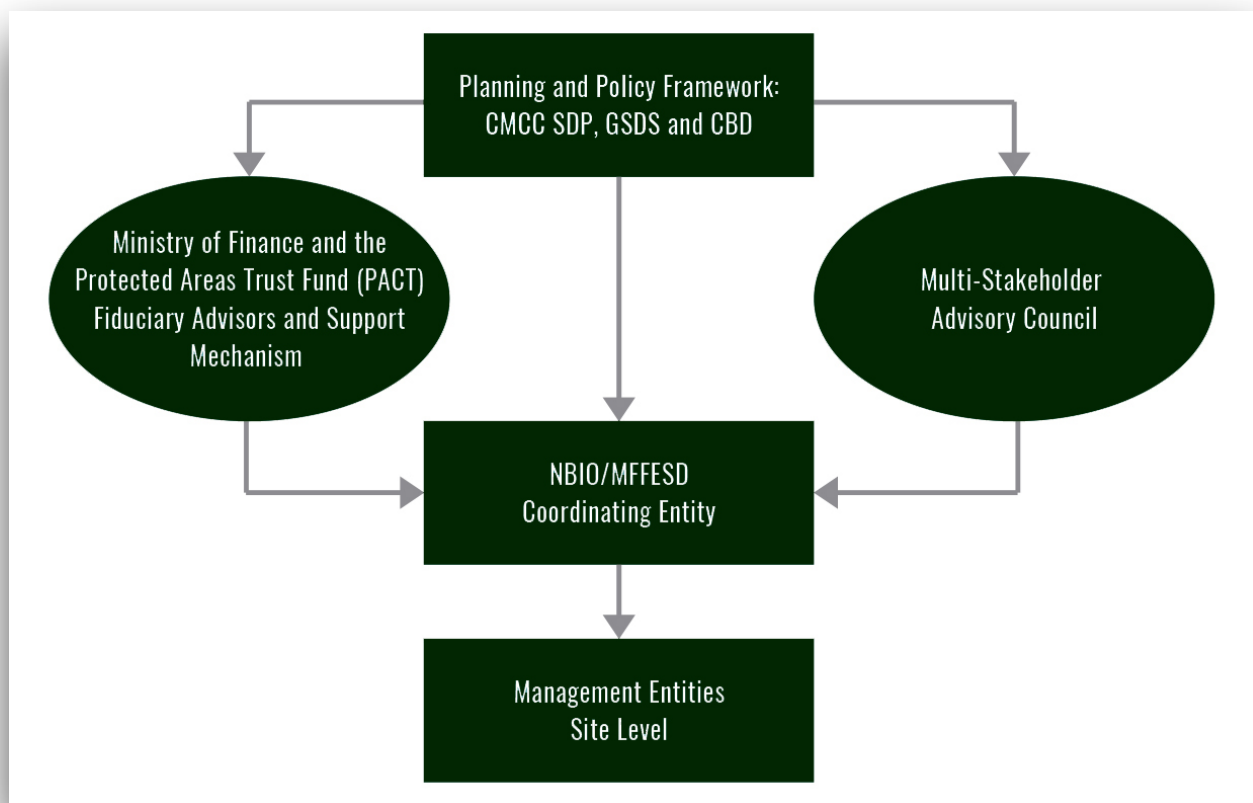


### **Phase I: Short-term to medium-term institutional framework**

The National Biodiversity Office (NBO) within the Ministry of Fisheries, Forestry, Environment, and Sustainable Development was recently established to regulate and manage non-extractive protected areas and conservation of biodiversity resources, and to serve as the government agency responsible for implementation of government's policies, plans and commitments relating to biodiversity and protected areas. While NBO has the mandate for system level management of non-extractive protected areas, site level management of other categorizations of protected areas within the CMCC remains under the respective managing entities: Forest Department, NICH, and FCD, as designed by law and co-management agreements, respectively. Therefore, in Phase I, the managing entities will liaise with the coordinating entity to ensure proper collaboration and alignment to the SDP.

