

BELIZE'S 2016 - 2020

NBSAP

NATIONAL BIODIVERSITY STRATEGY & ACTION PLAN



NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN (2016 – 2020), BELIZE



BELIZE'S NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN BELIZE FOREST DEPARTMENT, MINISTRY OF AGRICULTURE, FORESTRY, FISHERIES, THE ENVIRONMENT AND SUSTAINABLE DEVELOPMENT, BELIZE

We thank all those, both Government and non-government, who participated in regional and national workshops, in focal group meetings across Belize, and in the review and revision process.

NATURE . CULTURE . LIFE

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A Vision for Biodiversity in Belize

**“Belize’s natural environment is
valued, enhanced and enjoyed
by all, and contributes to
improving the quality of life of
its people.”**

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ABBREVIATIONS AND ACRONYMS

ALIDES	Alliance for the Sustainable Development of Central America
APAMO	Association of Protected Area Management Organizations
ASC	Aquaculture Stewardship Council
BAS	Belize Audubon Society
BFD	Belize Fisheries Department
BiO	Biodiversity Office (proposed)
BIOFIN	Biodiversity Finance Initiative
BNCCC	Belize National Climate Change Committee
BSGA	Belize Shrimp Growers Association
BSWaMA	Belize Solid Waste Management Authority
BTIA	Belize Tourism Industry Association
BTB	Belize Tourism Board
CARICOM	Caribbean Community
CBD	Convention on Biological Diversity
CBO	Community Based Organization
CCAD	Central American Commission for Environment and Development
CCCCC	Caribbean Community Climate Change Centre
CEO	Chief Executive Officer
CFO	Chief Forest Officer
CFU	Capture Fisheries Unit
CITES	Convention on International Trade in Endangered Species
CLA	Crown Lands Act
CSF	Critical Success Factor (GSDS)
CSFI	Corozal Sustainable Future Initiative
CZMAI	Coastal Zone Management Authority & Institute
DOE	Department of the Environment
EIA	Environmental Impact Assessment
ECP	Environmental Compliance Plan
EPA	Environment Protection Act
ERI	Environmental Research Institute
EU	European Union
FCD	Friends for Conservation and Development
FCPF	Forest Carbon Partnership Facility
FD	Forest Department
GCCA	Global Climate Change Alliance
GEF	Global Environmental Facility
GIS	Geographic Information System
GOB	Government of Belize
GSDS	Growth and Sustainable Development Strategy
IBA	Important Bird Area
ICZMP	Integrated Coastal Zone Management Plan
IDB	Inter-American Development Bank
IGO	International Governmental Organization
IPCC	Inter-Governmental Panel on Climate Change
IPM	Integrated Pest Management
ISCR	Institute for Social and Cultural Research
IWRMP	Integrated Water Resource Management Programme
KBA	Key Biodiversity Areas
LIC	Land Information Centre

LUA	Land Subdivision and Utilization Authority
MA	Managed Access
MCCA	Marine Conservation and Climate Adaptation
MDG	Millennium Development Goal
MESTPU	Ministry of Energy, Science and Technology and Public Utilities
MED	Ministry of Economic Development
MAFFESD	Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development
MESTPU	Ministry of Energy, Science and Technology and Public Utilities
MNRI	Ministry of Natural Resources and Immigration
MoFED	Ministry of Finance and Economic Development
MPA	Marine Protected Area
NBMP	National Biodiversity Monitoring Program
NBSAP	National Biodiversity Strategy and Action Plan
NCCO	National Climate Change Office
NCCPSAP	National Climate Change Policy, Strategy and Action Plan
NCD	Nationally Determined Contribution (climate change reduction)
NCRIP	National Climate Resilience Investment Plan
NEAP	National Environmental Action Plan
NEMO	National Emergency Management Organization
NGO	Non-Governmental Organization
NHDAC	National Human Development Advisory Committee
NICH	National Institute for Culture and History
NIWRA	National integrated Water Resources Act
NLA	National Lands Act
NPAS	National Protected Areas System
NPAS	National Protected Areas System
NPAPSP	National Protected Areas Policy and System Plan
NPASP	National Protected Areas System Plan
NPESAP	National Poverty Elimination Strategy and Action Plan
NSTDP	National Sustainable Tourism Development Plan
PA	Protected Area
PACT	Protected Areas Conservation Trust
PCB	Pesticides Control Board
PfB	Programme for Belize
POP	Persistent Organic Phosphates
SACD	Sarteneja Alliance for Conservation and Development
SEA	Southern Environmental Association
SI	Statutory Instrument
SIDS	Small Island Developing States
SDG	Sustainable Development Goal
SICA	Sistema de la Integración Centroamericana
SOPA	Status of Protected Areas report
SPAW	Specially Protected Areas and Wildlife
TIDE	Toledo Institute for Development and Environment
UB	University of Belize
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
WWC	Wildlife Conservation Society
WWF	World Wildlife Fund



FOREWORD

Dr. Omar Figueroa


Minister of State in the Ministry of Agriculture,
Fisheries, Forestry, the Environment, Sustainable
Development & Immigration

As the Minister of State in the Ministry of Agriculture, Fisheries, Forestry, the Environment, Sustainable Development & Immigration, it gives me great pleasure to present to you our formally endorsed National Biodiversity Strategy and Action Plan. This plan serves as an instrument for government and our multiple stakeholders, who actively and indirectly participate, in the implementation of our national biodiversity targets. This plan is part of Belize's commitments to the Convention of Biological Diversity (CBD). Belize's NBSAP is aligned to our Growth and Sustainable Development Strategy which brings to the forefront the role of biodiversity in achieving sustainable growth. It is based on the principle that the sustainable use of the nation's biological resources is outlined as a critical success factor in truly achieving sustainable development and maintaining the goods and services essential for safeguarding a healthy and productive people.

We as a people are proud that our rich and biodiverse natural capital, found within and outside of protected areas, serve as a major driver of the Belizean economy. It is known that our 39 watersheds provide water security for the entire population of Belize. They also provide hydro-electrical power, and natural resources such as timber and non-timber forest products. Key ecosystem services also include flood protection and buffering from climate change impacts. While many countries undertake forest restoration measures Belize continues to hold more than 60% of our national territory under forest cover and maintain a healthy reef which form a significant component of the Mesoamerican Barrier Reef system.

Without a doubt these accomplishments have not been achieved single handily. I take this opportunity to thank the NBSAP development team, the UNDP and the GEF for the resources and hard work, our stakeholders who participated in the development of the NBSAP, but even more so I thank on behalf of the Government of Belize, the many partners both national and international who have thus far partnered with us in achieving our biodiversity targets.

Our work however is not done... many national and global targets are yet to be met... Through the adoption of the NBSAP, commitment has been made by our government to achieve our biodiversity targets by 2020. The Government of Belize also remains committed to seeking innovative funding solutions and promoting good governance for the integrated management of Belize's biological resources.

A handwritten signature in black ink, reading "Omar Figueroa", written over a horizontal line.

DR. OMAR FIGUEROA

Minister of State - Ministry of Agriculture, Fisheries, Forestry, the Environment, Sustainable Development & Immigration

EXECUTIVE SUMMARY

Belize's national development framework, Horizon 2030, and its third phase, shorter term Growth and Sustainable Development Strategy (GSDS), recognize the importance of the environment for maintaining health and quality of life in Belize and the need for strengthening environmental protection. The GSDS places the environment as one of four Critical Success Factors - CSF3: Sustained or Improved Health of Natural, Environmental, Historical and Cultural Assets. CSF3 - "Sustained or Improved Health of Natural, Environmental, Historical and Cultural Assets" is considered vital for achieving national development, integrating the environment, biodiversity, and ecosystem health more firmly into national development goals, to be achieved through implementation of this National Biodiversity Strategy and Action Plan. Implementation of the NBSAP is considered crucial for achieving not only CFS3, but also CSF1 (Optimal National Income and Investment), CSF2 (Enhanced Social Cohesion and Resilience) and CSF4 (Enhanced governance and citizen security). The integrated management of our natural capital as expressed through the wealth of biological diversity is a central pillar of the economy, of social well-being and promotes good transparent governance. The GSDS also recognizes that biodiversity has intrinsic value in and of itself, and that "Belize's natural assets contribute to a sense of national identity, and their unique characteristics contribute to the profile of Belize in the international community."

The National Biodiversity Strategy and Action Plan (NBSAP) is a five year plan set within a fifteen year framework (aligning with the Horizon 2030 national development framework), and is designed to achieve the national Vision, through five thematic areas:

NBSAP VISION

Belize's natural environment is valued, enhanced and enjoyed by all, and contributes to improving the quality of life of its people.

THEMATIC AREAS

- A. Mainstreaming
- B. Reducing Pressures
- C. Protection
- D. Benefits
- E. Implementation

Each of the five thematic areas is broken down into measurable targets and actions that provide a strategic focus for collaborative efforts towards the NBSAP Vision.

As the National Focal Point for the Convention on Biological Diversity (CBD), the Forest Department, under the Ministry of Agriculture, Fisheries, Forestry, the Environment and Sustainable Development (MAFFESD) holds responsibility for the mainstreaming and coordinated implementation of this NBSAP, through the proposed establishment of the Biodiversity Office (BiO).

As a signatory of the Convention on Biological Diversity (CBD) (the global framework for the protection and wise use of biodiversity), Belize also has a commitment to ensuring that the National Biodiversity Strategy and Action Plan covers:

- conservation of biological diversity
- sustainable use of the components of biological diversity
- fair and equitable sharing of the benefits arising from the utilization of genetic resources.

The NBSAP itself is a national instrument, providing a road map to guide not just the Government of Belize, but all stakeholders in joint implementation.

CONTEXT

The Plan, together with the supporting Belize National Stocktaking and Target Setting Report (GoB, 2015), documents the current status of biodiversity in Belize, identifies the threats and underlying drivers of biodiversity loss, and presents the strategies required for reducing pressures, safeguarding ecosystems, ecosystem services and species, and improving benefits for the people of Belize.

Belize, recognized as part of the Mesoamerican biodiversity hotspot, was founded on its biodiversity wealth, and it is this natural capital that continues to support today's economy. Belize has largely met global protection targets for almost all ecosystems, maintaining the majority as viable, functioning systems, with identification of required actions for those that are under-represented.

Key ecosystem services include water security, tropical storm and flood protection, provision of natural resources (timber and non-timber forest products, fisheries products), support for tourism, hydroelectric power and other benefits. These are currently largely intact and functional, and the natural resource-dependent primary sectors (fishing, agriculture, and forestry) support livelihoods across Belize. The importance of Belize's wetlands is reflected in the declaration of two RAMSAR sites - Crooked Tree Wildlife Sanctuary and Starstoon Temash National Park, providing critical protection for wetland ecosystems, species and ecosystem services. The protected areas of the Maya Mountains Massif, including Belize's primary Key Biodiversity Area (KBA), are particularly important in protecting the headwaters of fourteen watersheds — the majority of Belize's River systems, providing water security for people across 55% of the total land mass of Belize.

The reefs of Belize form a significant component of the Mesoamerican Barrier Reef. Their unique values and importance are recognized through the designation of seven of Belize's marine protected areas as a serial World Heritage Site – the Belize Barrier Reef Reserve System. This vibrant, biodiversity-rich ecosystem is a valuable resource for traditional fishing communities and Belize's marine-based tourism industry, supporting more than 50% of the Belize population, either directly or indirectly.

Belize harbors a total of 118 globally threatened species (9 critically endangered, 32 endangered and 77 Vulnerable) and a further 62 near threatened / of least concern (IUCN, 2016). Of these, the critically endangered Central American River turtle ("hicatee") is considered at highest risk of local extinction. Two species of sawfish (the small tooth and large tooth sawfish) are considered ecologically (if not completely) extirpated from Belize in the last 30 to 40 years, primarily as a result of unregulated use of gill nets.

Belize's economy is tightly linked to its natural resources. The primary sector — the agricultural, fishing and logging industries — contributed 16% to the national economy in 2014. The tourism industry is also highly dependent on the status of the natural and cultural resources — the reef, the national protected areas and the archaeological sites. It is the number one foreign exchange earner, with direct tourism expenditure in Belize exceeding Bz\$510 million in 2015 – 14.7% of the total GDP.