As part of the vision for governance within the area, the work of the NBO and managing entities will be guided by a multi-stakeholder advisory council comprised of members from the public sector, private sector and civil society including communities. The responsibilities of the ad honorem council will be to: (i) promote and foster collaboration in the conservation and management of the areas; (ii) plan, conduct, and enforce the SDP for the CMCC; (iii) advise and support the coordination of activities and resources, and (iv) monitor execution of the SDP. The financial management of resources will be guided and supported by fiduciary advisors such as Ministry of Finance and Protected Areas Trust Fund (PACT). The below figure highlights the collaborative governance structure for the implementation of the SDP in the short term. A summary of the roles and responsibilities for the various stakeholders and levels of governance during Phase I of the SDP implementation is presented in Table 6.

Phase I will set the foundation for a long-term governance structure for the CMCC Protected Landscape. During this phase, a capacity assessment (human, financial and technical resources) of the respective entities in the overall governance structure (Figure 15) will be carried out in order to identify areas where capacity must be strengthened for these agencies to fulfill their roles within sustainable development of the CMCC Protected Landscape.



**Figure 15.** Governance structure for Phase I of the CMCC SDP implementation.



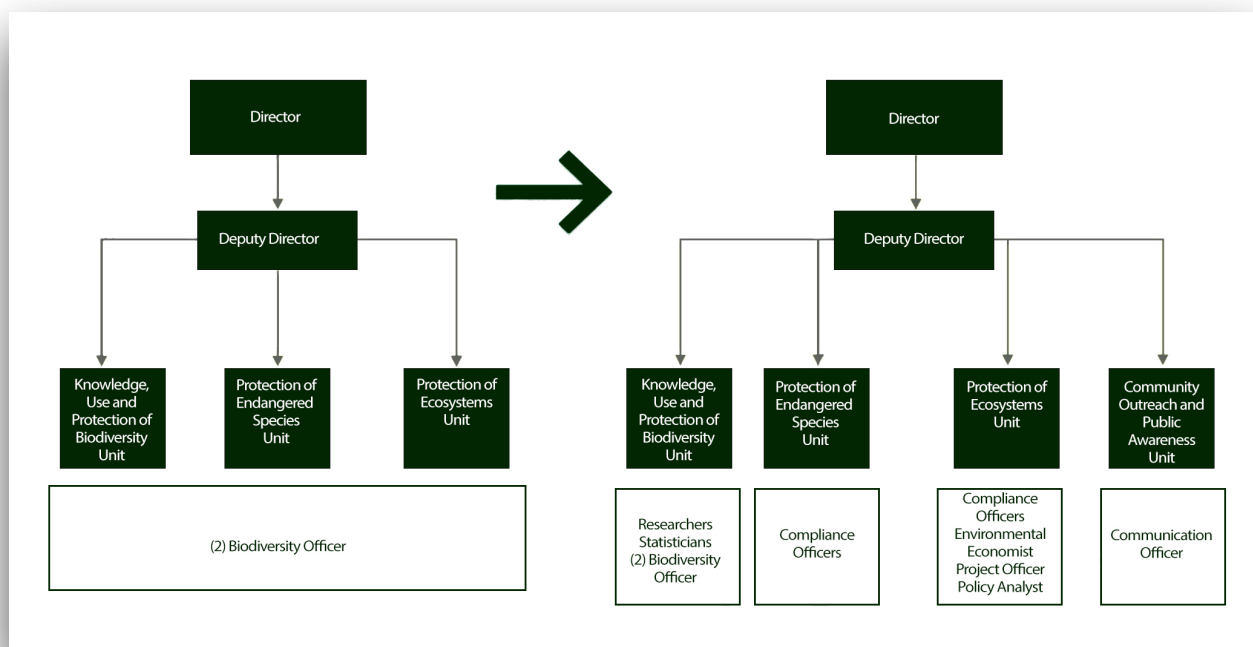
**Table 6.** Key stakeholders, roles and responsibilities in Phase I of the SDP institutional framework.