CAUSES OF BIODIVERSITY LOSS	
Pressures and Threats to Biodiversity and Ecosystems	
<ul style="list-style-type: none"> ▪ Land use change (including deforestation, forest fragmentation, clearance of mangroves, filling of wetlands) ▪ Climate change ▪ Unsustainable exploitation of natural resources (fishing, hunting, logging / non-timber forest products, illegal wildlife trade) ▪ Pollution (agrochemicals, industrial / urban effluent, solid waste, sewage, sedimentation) ▪ Anthropogenic fires ▪ Invasive species ▪ Unsustainable Tourism Practices (exceeding guide/visitor ratios, exceeding limits of acceptable change, poor boating practices, illegal wildlife interactions, negative impacts from large scale cruise ship tourism) ▪ Transboundary incursions (both terrestrial and marine; Guatemala, Honduras and Mexico) ▪ Natural disasters (hurricanes, earthquakes) 	
Direct Drivers	Indirect Drivers
<ul style="list-style-type: none"> ▪ Market demand ▪ Conflicting Government sector-specific policies ▪ Government incentives ▪ Livelihood diversification ▪ Culture / tradition ▪ Limited capacity for effective enforcement ▪ Household needs (food, water, shelter, income) 	<ul style="list-style-type: none"> ▪ National policies for economic growth ▪ National poverty alleviation strategies ▪ National and international market demand ▪ Delay in implementation of national frameworks ▪ Inadequate national investment in natural resource management ▪ Porous border ▪ Culture / tradition ▪ Poverty

The current highest rating terrestrial pressure is land use change, with a deforestation rate approaching 1% for the 2013-2014 period as the human footprint expands (Cherrington, 2014). Deforestation is driven primarily by agricultural expansion, and is not yet guided by an integrated national land use plan, resulting in fragmentation of key forest corridors and loss of critical ecosystems. Climate change is also identified as one of the highest rating pressures, though with longer term implications. Short term impacts are already being experienced, with reduced reef health, increased droughts and unseasonal rainfall, and more frequent tropical storms. The combined impacts of unplanned land use change and climate change will be significant in the future, affecting not only biodiversity, but also water security, health and risk to life.

THE NATIONAL BIODIVERSITY ACTION PLAN

The National Biodiversity Strategy and Action Plan is based on Belize's commitment to the conservation and sustainable development of national biological diversity. The Action Plan is focused on achieving the national NBSAP vision, based on fifteen guiding principles grouped under four areas — respect, responsibility, environmental context and commitment.



The Strategy framework consists of five NBSAP Goals (relating to Mainstreaming, Reducing Pressures, Protection, Benefits and Implementation), with a series of national targets identified under each Goal. The targets are linked to actions — the strategic actions required to achieve the Target — which are then broken down into activities. Each activity is linked to relevant indicators for measuring success of output and outcomes, and both lead agencies and supporting agencies are identified for taking responsibility for implementation of the actions and activities. Synergies are identified for mainstreaming implementation of the NBSAP, with the identification of relevant national legislations, policies and plans with similar objectives. A time frame per target for implementation is also suggested — for longer reaching actions this, in some cases, extends beyond the five year time frame of the Plan, but remains within the longer term time frame of Horizon 2030.

NBSAP IMPLEMENTATION PLAN

The Implementation Plan focuses on identifying capacity development needs for ensuring effective implementation of the National Biodiversity Action Plan: communication and outreach strategies, and resource mobilization.

Capacity Development: Belize has been building capacity since the development of the first NBSAP in 1998 - improving the management framework for natural resource management, increasing the number and capacity of technical staff, and strengthening collaborative partnerships between government departments and ministries, private sector and civil society. Through the 2016 NBSAP planning process, it was recognized that Belize needs to further strengthen in-country capacities at individual, institutional and systematic levels for the effective implementation of the NBSAP. Some of the capacity gaps have been identified under the GSDS, and other target-specific capacity building or training needs have been identified through the NBSAP revision process.

Communication and Outreach: The Communication and Outreach Strategy Framework, (NBSAP Strategy A4.1) will be a living document, to be modified



and updated at regular intervals throughout the implementation period (2016 - 2020). A number of other NBSAP strategies are also supported by specific communication, outreach and education activities, designed to build awareness, and will need to be integrated into the Communication and Outreach Strategy Framework as it is developed. One of these is the re-establishment of the national Clearing House Mechanism (CHM) through which information can be accumulated, organized and disseminated to the stakeholder community and the general public.

Resource Mobilization: The NBSAP will require focused and broad-reaching financial mechanisms in order to allow effective implementation of the actions and the achievement of the targets. The National Protected Areas System is the primary mechanism used by Belize for biodiversity conservation, and is supported through a variety of funding mechanisms including grants from the Protected Areas Conservation Trust (PACT), Debt-for-Nature agreement, revenue generated directly by the protected areas themselves, and funds leveraged by protected area co-management agencies. There is a strong reliance on international funding. A number of other options are being explored...primarily REDD+ and GCF, and Belize is positioning itself to be able to access these international, climate-change related funding lines.

A comprehensive review of financial needs and current expenditure in Belize is being carried out through the BIOFIN Initiative, being implemented in Belize from 2016 – 2017. This provides a structure for estimation of the full costs of implementing each of the biodiversity strategies within the revised NBSAP. It also identifies biodiversity finance actors, (individuals, groups or other entities that could potentially provide funding for biodiversity objectives and finance mechanisms [instruments or tools that enable potential revenue to be captured]).

INSTITUTIONAL MONITORING AND REPORTING

National Coordination Structure: Implementation of the NBSAP is the joint responsibility of all people in Belize, from the Government of Belize to private sector, research institutions, education institutions and civil society. The NBSAP forms a road map to be followed by all partners — but for implementation to be effective, significant coordination between all actors will be required. The establishment of the Biodiversity Office (BiO), to be housed in the Forest Department, will provide the coordination required to implement the NBSAP, working in close communication and collaboration with the Belize Fisheries Department, the National Climate Change Office and PACT, through the National Protected Areas Technical Committee.

Clearing House Mechanism: Belize is in the first stages of re-establishing its

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web-based national Clearing-House Mechanism (CHM) as a mechanism to support implementation of Belize’s responsibilities under the CBD, and to increase accessibility to Belize’s information network of electronic and non-electronic biodiversity-related media. The CHM is being established under the CHM Focal Point, the Forest Department, and is based on an understanding of the needs of collaborating ministries, NGO and CBO partners and special interest-groups.

Monitoring and Evaluation: Progress towards the targets will be tracked through robust, integrated and regular monitoring and evaluation. Measures of success have been built into the NBSAP framework, with indicators for both outputs and outcomes identified for each target. The National Biodiversity Monitoring Programme (NBMP) has been developed through the University of Belize - Environmental Research Institute to improve standardized and systematic monitoring of biodiversity indicators to inform national decision making and has been aligned with the Aichi Targets for measuring progress and contribution towards global goals. The NBMP provides a solid foundation for the development of a measures of success monitoring framework for NBSAP implementation and outcomes, based on the status of biodiversity.

This National Biodiversity Strategy and Action Plan has evolved through a participatory process that has been all-inclusive, from farmers to fishermen, NGOs and civil society, business, tourism and agricultural sectors, teachers, women and youths, and across Government. This touches all our lives — the provision of water and other ecosystem services for people, agriculture and industry, the wise use of our forests, wetlands and marine resources, the strengthening of our resilience to climate change, the need for increased sustainability of our agriculture and reduced impacts on the environment. Through the NBSAP, we need to ensure that we, as a nation, can balance our natural resource use and sustainable development goals over the next 5 years, and the years that follow.

NBSAP GOALS AND TARGETS



MAINSTREAMING

GOAL A: Improved environmental stewardship is demonstrated across all society in Belize, as is an understanding and appreciation of marine, freshwater and terrestrial biodiversity, their benefits and values.

Key to effective implementation of the National Biodiversity Strategy and Action Plan. Positive behavior change can only be achieved through fostering an understanding and appreciation of biodiversity, its benefits and values at all levels of society.

TARGET A1. By 2020, a framework has been designed and adopted to guide the harmonization of policies that positively impact biodiversity, across all Government departments.

TARGET A2. By 2020, Belize has legislated and implemented a national harmonized system of environmental standards and incentives that promote environmental responsibility and sustainability.

TARGET A3. By 2020, 100% of relevant national development decisions in Belize take into consideration ecosystem services and biodiversity relevance to the national economy.

TARGET A4. By 2020, 100% of relevant Government, 75% of civil society and 50% of the general public in Belize have increased awareness and appreciation of biodiversity and demonstrate active good stewardship.

REDUCING PRESSURES / SUSTAINABLE USE

GOAL B: Direct and indirect pressures on Belize's marine, freshwater and terrestrial ecosystems are reduced to sustain and enhance national biodiversity and ecosystem services.

Belize recognizes the importance of reducing direct and indirect pressures on biodiversity, and the critical need to implement the National Land Use Planning Framework. Improved sustainable management of primary industries such as agriculture, fisheries and forestry, strengthening of environmental standards, compliance to reduce pollution, improved identification and protection of critical ecosystems located in development areas, and effective fire management, are key to ensuring balanced, sustainable development.

TARGET B1. By 2020 primary extractive natural resource use in terrestrial, freshwater and marine environments is guided by sustainable management plans, with improved biodiversity sustainability.



TARGET B2. By 2020, 80% of businesses monitored in Belize are compliant with environmental standards.

TARGET B3. Between 2016 and 2020, Belize has limited its net rate of land use change for prioritized natural ecosystems / areas to no more than 0.6% per year.

TARGET B4. BY 2020, Belize is restoring 30% of degraded ecosystems to maintain ecosystems and ecosystem services essential for increasing Belize’s resilience to climate change impacts.

TARGET B5. By 2025, Belize is addressing its trans-boundary issues, with 20% reduction in terrestrial impacts and 50% reduction in illegal fishing from trans-boundary incursions.

TARGET B6. By 2018, Belize has a strengthened system in place for early detection and effective management of invasive species.

PROTECTION

GOAL C: Functional ecosystems and viable populations of Belize’s biodiversity are maintained and strengthened.

Strengthening the protected areas system and species protection, and also looking beyond, at the role and importance of natural ecosystems in the larger landscapes and seascape. Mitigating climate change impacts and building resilience is also a focus of this Goal.

TARGET C1. By 2030, Belize’s natural landscapes and seascapes are all functional and build biodiversity resilience to climate change.

TARGET C2. By 2020, three key corridors identified under the National Protected Areas Policy and System Plan are physically and legally established, and effectively managed.

TARGET C3. Between 2016 and 2030, no species will become functionally extinct in Belize.

TARGET C4. By 2020, average management effectiveness of the National Protected Areas System has increased to 80%..

TARGET C5. By 2020, Belize is implementing a biosafety policy that safeguards against large-scale loss of biological integrity.



BENEFITS

GOAL D: Strengthened provision of ecosystem services, ecosystem-based management and the equitable sharing of benefits from biodiversity.

The NBSAP strategies identify the need to support the Land Use Planning Framework and Integrated Coastal Zone Management Plan, focused on balancing development needs whilst maintaining ecosystem services. This goal also focuses on the integration of traditional knowledge and customs into protected area management, and valuing and protecting knowledge and customs.

TARGET D1. By 2025, key ecosystem services are sustainably managed and resilient to threats.

TARGET D2. By 2025, access to genetic resources and associated traditional knowledge is regulated and benefits arising from utilization are shared in a fair and equitable manner.

IMPLEMENTATION


GOAL E: The NBSAP is implemented effectively through capacity building, informed strategic decision making and integrated public participation.

The NBSAP needs to be owned by the people of Belize, with a collective responsibility for implementation. Cross-sectoral and multi-agency implementation is key, with strategies aligned to ongoing and planned efforts throughout relevant ministries, and across the NGO and private sector. Coordination of this effort will be through the establishment of a Biodiversity Office, working closely with the National Climate Change Office and Sustainable Development Unit.

TARGET E1. By 2020, all relevant government ministries, 75% of relevant civil society, and 25% of the private sector and general public are effectively involved in the implementation of the NBSAP.

TARGET E2. By 2020, accurate and current data on Belize's natural resources and environmental services informs relevant national development decisions.

TARGET E3. By 2020, Belize's NBSAP is being implemented effectively, monitored and evaluated, and achieving desired outcomes.



THE NBSAP IS THE ROADMAP FOR
BIODIVERSITY MANAGEMENT IN
BELIZE; IT CLEARLY ARTICULATES
OUR BIODIVERSITY TARGETS AND
STRATEGIES TO ENSURE THAT WE
MEET OUR COMMITMENTS UNDER
THE CONVENTION OF BIOLOGICAL
DIVERSITY...AS WELL AS OUR
SUSTAINABLE DEVELOPMENT
GOALS.”

COLIN YOUNG
Chief Executive Officer,
Ministry of Agriculture, Fisheries, Forestry,
Environment and Sustainable Development
2016

INTRODUCTION

Belize has long been recognized for the beauty of its natural resources, from the vibrant coral reef supporting traditional fishermen and tourism to the vast tropical forests of the Maya Mountains Massif. Unlike many of its larger Central American neighbors, the natural landscapes and seascapes of Belize still support viable populations of large ranging species — the charismatic jaguar and tapir, for example, are still seen frequently in rural areas.

The socio-economic well-being of Belize’s people and the nation’s economy as a whole is natural-resource based, with tourism, fishing and agricultural industries tightly linked to the health of biodiversity and the maintenance of ecosystem services. There is still considered to be a balance between human use, biodiversity conservation and effective management of ecosystem services.

However, Belize is reaching a tipping point. Land use change is rapidly removing the last unprotected forest areas, reducing the natural environmental buffers to many of the threats faced by other countries in the region. Despite stringent environmental legislation, limited resources are impacting monitoring and enforcement, and Belize is experiencing increased removal of essential forest cover and connectivity, clearance and destabilization of hill slopes. Development in low-lying coastal areas is resulting in the clearance of coastal mangroves and the associated erosion of coastlines. Coral reef health has declined significantly over the last 40 years, with increased coral bleaching episodes and macro-algal growth, and is at the upper edge of its temperature tolerance.

These existing pressures on biodiversity will only intensify over time with climate change. The combined impacts of climate change and increasingly rapid deforestation is disrupting rainfall patterns, bringing unseasonal and life-threatening floods, interspersed with intensified droughts. Increased temperatures are already being experienced, both on land and at sea, and as a low-lying coastal state, rising sea level is threatening much of the country. The socio-economic well-being of Belize’s people and the nation’s economy as a whole is natural-resource based, with tourism, fishing and agricultural industries tightly linked to the health of biodiversity and the maintenance of ecosystem services.

What do we mean when we talk about the biodiversity of Belize?

Biodiversity is the cornerstone of our existence on Earth. Short for “biological diversity”, the term refers to the variety of life in Belize at all its levels, from species to ecosystems, whether marine, freshwater or terrestrial, and the ecological and evolutionary processes that sustain Belize’s natural resources. Biodiversity also includes variation within species, between species, and among ecosystems.

Why is it important to conserve biodiversity in Belize?

Biodiversity plays an important role in the way ecosystems function and in the many services they provide to the people of Belize. Ecosystem services in Belize include nutrient and water cycling, pollination of plants, regulation of climate, protection of life and property from storm events, soil formation and retention, resistance against invasive species, as well as pest and pollution control. For ecosystem services to be effective, ecosystems have to be healthy — dependent on ensuring species are present and abundant at viable levels.

Adapted from the Millennium Ecosystem Assessment, 2009

This National Biodiversity Strategy and Action Plan (NBSAP) provides a five-year road map for national development that takes into account the need to balance development with the natural environment, to ensure a sustainable future for the people of Belize, and contribute towards national and global Sustainable Development Goals. Its purpose is to provide clear guidance in the utilization, conservation and benefit sharing of Belize's natural resources, with the multi-disciplinary approach and multi-sectoral involvement providing an opportunity for national, mainstreamed implementation.

BACKGROUND TO THE STRATEGY

Belize's national development framework recognizes the importance of the environment for maintaining health and quality of life in Belize and the need for strengthening environmental protection. Endorsed in 2015, the Growth and Sustainable Development Strategy (GSDS), the third phase strategy for Horizon 2030 (Belize's 30 year national development framework), identifies "Sustained or Improved Health of Natural, Environmental, Historical and Cultural Assets" as one of four Critical Success Factors (CSFs), vital for achieving CSF1 (Optimal National Income and Investment), CSF2 (Enhanced Social Cohesion and Resilience) and CSF4 (Enhanced Governance and Citizen Security), integrating the environment, biodiversity, and ecosystem health more firmly into national goals for development, and recognizing that management of our natural capital as expressed through the wealth of biological diversity is a central pillar of the economy, of social well-being and of national development.

Belize's National Biodiversity Strategy and Action Plan is a national instrument, considered a priority under the National Development Framework. This plan, together with the supporting Belize National Stocktaking and Target Setting Report (GoB, 2015), documents the current status of biodiversity in Belize, identifies the threats and underlying drivers of biodiversity loss, and presents the strategies required for reducing pressures, safeguarding ecosystems, ecosystem services and species, and improving benefits.

As a signatory of the Convention on Biological Diversity (CBD), Belize also has a commitment to ensuring that the National Biodiversity Strategy and Action Plan covers:

- conservation of biological diversity
- sustainable use of the components of biological diversity
- Fair and equitable sharing of the benefits arising from the utilization of genetic resources.

UPDATING THE NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN

Belize produced its first National Biodiversity Strategy and Action Plan (NBSAP) in 1998, providing guidance for both Government and non-governmental organizations in prioritizing conservation actions. The national context in 1998 has changed significantly. Climate change, the increasing rate of deforestation, land-based pollution, invasive species, and an increasing human population are placing far higher pressures on the environment. This revision of the NBSAP is therefore well-timed, as Belize moves forward in strengthening management and mainstreaming of its natural resources.

The development of Belize's NBSAP has been a highly participatory process, bringing together Government and multi-sectoral non-government stakeholders from across Belize through a series of workshops, technical and focal group meetings, and a structured review process. The Strategy provides a road map to guide not just the Government of Belize, but all stakeholders involved in sustainable development in Belize, in the knowledge that conserving biodiversity and using natural resources sustainably can only be achieved if agencies, organizations

and the general public take on joint responsibility and work together. The Ministry of Agriculture, Fisheries, Forestry, the Environment and Sustainable Development (MAFFESD) holds responsibility for the coordinated implementation of this NBSAP, through the proposed establishment of the Biodiversity Office (BiO) under the Forest Department, the National Focal Point for the Convention on Biological Diversity (CBD).

STRUCTURE OF THE REVISED NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN

The National Biodiversity Strategy and Action Plan (NBSAP) is a five year plan set within a fifteen year framework (aligning with the Horizon 2030 national development framework), and is designed to address five priority national goals, identified during the participatory planning process, and aligned with the CBD Strategic Plan for Biodiversity 2011-2020. Each of the national goals is supported by measurable targets and actions that provide a strategic focus for collaborative efforts towards the NBSAP Vision.



THE STRATEGY AND ACTION PLAN IS STRUCTURED IN FIVE SECTIONS:

1

Section One: Context. This first section sets the context for the NBSAP. It highlights the status of biodiversity, ecosystems and ecosystem services, and the importance and values of their contribution to human well-being and socio-economic development. It also identifies the causes and consequences of biodiversity loss — the direct threats to biodiversity and ecosystems, and the underlying drivers, linking this to the actual and potential socio-economic impacts on human well-being, livelihoods, and poverty reduction. It includes a review of the relevant constitutional, legal, and institutional framework within which the NBSAP is to be implemented, and identifies existing challenges to effective biodiversity conservation and sustainable natural resource use in national biodiversity-related policies and legislations. It also summarizes the successes, challenges, and lessons learnt from the implementation of the 1998 NBSAP, which have been taken into account in this revision of the Strategy

2

Section Two: Belize's National Biodiversity Strategy. The second section introduces the National Vision for 2030, and the guiding principles of the National Biodiversity Strategy and Action Plan (NBSAP) — the core values and beliefs on which the NBSAP has been developed and under which it will be implemented. It presents the five national goals and twenty measurable national targets.

3

Section Three: Belize's National Biodiversity Action Plan. Section Three presents the national actions identified for achieving the targets and goals within a structured timeframe, with clear indicators, and definition of roles and responsibilities. The Action Plan is structured for mainstreaming and multi-sectoral implementation across government, private sector and civil society. Actions are also linked to national development planning, broader national policies, poverty reduction strategies and climate change adaptation plans, to facilitate mainstreaming and integration.

4

Section Four: Implementation Plan: The Implementation Plan includes identification of capacity development needs — both human and technical — for ensuring effective implementation of the NBSAP. It also identifies mechanisms for effective resource mobilization to support implementation of the actions required to meet the targets.

5

Section Five: Institutional, Monitoring, and Reporting: This section identifies the national coordination structures required to guide, coordinate, and ensure implementation of the NBSAP, with a clear identification of roles and responsibilities. A summary is provided of the steps to be taken to establish an effective Clearing House Mechanism that supports the implementation of the NBSAP, and national regional institutional networks for the conservation of biodiversity. As an important component of the NBSAP, this section summarizes the monitoring and evaluation mechanism for the strategy, with the identification of both process and output indicators for tracking progress and output success. It also provides a framework for reporting at both national and CBD Level.



CONTEXT

1.1 BIODIVERSITY AND ECOSYSTEM VALUES

1.2 CAUSES AND CONSEQUENCES OF BIODIVERSITY LOSS

1.3 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

**1.4 REVIEW OF THE 1998 NATIONAL BIODIVERSITY
STRATEGY AND ACTION PLAN**



1.1 BIODIVERSITY AND ECOSYSTEM SERVICES

Belize, recognised as a world biodiversity hotspot (Conservation International, 2004), was founded on its biodiversity wealth, from the first days of the logging industry to today's reliance on a healthy, natural resource-based tourism industry. Belize stands out in Central America for still retaining 61.6% of its natural, intact forest cover (Cherrington et al. 2012), of which approximately 35.8% is protected within the NPAS. It has 25% of the largest contiguous block of intact forest in the region, and the largest barrier reef in the western hemisphere, with 19.8% of territorial waters protected (Walker et al., 2014). Belize has exceeded global protection targets for almost all ecosystems, maintaining the majority as viable, functioning systems, with identification of required actions for those that are under-represented. These provide protection for a total of 118 globally threatened species (9 critically endangered, 32 endangered and 77 Vulnerable) and a further 62 near threatened / of least concern (IUCN, 2016). Ecosystem services — including water security, tropical storm and flood protection, non-timber forest products, hydroelectric power and other benefits — are largely intact and functional, and the natural resource-dependent primary sectors (fishing, agriculture, and forestry) support livelihoods across Belize.

For some globally threatened species — the Central American River turtle (*Dermatemys mawii*), yellow-headed parrot (*Amazona oratrix*), Antillean manatee (*Trichechus manatus manatus*), goliath grouper (*Epinephelus itajara*), Yucatan black howler monkey (*Alouatta pigra*), and the white lipped peccary (*Tayassu pecari*), Belize is considered one of the last remaining strongholds in the region. For others, such as the small tooth sawfish (*Pristis pectinata*), it may already be too late. Many of these species are seen as critical in their role of maintaining ecosystems, yet are declining at an alarming rate. However, with its growing population (from 144,150 in 1980 to a January 2016 population estimate of 363,368) and the need for economic development, Belize is now following the pathway of its Central American neighbors, with a significantly accelerated rate of forest clearance.

There is a strong culture of natural resource use — the most vulnerable communities, with the highest poverty rate, particularly those in southern Belize, have a high direct dependence on natural resources, with extraction of forest materials for construction (thatch palm leaves and structural poles), edible and game species for food, and medicinal plants for health care. Even outside southern Belize, many rural families have smallholdings producing basic, subsistence-level crops for their households, supplementing their diets with freshwater or marine fish, and have a high reliance on adequate water. The natural resources are also important for their cultural value — for example, the majority of Belizean's consider it a cultural right to eat wild game meat. An estimated 75% of Belizean's eat game meat, irrespective of income level, with 20% eating game meat on a regular basis. Where poverty is highest, in southern Belize, reliance on game meat increases, as an important protein source of the subsistence diet (Foster et al., 2014.)

Belize is considered one of the highest at-risk countries in Central America in terms of climate change impacts, and ecosystem integrity is recognised as critical in the mitigation of the devastating damages from the predicted increased droughts and flood events, and increasingly intense tropical storms.

1.1.1 ECOSYSTEMS

Located at the confluence of north and South America, Belize, despite its small size, is recognized for its high biodiversity — and with a relatively low human footprint, much of this biodiversity is still retained. Belize has five global ecoregion (Conservation International, 2004; Olson et al., 2002), with fourteen broad natural and two anthropogenically altered ecosystem types identified under the national ecosystem mapping (BTFS, 2012), further broken down into 68 ecosystems (Meerman, 2011). One of the goals of the National Protected Areas Policy and System Plan (NPAPSP, 2005), endorsed by Government in 2005/6 and revised in 2015, is to ensure that the “National Protected Areas System includes high quality examples of the full range of environment types within Belize, with balanced representation of the ecosystem types they represent” (NPAPSP, 2005). An assessment of representation within the National Protected Areas System (NPAS) identified that, in 2012, over 90% of Belize’s recognized ecosystems had greater than 10% representation within the NPAS – meeting IUCN targets. 60% of ecosystems had greater than 30% representation within the NPAS, meeting regional targets. Realignment to improve the representation of rivers, deep sea, littoral forest and riparian vegetation were recommended (Walker et al., 2013) and a number of these are currently being implemented.

In 2014, the forests of Belize still covered more than 61% of the terrestrial area, much of it protected by the National Protected Areas System. Ranging from the mossy elfin forests of the highest mountain peaks to the swamp forests, and pine savannas of the coastal lowlands, coastal mangroves, and the lowland semi deciduous and dry tropical forests of the northern Yucatan platform, Belize’s forests are largely intact, providing habitats for keystone species such as jaguar and white-lipped peccary, absent from many forests in other Central American countries.