Stakeholder(s)	Role	Responsibilities	Legal Framework
National Biodiversity Officer/Ministry of Fisheries, Forestry, Environment and Sustainable Development	Coordinating Entity	Responsible for acting as the project's champion and coordinating the implementation of the plan. It includes maintaining consistent communication with implementing ministries and agencies, managing entities and communities. Coordinate with the ministries and agencies progress reporting. Along with the fiduciary advisors, provide advice on financial mechanisms and opportunities for implementation of the activities by each respective entity.	Amendment of the NPAS 2015 and designation of the protected areas into CMCC Protected Landscape will provide the NBIO with the legal mandate to execute its functions.
Economic Development Council, Ministry of Economic Development, Ministry of Tourism and Civil Aviation, Ministry of Natural Resources, Forestry Department, Ministry of National Security, Ministry of Trade, Investment and Commerce, Ministry of Agriculture, Ministry of Culture, Department of the Environment, Academia, Ministry of Labour, Local Government and Rural Development, Private Sector Association, Protected Areas Management Representatives, Community Representatives/NAVCO	Advisory Council	Responsible to provide strategic and policy direction to the Coordinating Entity to ensure the activities being executed are aligned with the plan. The advisory council will monitor the implementation of the plan through timely reporting and meetings. They will deal with issues and risks that have implications for the various activities, make binding decisions on cross-cutting issues to balance conflicting priorities against available resources. It will also form a platform for respective agencies to report on the progress of implementing assigned activities under the plan.	The specific role and responsibility for each respective entity will reflect its respective legal mandate and area of expertise.
Ministry of Finance and Protected Areas Trust Fund	Fiduciary Advisors	Responsible for providing advice and assisting the coordinating entity in resource mobilization.	Finance and Audit Act, Chapter 15 of the Substantive Laws of Belize, Revised Edition 2011, Protected Areas Conservation Trust Act
Friends for Conservation and Development, National Institute for Culture and History, Forestry Department, Private Concessionaires	Management Entities (Site Level)	Responsible for site level regulation and management within the CMCC Protected Landscape and coordination with NBIO.	National Institute of Culture and History Act, Chapter 331 of the Substantive Laws of Belize, Revised Edition 2011, Forest Act, Chapter 213 of the Substantive Laws of Belize, Revised Edition 2011, as amended by Act No. 17 of 2017

Further to the above table, NBIO's roles and responsibilities as the coordinating entity include:

- Policy and Strategic Planning
- Oversight and Enforcement at the CMCC Landscape/Corridor Level
- Public Awareness and Community Outreach
- Resource Mobilization

In order for NBIO to accomplish its function as the coordinating entity for the SDP, the strengthening of its current institutional governance structure would be required (Figure 16). It will entail the revision of the current legislative framework and additional human and financial resources. The NBIO is currently staffed with a Director, Deputy Director, two Biodiversity Officers and a Secretary, all reallocated from within the Ministry of Fisheries, Forestry, Environment and Sustainable Development.



**Figure 16.** Strengthening of NBIO's governance structure.

Therefore, phase I coordination of the CMCC SDP depends on the following key activities:

- i. **Institutional Strengthening of NBIO:** Considering NBIO's current expertise and challenges, it is necessary to institutionalize the unit into the public service and equip the team with a communication officer and project officer in order to streamline the short-term activities identified in the SDP. In the long-term, based on the capacity assessment, additional staff such as compliance officers and an environmental economist might be required to conduct monitoring and enforcing, and policy and strategic planning, respectively.
- ii. **Capacity Development:** Strengthen the capacity of managing entities and communities in biodiversity management. This also includes technical capacity training for NBIO personnel. NBIO should consider partnerships with local and international education institutions to build its capacity in research and data management.
- iii. **Resource Mobilization:** The SDP will require the allocation of financial resources by the Ministry of Finance to support the short-term activities under each respective ministry. It is recommended that provisions be made to provide the coordinating entity with a project budget for the coordination of the SDP. The overall success and implementation of the SDP requires a sound financial and resource mobilization plan. The BIOFIN Biodiversity Finance Plan can inform site level plans for the CMCC.
- iv. **Communication Mechanism:** Given the cross-section of activities recommended in the SDP, it is important that all relevant stakeholders are kept engaged. Therefore, it is vital that a communication strategy along with appropriate mechanisms—such as the advisory council—be enacted immediately. A communication officer instituted at NBIO is critical to build and sustain the momentum and interest from stakeholders resulting from the various engagements throughout the course of SDP development.