Belize still retains three large, forested nodes, important in maintaining both national and regional biodiversity (NPAPSP, 2005; Walker et al., 2013). Belize’s primary Key Biodiversity Area (KBA) lies within the Maya Mountains Massif node, one of the largest remaining forested areas in Central America. The secondary KBAs are located within the other two nodes – the Selva Maya forest in the west, linked to the Guatemala Selva Maya, and the Shipstern / Fireburn node in the north east (Meerman, 2007; Walker et al., 2013).

The reefs of Belize form a significant component of the largest barrier reef in the western hemisphere, running parallel to the shore, and encompassing some of the richest marine resources of the Mesoamerican Barrier. This vibrant, biodiversity-rich ecosystem is a valuable resource for traditional fishing communities and Belize’s marine-based tourism industry, supporting more than 50% of Belize’s population, either directly or indirectly. In 1996, the unique array of reef types, from fringing reefs to barrier and atoll reefs, within one self-contained

Broad Natural Ecosystems (BTFS, 2012)

- Lowland broad-leaved dry forest
- Lowland broad-leaved forest
- Sub-montane broad-leaved forest
- Shrubland
- Lowland savanna
- Lowland pine forest
- Sub-montane pine forest,
- Wetlands
- Water
- Mangrove and littoral forest,
- Seagrass,
- Coral reef
- Sparse algae
- Open sea

Anthropogenically Altered Ecosystems

- Agricultural
- Urban



area, and the state of the reef ecosystems – considered the most pristine in the Western Hemisphere at that time - resulted in its designation as “The Belize Barrier Reef Reserve System”, a serial World Heritage Site inscribed in 1996 (UNESCO, 1996). The coastal lagoon lying between the reef and the mainland has extensive interconnected seagrass beds and mangrove-lined cayes that provide the essential ecosystem connectivity for maintenance of Belize’s exceptionally diverse marine life. Belize also provides representational protection for an estuarine stromatolite reef, one of very few modern stromatolite reefs known in the world, which runs parallel to the shore for 1.5km in the northern most protected area of the country – Corozal Bay Wildlife Sanctuary (SACD, 2013).

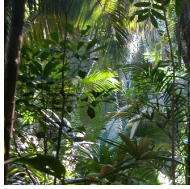
The importance of Belize’s wetlands is reflected in the declaration of two Ramsar sites - Crooked Tree Wildlife Sanctuary in 1998, and more recently, Sarstoon Temash National Park (2005), providing critical protection for wetland ecosystems and species. The ecosystem services of Crooked Tree Wildlife Sanctuary in particular, in terms of flood control, are critical during flood events, the large lagoon system acts as a sink for flood waters and plays a significant role in mitigating potential flooding of Belize City, the largest population centre in Belize.

Natural ecosystems, whether forests, savannas, freshwater or marine, are coming under increasing pressure as the human population grows, the human footprint expands, cross-border incursions impact more and more of Belize’s territory, land-based pollution and unsustainable fishing reduce the health of the reef, and climate change impacts increase. Balanced land use planning will be a critical component of Belize’s ability to adapt to future climate shifts and to ensuring that the natural resources and ecosystem services can continue to support Belize’s population.

Whilst the National Protected Areas System protects representational coverage of the majority of Belize’s ecosystems, it falls short of the CBD targets for ecosystem representation in the marine environment, (Table 1). The greatest gaps are under the various categories of **Caribbean Open Sea**.

Coastal forests (littoral forests) and beach vegetation (tropical coastal vegetation on very recent, moderately drained sediments), are identified as highly vulnerable, lying in areas targeted for coastal tourism development. Even with the declaration of the new protected area at Turneffe Atoll, protection of littoral forest is still under the 10% target. These ecosystems will be further stressed in the future with the predicted short term increase in coastal development and long term rise in sea level. Other ecosystems with limited representation include rivers, often being used to define protected area borders, but not included within the protected areas themselves. This impacts the effectiveness in protection of species such as the critically endangered Central American river turtle (*Dermatemys mawii*). These gaps have been identified and strategies recommended for addressing shortfalls (Walker, 2013).

BELIZE ECOSYSTEM TYPES



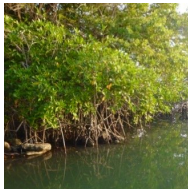
Petén-Veracruz Moist Forest encompasses the broadleaf tropical forests, and well represented in Belize, but considered as globally critical / endangered, a reflection of the high rate of deforestation and land use change in the region.



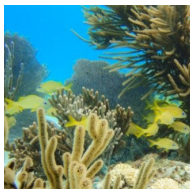
Belizean Pine Forest, also considered globally critical / endangered, represents one of the few examples of premontane pine forest in the Neotropics. Fire is the highest threat, with increasing frequency of fires resulting in ecosystem degradation.



Yucatan Moist Forest, considered vulnerable globally (Olson et al., 2002), and limited in Belize to the north east of the country. Climate change predictions suggest that elements of the Yucatan Moist Forest will become more prevalent in forest ecosystems further south as rainfall becomes less predictable, and will be important in the maintenance of viable forest cover in the medium to long term. Connectivity for this forest type to other forests is therefore particularly important in climate change planning.



Belizean Coast Mangrove ecoregion encompasses the various mangrove ecosystems that exist on the mainland – extensive stretches of inundated dwarf mangroves in shallow, coastal lagoons, tall basin mangroves, and fringing mangroves of the coast. These mangroves are recognised for their critical importance in coastal and caye protection, and for their role in the fisheries sector, providing nursery functionality for many commercial and sport fishing species.



Belize Reef and Mangrove ecoregion encompasses the offshore mangroves, extensive seagrass beds and coral reef. Belize is well known for the beauty of its reefs, sand cayes and coastal waters - the marine environment falls within the Western Caribbean, considered one of ten global coral reef hotspots (Conservation International, 2002). This unique, global importance has been recognized through the declaration of seven of Belize's marine protected areas as components of the Belize Barrier Reef Reserve System World Heritage Site.

MARINE ECOSYSTEM	TERRITORIAL SEA	WITHIN THE NPAS	% REPRESENTATION IN MPAS	% REPRESENTATION IN NTZ
Caribbean open sea abyssal	83,558.80	-	0.0	0.0
Caribbean open sea bathyal	391,715.50	982.95	0.3	0.2
Caribbean open sea mesopelagic	469,620.70	59,886.41	12.8	2.9
Coastal Shelf	119,939.54	39,585.56	33.0	7.8
Coral Reef	60,313.04	32,728.17	54.3	14.3
Deep Patch Reef and Seagrass	15,234.40	15,217.49	99.9	26.4
Deep Water Mud	262,250.09	57,644.78	22.0	2.9
Littoral Forest	16,820.53	1,437.05	8.5	2.7
Mangrove	62,154.08	10,441.30	16.8	3.2
Seagrass	379,130.90	89,764.68	23.7	1.9
Sparse Algae and Sea Grass	136,887.19	110,164.39	80.5	6.6
<p>NTZ: No Take Zone This estimation covers MPAs and protected areas up to 1km inland from the coast Based on BTFS Ecosystem map (Meerman, 2004)</p>				

Table 1: Ecosystem representation in the Marine Environment (TNC, 2014)



1.1.2 ECOSYSTEM SERVICES

Belize, as a country, is heavily dependent on its natural resources and the environmental services they provide – these are critical to the wellbeing of Belize’s people and to the health and well-being of the nation’s economy. Both the marine and terrestrial protected areas of the National Protected Areas System (NPAS) integrate features that protect ecosystem services and provide some resilience to climate change (Walker et al., 2013). Protected areas in both the marine and terrestrial environments were assessed for their resilience to climate change, their contribution towards ecosystem services, and their contribution towards building Belize’s resilience to climate change impacts, as part of the NPAS rationalization process (Walker, 2013).

Water Security: With its small population, Belize has the highest per capita water resources in the Americas. However, as a Small Island Developing State (SIDS), it is also identified as one of the countries that will be most at risk from climate change (IIED, 2007), with less predictable, decreasing rainfall and increasing drought. Whilst there has not been a comprehensive national evaluation of water resources, past work has provided estimates for the Maya Mountains Massif, an area of over 1.28 million acres (5,180 km²) under extensive forest cover that is either fully protected or under sustainable forestry management, within the National Protected Areas System (Hammond et al., 2011).

The Maya Mountains Massif, the largest intact forest block in Belize, is particularly important in its role of watershed protection. The headwaters of fourteen watersheds - the majority of Belize’s river systems - originate within the Maya Mountains, providing water security for 55% of the total land mass of Belize and over 128 communities, as well as supplying water to over 180 communities in Guatemala (Walker et al., 2008). The large tracts of intact forest canopy of lowland Belize also play an important role in rainfall catchment, and are critical for refilling the aquifer of the limestone platform of the north. Unseasonal drought conditions are

becoming more frequent, particularly in the north, where agricultural areas overlie shallow soils above porous limestone rock, leading to soil desiccation. Changes in rainfall patterns, attributed primarily to climate change, are exacerbated by clear felling of natural forest cover for agriculture, along with increased exploitation of both surface water and aquifers by communities, coastal and caye developments and crop irrigation. A National Integrated Water Resource Management Policy has been endorsed by the Belize Government to manage these resources, and is the first initiative in Belize to be authorised to put a cost on an environmental service – opening the way for payment for environmental services. As a first step, there are ongoing initiatives under the National Integrated Water Resource Management Authority (NIRWA) to develop estimates of water availability and value, and implement measures to ensure wise use and long term sustainability of Belize’s water resources. This includes protection of critical forest blocks to maintain water catchments.

Forest Resources: The tropical forests, particularly in the southern third of the country, where poverty is highest, are important to the indigenous Maya, providing materials for construction, as well as food and medicinal plants. These are predominantly rural communities with livelihoods that are highly dependent on access to land and natural resources. There are ongoing initiatives investigating the feasibility of establishing traditional right-based access regimes in key forest reserves for these rural communities, as well as efforts to engage rural communities in the principles of sustainable forest management in the forested areas that occur within their community lands. Outside of southern Belize, in other rural communities, reliance on forest resources is still strong, focused on hunting of game species, harvesting of medicinal plants and non-timber forest products for house construction.

Steep Slope Protection: The importance of maintaining forest cover on steep slopes to stabilize

soils and reduce the potential for landslides is recognised in environmental guidelines from the Department of the Environment (DoE), which seeks to address the concerns of the increasing clearance of steep slopes for agriculture (DoE, 2012). The current protection of forests on steep slopes is largely responsible for the limited number of catastrophic fatal landslides in Belize during tropical storm events, when compared with neighbouring countries. Steep slope protection against erosion has been a contributing factor in the logic behind the establishment of a number of the protected areas in Belize, and is taken into account in forestry regulations.

Storm Protection: Belize's atolls, reef and coastal mangroves provide critical protection against tropical storm events, coastal flooding and erosion - the barrier reef and atolls provide an estimated value of US\$120–\$180 million in avoided damages per year, breaking the force of storm surges from the Atlantic (WRI, 2007). Coastal mangrove protection is estimated at a further US\$111–\$167 million per year, buffering the land against tropical storm force winds and preventing shoreline erosion (WRI, 2007).

Filtration: There is increasing awareness of the importance of riparian vegetation and mangroves in providing a buffering filter against agrochemical contamination and sediment from land-based runoff

1.1.3 NATURAL RESOURCES AND THE ECONOMY

The aesthetic beauty of the cayes, the spectacular reefs and the biodiversity-rich tropical forests draw tourists to Belize from all parts of the world, supporting much of the tourism industry, an important contribution to Belize's foreign exchange earnings. The barrier reef, with its coral and associated seagrass and mangrove ecosystems, provides critical economic and environmental services (fisheries, tourism, and coastal protection), as well as habitats for many unique species, maintaining a large genetic resource pool. Seagrass and mangrove are also increasingly recognized for

for maintaining healthy rivers and reef. The importance of maintaining riparian vegetation is also highlighted in the DoE environmental guidelines, with identification of the critical need to leave the 66 foot buffer reserve along all water bodies (DoE, 2012). Past experience with storm floods has also demonstrated the impacts clearance of the 66 foot buffer and subsequent erosion of river banks can have on infrastructure – as demonstrated by the loss of the Kendal Bridge during Tropical Storm Arthur in 2008, severing road connections between north and south Belize, affecting the economy for months, and requiring a multimillion investment for replacement.

Flood Control: Belize has large areas of low-lying wetlands. With 35% of the population concentrated in coastal areas, these wetlands are extremely important in their role in flood control – preventing significant flooding by storing flood waters after tropical storm events, and then releasing them slowly back into the rivers. Crooked Tree Wildlife Sanctuary and Burdon Canal Nature Reserve, whilst originally designated for their importance for birds, are both critical in the regulation of flood waters during tropical storm events, mitigating downstream impacts that would otherwise affect Belize City. Despite the knowledge of this important function, poorly planned construction of causeways in the past have impacted water flow, reducing the functionality of the Crooked Tree wetland.

the roles they play as important carbon sinks for mitigation of climate change, and for providing critical protection for life and property during tropical storm events. Mangroves benefit from widespread awareness of their role in fisheries, filtration of land based runoff, and as a critical habitat for nesting and migratory birds and other wildlife.