Specific policy recommendations to ensure the success of Phase I of the governance approach include:

1. Cabinet Directive to replace the current separate Protected Area designations and establish a single CMCC Protected Landscape designation through the passage of an Order under the National Protected Areas System Act of 2015. This is consistent with a previous policy decision from 2015 to adopt the rationalization report for the Protected Areas system, which calls for the consolidation and re-designation of the CMCC area into a single unit. A Statutory Instrument will be necessary to create the governance, administration and management framework to apply to the new area. This will empower the existing institutions such as the NICH, the Forest Department, NBIO, FCD and others to form a council charged with semi-autonomous oversight of the area. A secretariat, in this case NBIO, will be assigned the coordinating function in support of the council under the regulations.
  2. Cabinet Directive assigning the National Biodiversity Office (NBIO) under the Ministry of Fisheries, Forestry, Environment and Sustainable Development as the overall coordinating entity for the phased implementation of the SDP. The following will formalize the institutionalization of the NBIO:
    - Formalization and empowerment of the National Biodiversity Office's legal mandate for conservation protected areas through a short amendment of the National Protected Areas System Act #7 of 2015. Drafting notes have already been prepared.
    - Institutionalization of the National Biodiversity Office structure into the Government of Belize Public Service.
    - Instructions for the Ministry of Finance to on an annual basis identify and allocate supplementary resources for the NBIO to oversee the implementation of the SDP.
1. Cabinet Directive, separately or as part of (1) above, should also outline:
- Instructions for the Ministry of Natural Resources to conduct a comprehensive assessment of land tenure within the CMCC Protected Landscape.
  - A prohibition on land de-reservation, future sales and land-transfers of **public lands** within the CMCC Protected Landscape.
  - Institutionalization of the zoning scheme proposed within the SDP, including a special management area designation under the Lands Act for the area outside the CMCC.
  - Enforcement of the National Protected Areas System Act #7 of 2015 which prohibits extractive activities such as mining for minerals and oil exploration within National Parks found within the CMCC Landscape/Corridor. The Ministry of Natural Resources (Mining Unit) along with NBIO will establish environmentally sound standards and a monitoring program for exploratory (research) licenses. This can include restoration fees to restore impacted ecosystems to their original state. of legal instruments at the site and system level.

2. Development of a sound legal and policy framework to guide biodiversity management in the CMCC Landscape/Corridor. This will provide for harmonization of legal instruments at the site and system level.
3. Development of an integrated financial strategy and resource mobilization plan for the CMCC.
  - Drawing from the current ongoing work by the Ministry responsible for the Environment and the Protected Areas Conservation Trust (PACT), outline a public-private partnership (PPP) framework to allow for increased private sector participation in sustainable development of the CMCC.
4. In order to support the long-term implementation of the SDP, conduct further assessments to strengthen the Governance of the CMCC via a mix/collaborative approach:
  - Conduct an assessment to establish a guiding framework for community participation
  - Conduct an institutional capacity assessment of the entities within the CMCC
  - NBIO, in partnership with the Ministry of Labour, Local Government and Rural Development, will support capacity development for the communities to empower their management and benefit sharing at the site and system level.