The primary sector – the agricultural, fishing and logging industries - contributed 16% to the national economy in 2014. The **agriculture / aquaculture sector** is focused on a limited number of industrial

scale farming initiatives – primarily citrus, banana, sugar cane, cattle and farmed shrimp. The citrus and banana industries are generally located throughout the Stann Creek Valley and southern coastal plain, and are relatively well organized, with international markets that are necessitating their move into certification, including environmental standards, to improve their social and environmental sustainability. In southern and central Belize, employment in the larger agricultural industries results in migration of workers from poorer rural communities, to live and work at the citrus, banana and shrimp farms. Cattle farming is also increasing in footprint in southern Belize and is also prevalent in western Belize, being one of the current drivers behind deforestation, resulting in large areas of cleared lands and degraded soils. Smaller farmers are often at subsistence level, farming rice, beans, corn, squash and a variety of other crops, supplemented by household livestock – generally chickens, and pigs.

The flat northern limestone plain is characterised by extensive farming – predominantly sugar cane farming, with low mechanization and a large labour force. Several Mennonite communities in the north and west provide Belize with rice, beans, corn and beef. These communities, whilst very important for the economy, are, with a few exceptions, also associated with the highest rates of land clearance, land degradation, and unregulated use of pesticides.

Shrimp farming forms the basis of the aquaculture industry, and is reliant on a clean and adequate water supply. The 13 shrimp farms employ over 1,000 people, predominantly from the southern communities (BSGA, pers. com., 2014). On top of its investment in human resources, the shrimp farms also contributed Bz\$88.5 million to the export earnings of Belize in 2014 (SIB, 2015). The shrimp farming industry has been a global leader in the move to certification under the Aquaculture Stewardship Council (ASC), through market-driven necessity. Belize is the first country in the world to achieve ASC certification, with 90% of its shrimp farms fully certified. A fragile industry, however, the shrimp farms have suffered considerable loss

following bacterial infection in early 2015, leading to all major farms in the country being drained and dried, and restocked in 2016.

Belize’s agricultural / aquacultural industries are highly vulnerable to adverse weather and disease, in an area with increasingly unseasonal weather patterns and high risk of strengthened tropical storm activity. Droughts and flooding are increasingly affecting farm outputs. Almost two thirds of Belize’s agricultural areas are located on soils overlying limestone, prone to desiccation in times of low rainfall (Meerman, 2005). This, combined with the climate change predictions of longer dry seasons, increased temperatures and reduced rainfall in the future leads to an urgent need for more effective land use planning and environmental management, to maintain a balance between agriculture and the remaining forest cover to ensure future water security.

The **timber industry**, whilst on the decline in Belize, still contributes towards export earnings, with a value of Bz\$5.7 million in 2014 (SIB, 2015), and a trend of increasing export demand for secondary hardwoods such as black poisonwood and black cabbage bark. The management focus is on long term forest license concessions for sustainable forest management and improved management of species at risk, such as rosewood. Whilst hardwoods (species such as mahogany (*Swietenia macrophylla*), cedar (*Cedrela odorata*), Santa Maria (*Calophyllum antillanum*) and yemeri (*Vochysia hondurensis*)) and pine are the primary species being harvested, there are also a number of non-timber forest products such as xaté (*Chamaedorea* spp.) and “popta” seeds from the palmetto palm (*Acoellorraphe wrightii*).



MARINE DOMESTIC EXPORTS, 2014 (CAPTURE FISHERIES)	
Product	Value (Bz\$)
Lobster Tail	13,998,780
Conch	8,534,180
Whole fish	558,190
Aquarium Fish	472,430
Lobster Meat	1,614,840
Crab	86,770
Total	Bz\$25,265,190

Table 2: Marine Domestic Exports Capture Fisheries, 2014 (SIB, 2015)

The **fishing industry** has strong traditional roots, and is focused on the shallow waters between the coast and the barrier reef, and on the three offshore atolls. It is both socially and economically important to Belize, with more than 2,750 fishermen directly dependent on capture fisheries, supporting an estimated 12,500 Belizeans from 20 communities, and with a further 1,000 people involved indirectly in processing and export (BFD, 2013). The primary products in the marine sector are Caribbean spiny lobster, Queen conch and finfish (primarily snapper and grouper), with sea cucumber as a relatively new extractive industry. Fishing is commercial and non-mechanised, with fishermen fishing independently of each other, using open boats, sail sloops, and canoes, either free-diving for lobster and conch, using lobster traps and shades, or fishing by hook and line. An estimated 90 to 95% of the product is sold to four fishing cooperatives, two of which then export to the United States and Europe, with a value of Bz\$25.26 million in 2014 (EDF, 2014; Table 2). The rest is marketed in Belize, primarily to the restaurant trade, but also for household consumption. Economic dependence on the traditional fishing industry is high, particularly in the northern coastal communities, where limited options for diversification into other livelihoods exist, despite international investment in training and alternative livelihood projects. Fishing is highly dependent on the health of the reef, which is facing multiple pressures not only from unsustainable fishing, but

also from land based pollution, climate change and ocean acidification. Belize is working to reduce pressures through implementation of a rights-based Managed Access system, rolled out across the marine protected areas in June, 2016, and through environmental regulations that set agricultural and aquaculture industry standards.

The **tourism industry** is the number one foreign exchange earner – an estimated 1,299,100 visitors travelled to Belize in 2015, and whilst approximately 73% of visitors arrived through cruise ship visitation, over 326,000 were overnight visitors (BTB, 2016) – critical for ensuring that tourism benefits are distributed and trickle down to communities across Belize. Tourism is primarily natural- and cultural-resource based, with visitors focusing on the cayes, coastal communities and coral reef (particularly snorkelling, diving and sport fishing activities), inland protected areas and archaeological sites. Direct tourism expenditure in Belize exceeded Bz\$510 million in 2015 – 14.7% of the total GDP. When indirect contributions are taken into account from related support industries, this rises to 38.6% of the GDP (WTTC, 2016). The tourism industry supports over 18,000 direct jobs – 13.2% of total employment, in 2015. This expands to 34.8% of total employment when related support industries are taken into account (WTTC, 2016).

Case Study: Economic valuation outputs of catch-and-release sport fishing in Belize – bonefish, permit, and tarpon

Tourism in Belize is based on the natural and cultural resources...

- Catch and release sport fishing for bonefish, permit and tarpon creates an annual economic impact of over Bz\$25 million in direct expenditures into the Belize economy, plus an additional \$31 million in value added expenditures, providing a total yearly economic impact of about \$56 million - approximately 6% of the Belize's tourist economy.
- Sport fishing for bonefish, permit and tarpon are estimated to result in approximately \$2.7 million in Hotel Tax, Property Tax, Business Tax, GST, Employee (income and social security) Taxes, and Airport Exit Taxes generated for the Belize treasury.
- In 2007, more than 100 independent fishing guides provide services to approximately 4,800 international fishing guests at hotels and resorts throughout Belize, and at least 13 fishing lodges hosted nearly 1,000 international anglers from Europe, Canada, the United States and elsewhere
- Nearly \$30 million in annual wages and salaries as well as 1,800 full-time jobs are supported by the sport fishing industry.

Fedler, 2008

Tourism visitation to the national protected areas is an important financial contribution to the effective management of these sites. An informal mechanism for re-investment of entrance fees into protected area management is ongoing for the majority of co-managed protected areas, and is particularly important in supporting operational costs (legally, however, all fees should go into the GOB general revenue system). The knock-on benefits of protected area-related tourism for communities are evident in rural areas, such as Maya Centre, adjacent to the

Cockscomb Basin Wildlife Sanctuary, where local women have a thriving arts and crafts market, and many of the hunters have now switched to providing guided tours of the protected area.

Belize, with one of the highest energy costs in Central America, has not yet become self-sufficient in **energy production**. However, as a member of the Small Island Developing States Sustainable Energy Initiative (SIDS DOCK), it is committed to the collective goal of increasing energy efficiency by 25% above the 2005 baseline, and to generating a minimum of 50% of electric power from renewable sources, with a 20-30% decrease in conventional transportation fuel use, by 2033. In 2012, 55% of electricity generation was produced internally, 40% from hydro-electricity (BECOL and Hydro Maya), and 12% from bio-generation, linked to sugar cane production. The gap between electricity production and demand is currently met with electricity bought from Mexico.

Whilst petroleum has been produced since its discovery in western Belize in 2006, Belize lacks capacity for domestic refining, so exports only the crude oil. Production peaked in 2010, and has not been sufficient to be considered sustainable for the long term, with outputs declining (IDB, 2014). Fuel is therefore imported, with a heavy reliance until recently on refined products from Venezuela under the now defunct Petro-Caribe agreement.

Belize has two primary hydroelectricity generating systems feeding into the national grid. The value of hydroelectric power generated from these two (the Chalillo three dam system and Hydro Maya) combined has been estimated at US\$17.5 million per year, based on 2008 figures (Hammond et al., 2011). Belize is investigating additional clean energy development mechanisms to boost its energy production and reduce its dependence on imported electricity and fossil fuels (MESTPU, 2012). The National Sustainable Energy Strategy (2012-2033) focuses on transitioning to low carbon development, with replacement of imported fossil fuels with indigenous renewable sources. It explores the potential for production of biofuels on land that is

marginal for food production, as well as hydro, solar and wind power. The Strategy also focuses on increasing efficiency of power use in both public and private sector, through improved best practices (MESTPU, 2012).

Belize is very rich in both surface and ground water, with internal renewable water resources estimated at 15.26km³/year (FAO, 2015), the highest water availability per capita in Central America. The value of **potable water** has been estimated at between US\$0.3 and US\$2.3 million, dependent on the level of maintenance of forest cover (Hammond et al., 2011). Belize shares its watersheds with its neighbours – Mexico to the north and Guatemala to the west, and is seeking to improve management of shared river basins (FAO, 2015).

...the value of **potable water** has been estimated at between US\$0.3 and US\$2.3 million, and is dependent on the level of maintenance of forest cover

Adapted from Hammond et al., 2011



1.1.4 SPECIES

As part of the Mesoamerican biodiversity “hotspot” - the land bridge between the North and South American continents (Belize has species representation from both continents).

Belize is part of the northern-most range of species more associated with South America, such as the harpy eagle. It also has a number of Yucatan endemics representative of species associated with Mexico – such as the endangered Yucatan black howler monkey (*Alouatta pigra*) and more common Yucatan jay (*Cyanocorax yucatanicus*), which thrive in the drier northern forests. Whilst species inventories are not yet complete for many taxa, it is known that Belize provides habitat for over 118 globally threatened species (9 critically endangered, 32 endangered and 77 Vulnerable) and a further 62 near threatened / of least concern (IUCN, 2016). Range extensions and new species are still being added to the national list, particularly from the more remote areas of the Maya Mountains Massif, as more specific field work targets taxa such as amphibians, plants and snails. For some globally threatened species - the Central American river turtle (*Dermatemys mawii*), yellow-headed parrot (*Amazona oratrix*), the Antillean manatee (*Trichechus manatus manatus*), Goliath grouper (*Epinephelus itajara*), Yucatan black howler monkey (*Alouatta pigra*), and the white lipped peccary (*Tayassu pecari*), Belize is considered one of the last remaining strongholds in the region. Many of these species are also critical in their role of maintaining ecosystems and ecosystem services, yet are declining at an alarming rate.

Of the 10 critically endangered species, the two species of sawfish (the smalltooth and large tooth sawfish (*Pristis pectinata* and *Pristis pristis*)) are considered ecologically (if not actually) extirpated from Belize in the last 30 to 40 years (Graham, in Harrison et al., 2014), primarily as a result of the unregulated use of gillnets. Goliath grouper (*Epinephelus itajara*) populations have decreased significantly (Graham, 2009), as have populations of the Central American river turtle (*Dermatemys*

Critically Endangered Species of Belize

Staghorn Coral	<i>Acropora cervicornis</i>
Elkhorn Coral	<i>Acropora palmata</i>
Morelet's Treefrog	<i>Agalychnis moreletii</i>
Central American River	
Turtle	<i>Dermatemys mawii</i>
Goliath Grouper	<i>Epinephelus itajara</i>
Hawksbill Turtle	<i>E r e t m o c h e l y s imbricata</i>
Smalltooth Sawfish	<i>Pristis pectinata*</i>
Large-tooth Sawfish	<i>Pristis pristis*</i>
Cycad sp.	<i>Zamia prasina</i>

IUCN, 2016

* Sawfish have not been confirmed in Belize in recent years. Note: *C. coffeus* has recently been added to the species list as a range extension

mawii) (Rainwater et al., 2010). Both these species are considered traditional cultural delicacies and have only partial protection under Belizean law, through size limits, bag limits and seasonal closures.

Despite being a small country, Belize has over forty endemic plant species, many restricted to the pine savannah ecosystems, isolated limestone peaks and sinkholes. The karstic characteristics of the limestone areas has resulted in extensive cave formations with endemic sub-species such as the cave chulin (*Rhamdia laticauda typhla*), a cave-dwelling catfish. At least fourteen other vertebrate species are also endemic to mainland Belize, including the freshwater mountain molly (*Poecilia teresae*), the Petén centipede snake (*Tantilla hendersoni*) and the Maya Mountain frog (*Rana juliani*), all only found only in the Maya Mountains Massif.

The sheltered waters of the reef lagoon, somewhat isolated from the rest of the Western Caribbean, also harbour at least twelve endemic marine fish species, identified from the patch reefs of the coastal lagoon,

with a further eight being identified from the outer barrier reef and the atolls (Lobel et al. 2011). Many of these are new species identified in the last five years, with the potential for continued discoveries in the future. These include the white lined toadfish (*Sanopus greenfieldorum*), only known from the Mesoamerican reef system. The isolated cayes of the barrier reef and atolls also host endemics such as the Island leaf-toed gecko (*Phyllodactylus insularis*), found only on the Atolls (Meerman, 1996).

A number of National Working Groups bring together technical experts to discuss recommendations for improved species management at the national level, providing technical advice to the Forest and Fisheries Departments to assist in decision making. Implementation of national species recovery strategies, whilst not covering all threatened species (or even all critically endangered species) has had an impact on those targeted. The Critically Endangered hawksbill turtle (*Eretmochelys imbricata*), for example, has shown a population increase noted by both in-water surveys and nesting beach monitoring reports, following full legal protection of this and other marine turtle species since 1992 to address the issue of overharvesting. The regional sub-species of the West Indian manatee – the Antillean manatee (*Trichechus manatus manatus*) – is also considered to have increased in numbers following inclusion of this species in the Wildlife Act in 1981, giving it full protection, and the implementation of strategies under the Species Recovery Plan (Auil, 1998), currently being revised. For this species, however, recent increases in watercraft strikes is rapidly reversing this trend with significant concerns for the long-term viability in Belize and in the region.



1.2 CAUSES AND CONSEQUENCES OF BIODIVERSITY LOSS

The main pressures on biodiversity and ecosystems in Belize are well recognised and can be categorised into a number of key broad direct threats (Table 3). The drivers, too, have been defined at two levels: Direct Drivers (conditions that lead to the pressures and threats identified) and Indirect Drivers (anthropogenic factors behind the Direct Driver).

The current highest rating pressure is land use change, with a deforestation rate approaching 1% for the 2013-2014 period as the human footprint expands (Cherrington, 2014). Deforestation is driven primarily by agricultural expansion, and generally occurs without the benefit of an integrated national land use plan, resulting in fragmentation of key forest corridors and loss of critical ecosystems. A national Integrated Land Use Planning Framework is, however, being finalised, and will balance agricultural use with resource and ecosystem service conservation.

Climate change is also identified as one of the highest rating pressures, though with longer term implications. Short term impacts are already being experienced, with reduced reef health, increased droughts and unseasonal rainfall. The combined impacts of unplanned land use change and climate change will be significant in the future, affecting not only biodiversity, but also water security, health and risk to life, unless the National Land Use Plan is endorsed and effectively implemented.

CAUSES OF BIODIVERSITY LOSS	
Pressures and Threats to Biodiversity and Ecosystems	
<ul style="list-style-type: none"> ■ Land use change (including deforestation, forest fragmentation, clearance of mangroves, filling of wetlands) ■ Climate change ■ Unsustainable exploitation of natural resources (fishing, hunting, logging / non-timber forest products, illegal wildlife trade) ■ Pollution (agrochemicals, industrial / urban effluent, solid waste, sewage, sedimentation) ■ Anthropogenic fires ■ Invasive species ■ Unsustainable Tourism Practices (exceeding guide/visitor ratios, exceeding limits of acceptable change, poor boating practices, illegal wildlife interactions, negative impacts from large scale cruise ship tourism) ■ Transboundary incursions (both terrestrial and marine; Guatemala, Honduras and Mexico) ■ Natural disasters (hurricanes, earthquakes) 	
Direct Drivers	Indirect Drivers
<ul style="list-style-type: none"> ■ Market demand ■ Conflicting Government sector-specific policies ■ Government incentives ■ Livelihood diversification ■ Culture / tradition ■ Limited capacity for effective enforcement ■ Household needs (food, water, shelter, income) 	<ul style="list-style-type: none"> ■ National policies for economic growth ■ National poverty alleviation strategies ■ National and international market demand ■ Delay in implementation of national frameworks ■ Inadequate national investment in natural resource management ■ Porous border ■ Culture / tradition ■ Poverty

Table 3: Causes of Biodiversity Loss

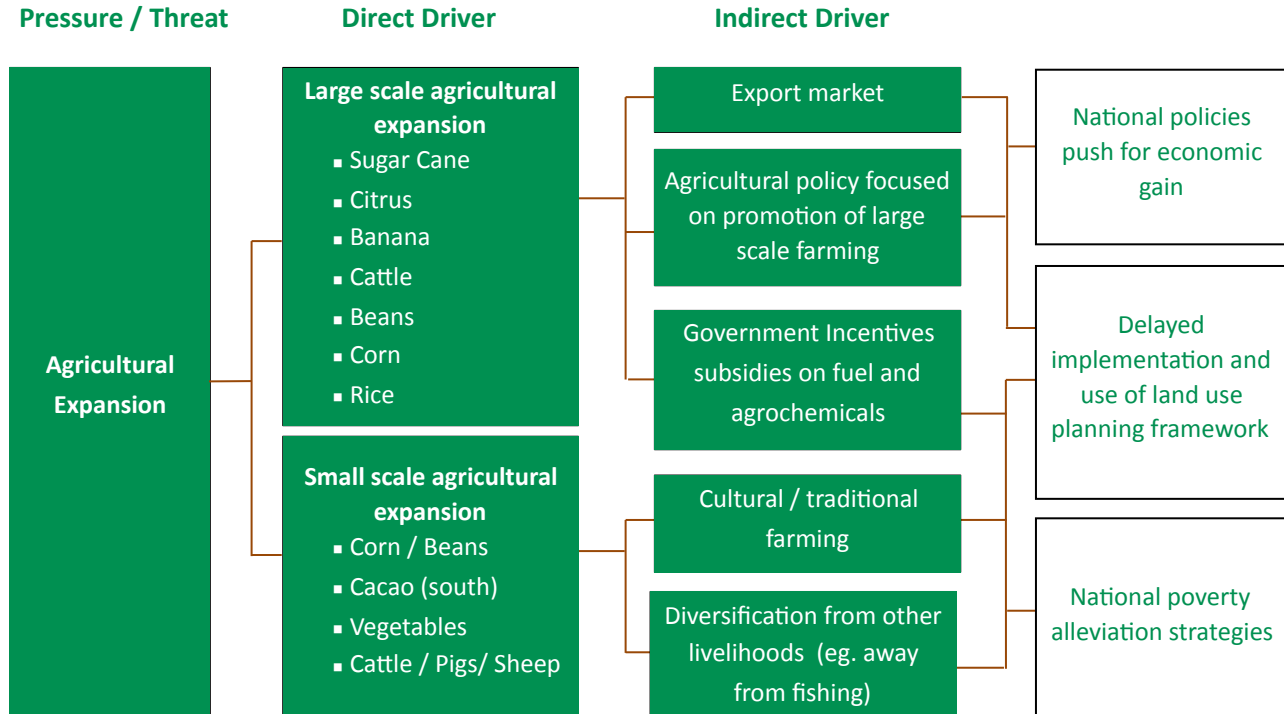
1.2.1 LAND USE CHANGE

Land use change in Belize is the result of conversion of natural landscapes to man-made is predominantly through activities that include deforestation, filling of freshwater and mangrove wetlands, and dredging of seagrass. Two primary drivers have been identified at the national scale - Agricultural Expansion (including aquaculture), and Population Expansion/Coastal - Caye Development

Agricultural Expansion: Agriculture is recognised as a vital component of Belize’s economy, for food security and for its value in alleviating poverty. However, agricultural expansion is also identified as the primary activity linked to biodiversity loss, generally removing large areas of high-biodiversity forests and other natural ecosystems, and replacing them with low-diversity arable and livestock farming. There is an urgent need to balance agricultural development with maintenance of environmental

services through improved land use planning. Agricultural expansion is occurring on two scales: Large-scale commercial farming throughout much of the southern / central coastal plain and northern Yucatan limestone plateau; and small scale slash-and-burn / slash-and-mulch milpa farming, adjacent to rural communities throughout Belize.

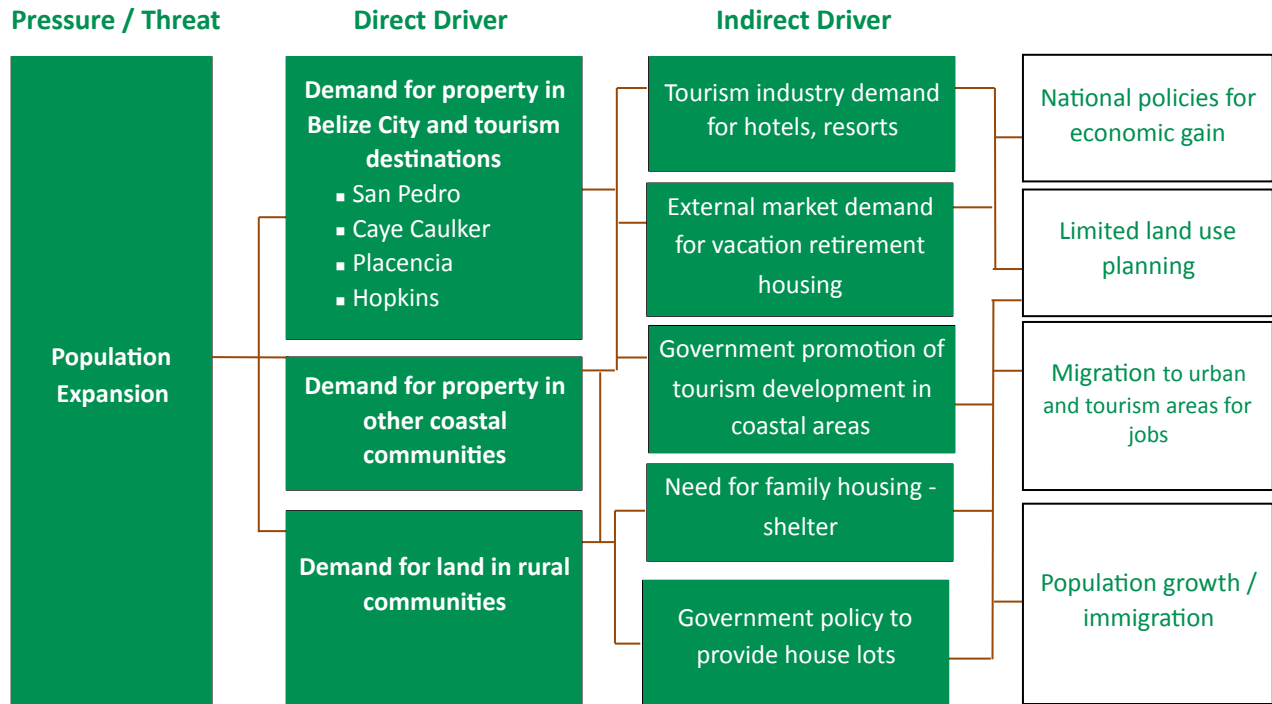
Current agricultural policies seek to provide financial incentives for investment in large scale agriculture, though these financial incentives do not yet include environmental sustainability as a component of the required criteria. However, large-scale agricultural areas do require an Environmental Impact Assessment, a process that can, to some extent, address the need for environmental sustainability considerations, as does the move towards environmental certification as a requirement to meet international market demand.



Expansion of Population Centres: Expansion of population centres can be categorised as occurring in three sectors:

**Agricultural Expansion:
Drivers**

- expansion in coastal and caye areas designated for development focus
- expansion of smaller coastal communities
- expansion of inland, rural communities and district centres



Urban Expansion: Drivers

Land Use Change in the Coastal Zone: The coastal shoreline and cayes are the most vulnerable areas of Belize in terms of development impacts, with potential for affecting the long term viability of coastal biodiversity and provision of ecosystem services. Red mangrove and herbaceous beach vegetation play a critical role in stabilizing coastal and caye structure, reducing coastal erosion, beach loss and sedimentation as well as providing nursery functionality for many marine species. Among the most threatened ecosystems in Belize, the loss of natural coastal vegetation is accelerating as the developmental value and demand for beach frontage escalates, resulting in habitat removal throughout coastal Belize, and on the cayes resulting in caye destabilization, increased beach erosion,

beach loss and increased sedimentation impacts on the reef.