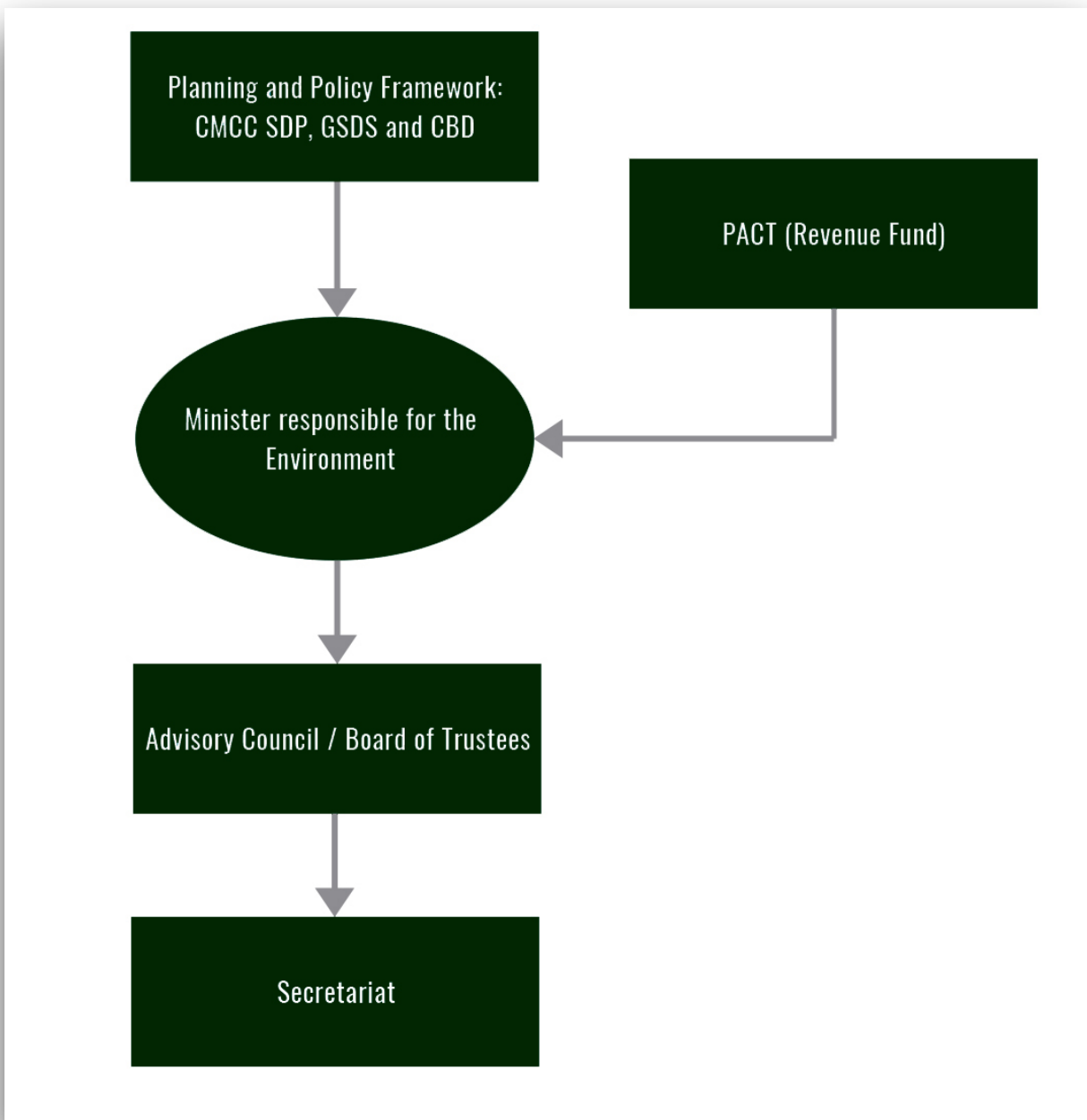


## **Phase II: Long-term institutional framework**

Building on the foundation created in Phase I, the governance structure for the CMCC Protected Landscape will comprise a legally sanctioned Council or Board of Trustees responsible for the coordination and management of the CMCC Protected Landscape, including management of revenue and assets. In essence, it will be the transition of the *ad honorem* advisory council established in Phase I into a legal entity under the Ministry responsible for Environment. The body will then have the authority to manage and coordinate the activities within the CMCC. Similar to other entities in the region, the council will be given the responsibility to:

- Administer financial and human resource within the area;
- Prepare and adapt management programs;
- Construct/manage infrastructure within the CMCC;
- Partner with academic and research institutions, communities and non-governmental organizations in the administration of resources; and
- Promote a landscape management system.