The increasing focus and national push for coastal development in areas such as San Pedro and Placencia is also leading to the migration of workers to these areas, with urban sprawl into less habitable and less healthy mangrove swamps, and a need for more dredging and landfill not only for the developments themselves, but also for housing those people moving into the area in search of work. Poor sanitation in these peripheral areas has led to high effluent and pollution levels in these low lying swamps.

It is recognized that the long-term sustainability of coastal and caye-based tourism and residential developments would be significantly more financially

viable through the maintenance of these natural ecosystems, and coastal development planning based on best use is presented in the Integrated Coastal Zone Management Plan.

Inland Community Expansion: Belize has a very low population density, but one that is growing fast, both from natural population increase and from immigration from adjacent Central American countries. Unplanned growth of communities, whether small rural communities or urban population centres, is having an impact on the adjacent ecosystems and natural resources, with clearance of natural vegetation, draining of swamps in wet areas, and land fill.

Most communities still have a village or town reserve with lands available for allocation for development, but activities such as land fill of low, poorly-drained swampy areas are often done on a per household basis, and poorly coordinated, with fill from one lot causing flooding in the next. Installation of roads does not always take into account the natural flow of water, resulting in increased flooding in some areas.

Some indigenous communities in the south have discussed setting aside village land as community reserves, to ensure supply of construction materials and medicinal plants (Walker et al., 2009), but

whether this will be viable as the communities grow and there is more call for land remains to be seen.

Key Consequences of Land-use Change

- Removal of natural vegetation cover
- Loss and degradation of ecosystem services – loss of watershed catchment, flood control, storm buffering, soil formation and retention, pollination, natural pest control
- Loss of biodiversity, including key seed dispersers and other species requiring, and helping maintain, the functionality of large, intact expanses of natural habitat (e.g. Baird’s tapir, Central American spider monkeys, harpy eagles, scarlet macaws)
- Reduced water catchment and impacts on replenishment of the aquifer, particularly in northern Belize
- Increased drought, with reduced agricultural productivity
- Increased wildlife-human conflict and associated costs as wildlife becomes marginalised in shrinking forests – problem jaguar/livestock conflicts, problem crocodiles, increased crop damage, increasing numbers of howler monkeys entering urban areas, etc.



1.2.2 UNSUSTAINABLE HARVESTING OF NATURAL RESOURCES

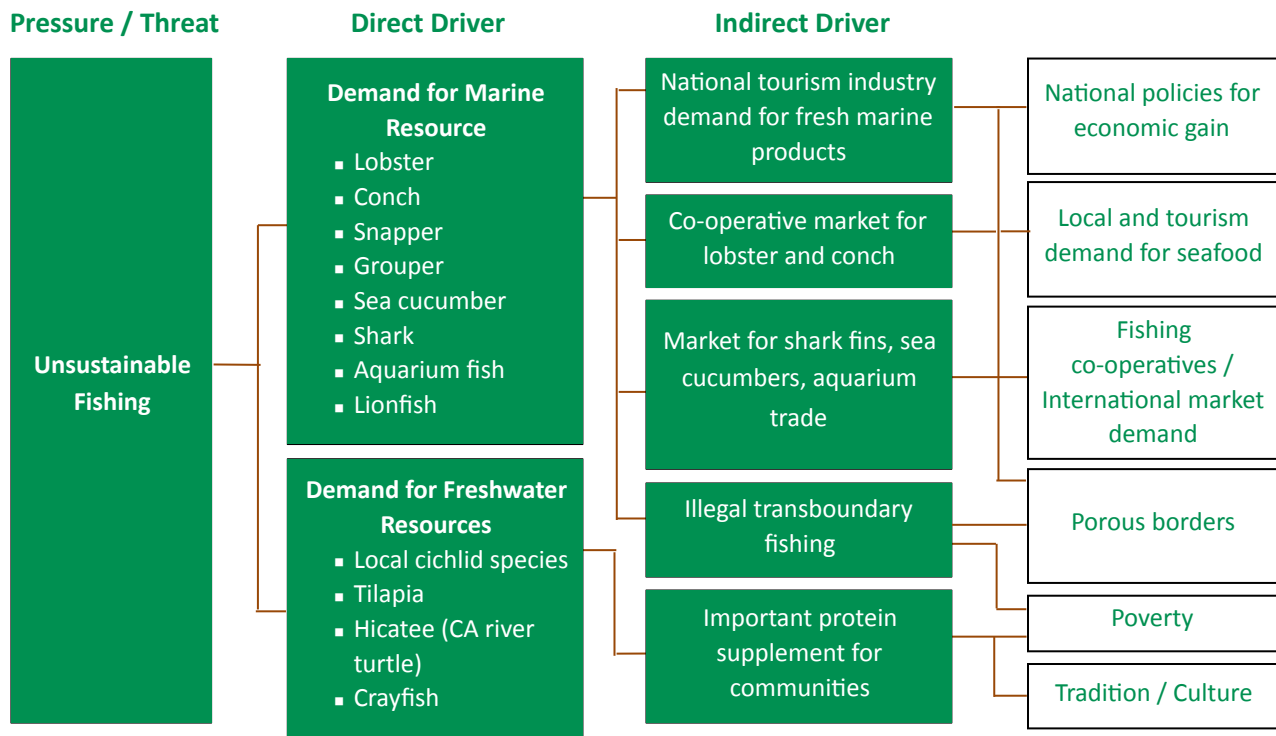
The unsustainable harvesting of natural resources has been identified as a specific threat in three different sectors:

- Fishing
- Logging / extraction of non-timber forest products
- Hunting

Unsustainable Fishing

Commercial fishing focuses primarily on the marine environment and the lobster and conch fishery. Whilst in the past there has been a permitting system in place, any Belize resident was eligible to apply for a fishing license that covered all coastal

waters outside of conservation and preservation zones. The open access nature of the fishery has led to too many fishermen going after too few lobster, conch and finfish. This has been exacerbated by transboundary incursions - with associated loss to the economy, limited financial and human resources for effective surveillance and enforcement, and reduced reef health – the latter a result of the combined impacts of unsustainable fishing, pressure from land-based pollution and climate change. Good reef health, critical for the fishing industry, is not only being impacted by unsustainable fishing, but also by land-based pollution, coastal and caye development, unsustainable tourism pressures and poor tourism practices...agriculture and tourism are both priority development goals, and are potentially expanding faster than they can be regulated.



Unsustainable Fishing: Drivers

Unsustainable fishing is being addressed through the introduction of a Managed Access (MA) framework - a rights-based fishing regime that supports fishermen that customarily use specific fishing areas through managed area permits, building ownership of the resource and vested interest in effective management of the fishing areas. Managed Access has been tested in two marine protected areas as a pilot phase, with results suggesting that the MA framework does build good stewardship and improve fishing practices. As a result, MA was rolled out across all Belize's territorial waters in 2016, with the establishment of 9 fishing zones or fisheries management areas.

Loss of key herbivores has also been addressed, with a ban on the fishing of key species – parrotfish, angelfish and tangs, with the requirement for all fish fillet to have a skin patch left to identify species. Since the ban, the biomass of herbivores has been increasing. A similar reversal of negative trends was also seen following the ban on hunting marine turtles (all three species were hunted for their meat). Numbers of individuals seen during in-water surveys has been increasing, though many of these are juveniles or sub-adults. However, as they reach reproductive age, an increase in the number of nests is expected.

Key Consequences of Unsustainable Fishing

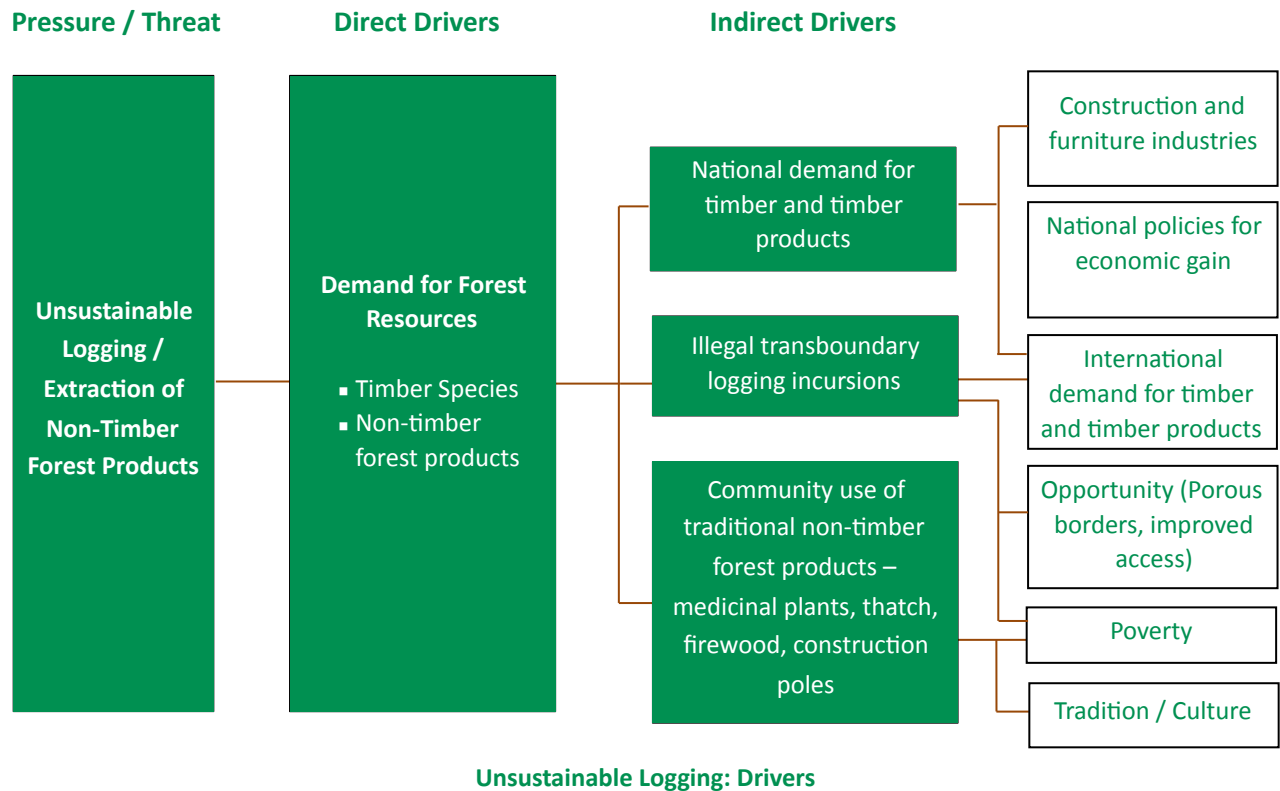
- Reduced marine product, impacting fisher livelihoods
- Reduced tourism value
- Declining threatened species - e.g. the critically endangered Goliath grouper and freshwater Central American river turtle ('hicatee'), and endangered great hammerhead
- Reduced populations of illegal species – parrotfish, marine turtles – or commercial species out of season (lobster and conch) from transboundary illegal take

- Very few large commercial fish - snapper and grouper - left for maintaining viable populations
- Reduced trophic integrity with loss of key predators – e.g. sharks
- Impacted natural processes in the marine environment – removal of herbivores and top predators resulting in negative impacts to the health of the reef
- Reduced resilience to climate change impacts in marine and freshwater environments

Unsustainable Extraction of Timber and Non-Timber Resources

Belize is moving towards improved sustainable harvesting practices, through Long-Term Forest Licences for the Forest Reserves, designed to promote sustainable forest management, with a small number of large-scale forestry companies working closely with the Forest Department towards improving stewardship of the forest resources. The current revision of the National Forest Policy, National Forest Program and the Forest Act will significantly strengthen Belize's management of its forest resources once completed and endorsed, as will the reduction and / or phasing out of Short-Term Forest Licences and chainsaw permits (petty permits). The contractual agreements for Short Term Forest Licences include best management practices, but limited human and financial resources for monitoring the concession areas, and few incentives for concession holders to not take short cuts, has led to unsustainable logging practices across Belize. Illegal logging is also flagged as an active threat throughout Belize, as the increasing spread of agricultural clearance and roads provides easier access to intact forest areas.

The greatest illegal loss of forest resources occurs along the porous border with Guatemala, with logging roads originating in Guatemala accessing Belize's forests in the Chiquibul and Columbia River protected areas. As with illegal loggers from Belizean communities, these transboundary loggers have no incentive to consider sustainability.