This autonomous body will be supported by a secretariat such as NBIO and leverage PACT to function as the fiduciary arm. The finalization of the overall governance structure (Figure 17) will be informed by the studies conducted in Phase I.



**Figure 17.** Proposed long-term governance structure for the CMCC Protected Landscape



## Summary of policy and governance recommendations

In order to provide an enabling environment for the initial and long-term governance approach within the CMCC, the following are specific policy recommendations:

- Cabinet Directive to replace the current separate Protected Area designations and to establish a single CMCC Protected Landscape designation through the passage of an Order under the National Protected Areas System Act of 2015. A Statutory Instrument will also be necessary to create the governance, administration and management framework to apply to the new area.
- Cabinet Directive, separately or as part of the above, should also outline:
  - A comprehensive land tenure assessment
  - A prohibition on land de-reservation, future sales and land-transfers of **public lands** within the CMCC Protected Landscape
  - Institutionalization of the recommended zoning scheme, including a special management area designation under the Lands Act for the area outside the CMCC
  - Enforcement of the National Protected Areas System Act #7 of 2015 which prohibits extractive activities within National Parks in the CMCC.
- Cabinet Directive assigning the National Biodiversity Office (NBIO) under the Ministry of Fisheries, Forestry, Environment and Sustainable Development as the overall coordinating entity for the phased implementation of the SDP. This includes formalization and empowerment of NBIO's legal mandate, institutionalization of NBIO into the GoB Public Service, and allocation of resources.
- Development of a sound legal and policy framework to guide biodiversity management.
- Development of an integrated financial strategy and resource mobilization plan for the CMCC, drawing on ongoing work through PACT to outline a public-private partnership framework that allows for increased private sector participation.
- Conduct assessments of community and institutional capacity to strengthen collaborative governance, establish a framework for community participation, and to empower communities to manage and share benefits of the CMCC at the site and system level.

These policy interventions will ensure that all stakeholders have an active and equal role in participation and decision making for the CMCC Protected Landscape. ***The successful landscape governance of the CMCC region will embody the following key design principles of governance: (i) collaborative, inclusive and polycentric, (ii) deliberate and legitimate, (iii) transparent and accountable, and (iv) multilayered.***

## 5. Conclusion



## 5. Conclusion

This SDP for the Chiquibul-Mountain Pine Ridge-Caracol Complex Region has been informed by extensive public consultations and designed to ensure a stakeholder-led process. In it, communities, policy makers, businesses, and leaders have shared their vision for the future of the region.

The SDP has been designed according to an ecosystem-services approach that addresses the crucial link between economic development, biodiversity conservation and the sustainable management of natural resources providing multiple benefits.

It provides an actionable management plan to guide the sustainable development of the area for both its people and its environment, founded on the six key pillars identified by stakeholders as the most important issues to be addressed.

Through three strategic stages (up to 2025, up to 2030, and up to 2035) and the implementation of multiple recommendations regarding activities in different sectors, this SDP reshapes the CMCC region to a place that contributes to a nature-based economy, providing opportunities for Belizean communities to live healthy and productive lives, protecting cultural heritage, and preserving the natural capital and environmental resources that are the basis for economic prosperity.

Despite some both negative and positive environmental impacts, the vision laid out by this SDP will bring substantial socio-economic benefits to the communities in the CMCC region, providing a strong basis for improving growth, incomes, employment, education, health and livelihoods.

An SDP interactive web viewer is available for users to explore the development activities recommended for the CMCC region, the results of the ecosystem services modeling, and related data. Users may also download publicly available spatial data sets used in the preparation of the SDP as well as the project interim report that details modeling inputs and results. Visit the viewer at <http://viz.naturalcapitalproject.stanford.edu/caracol/>.





Photo: Tony Rath Photography/tonyrath.com



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