Key Consequences of Unsustainable Extraction of Timber and Non-Timber Resources

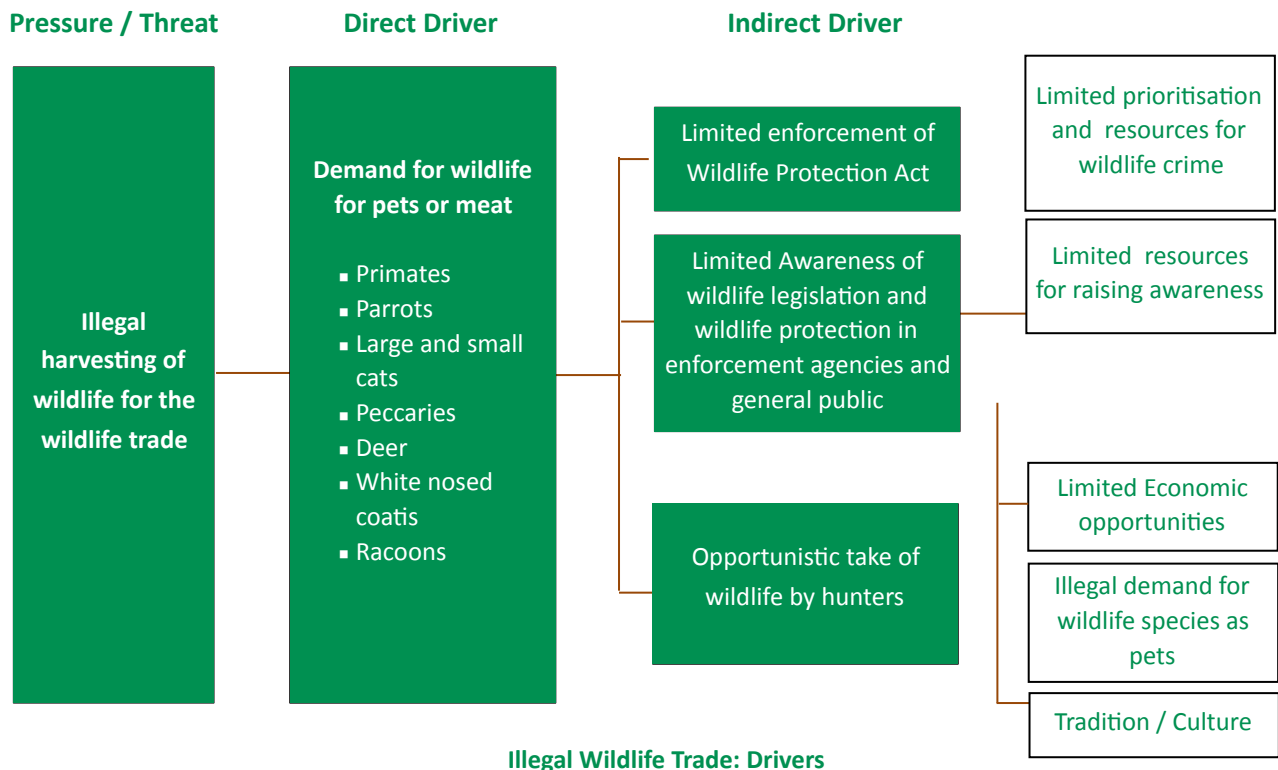
- Shift in composition of tree species – e.g. forest in north east Belize has very few cedar left, mahogany is disappearing, with very few large mahoganies remaining, leaving very few seed trees for replenishment.
- Over-harvesting of large trees with structural impacts on the forest canopy and on connectivity, reducing forest resilience to storm events
- Increased fire risk from increased fuel load on forest floor following logging
- Logging roads increase accessibility for hunting, reduce connectivity for smaller forest species and reduce structural integrity for resilience to tropical storm winds, and assist in the spread of invasive species

Illegal Wildlife Trade

Belize is committed under the Convention on Biological Diversity, the global Sustainable Development Goals and the National Development Framework (GSDS / Horizon 2030) to ensuring the continued viability of its biodiversity. Whilst land use change, with increasing rates of deforestation, and habitat fragmentation, is identified as the primary pressure in the decline of many wildlife species, the illegal wildlife trade is also an important contributor. Primates (the endangered Yucatan black howler monkey (*Alouatta pigra*) and Geoffroy's spider monkey (*Ateles geoffroyi*)), parrots (including the endangered yellow-headed parrot (*Amazona oratrix*)) and other wildlife are targeted for the internal illegal pet trade and smuggled across borders.

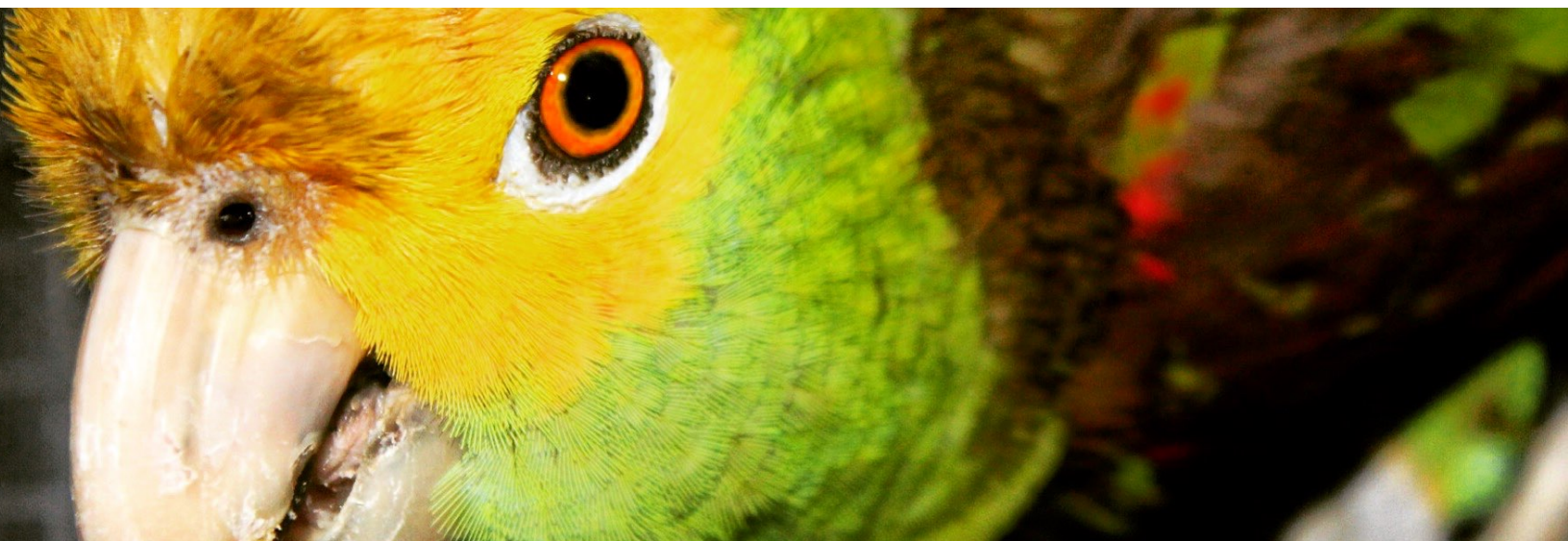
The Forest Department and its enforcement and NGO partners are strengthening co-ordination and strategic collaboration in addressing illegal wildlife related activities, to achieve improved conservation outcomes and prevent any further national extinctions. It is accepted that there is the need to take a stand before Belize loses

more species, with greater coordination and improved enforcement across enforcement agencies. There is also the need to urgently address the underlying cause – the limited awareness of wildlife, the issues it faces and wildlife legislation in Belize’s general public.



Key Consequences of the Illegal Wildlife Trade

- Loss of key seed dispersers, important for building Belize’s forest resilience to climate change and maintaining forest productivity
- Decline of populations of threatened species – endangered primates and parrots
- Impacted social structures in wildlife populations – e.g. spider and howler monkeys, peccaries, yellow headed parrots
- Destruction of nesting habitats - e.g. nesting trees of yellow headed parrots targeted for nestlings
- Increased risk of disease transmission within species, and between species and humans
- Behaviour change (human avoidance), reducing tourism and other values



1.2.3 POLLUTION

Concerns regarding pollution in Belize are focused primarily on contamination of water, and particularly on its impacts on the coral reef. Sediment and urban and agrochemical contamination from Belize's watersheds have been highlighted as perhaps the greatest impacts on the Belize reef after climate change. The general trend is for an increase in water contamination as agriculture and urban areas expands. There are, however, some exceptions, such as the shrimp farming industry, which has been working to become more environmentally sustainable.

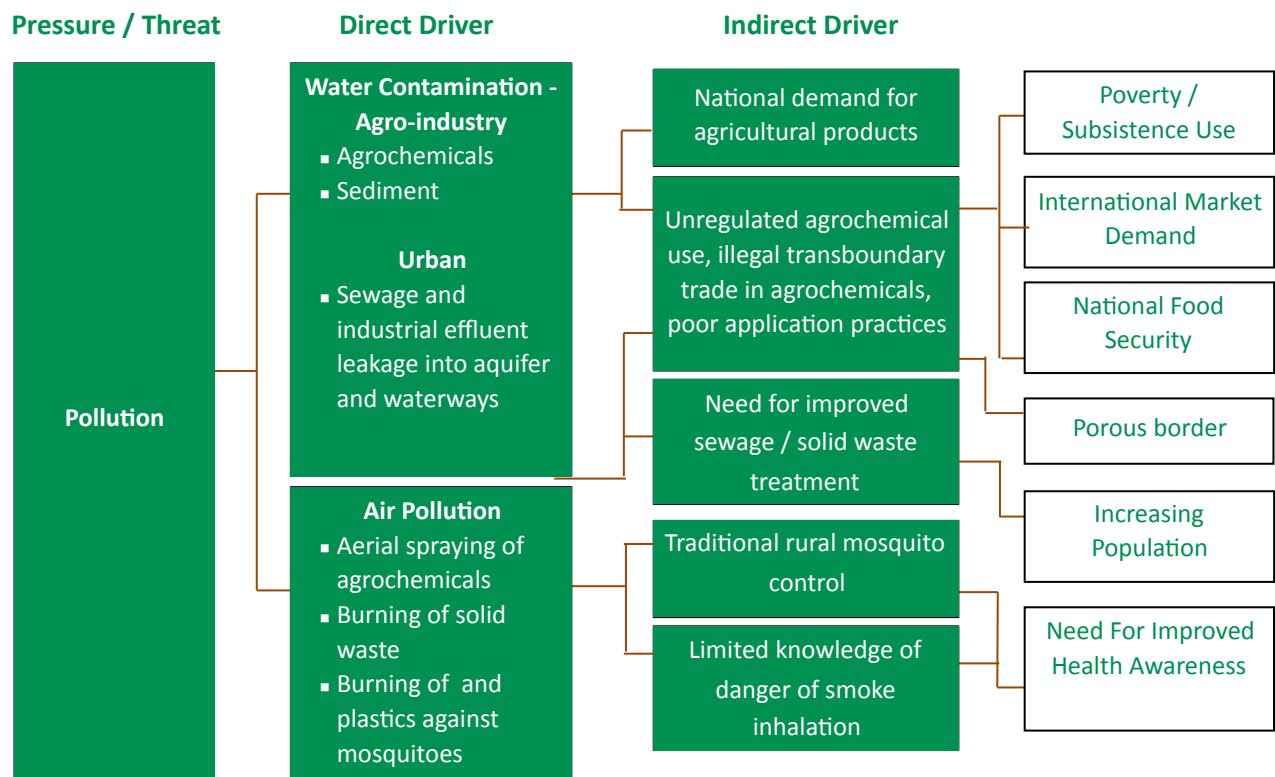
In the north, there are concerns about agrochemical runoff from the sugar cane, rice and cattle areas, as well as urban runoff and poor solid waste and sewage management. Two primary rivers drain the flat agricultural lowlands – the Rio Hondo and the New River – flowing into Corozal Bay, one of the largest estuary systems of the Mesoamerican reef system. Chetumal itself, on the Mexican side of the estuary, has a population of over 150,000 (almost half of Belize's entire population) but only limited sewage treatment, with much of the raw sewage entering the estuary. The estuary itself acts as a settling pond and provides filtration for many of the contaminants and sediments, before the water flows out onto the reef. However, this leads to high levels of pollution in the estuary itself.

In Central Belize, agrochemicals are generally associated with the citrus and banana industries, and enter the rivers as a result of water runoff after irrigation or rainfall, exacerbated by the clearance of riverine vegetation. In the south, five major watersheds drain the principal banana growing areas. Following storm events, the increased sediment load of these rivers is also accompanied by an increased pesticide load, as rain washes agrochemicals from the watersheds into the rivers, and from there into the sea. The majority of the shrimp farms are also located on the southern / central coastal plain. Whilst there have been significant negative impacts on the environment

from these farms in the past, the shrimp industry has recently moved towards greater environmental sustainability and is now leading the way globally in environmental certification under the Aquaculture Stewardship Council.

Land-based pollution from Belize is, however, overshadowed by the watersheds emptying into the Gulf of Honduras, from Guatemala and Honduras (particularly the Uluá, Motagua, Patuca and Aguan) where land use change has removed much of the natural vegetation from the formerly forested slopes, and replaced it with agriculture (Burke et. al. 2006; Soto et. al. 2009; Andrefouet et al. 2002).

Air pollution is not considered as great a problem as water based pollution, but it is causing some issues – an increase in health issues has been linked to chemical use in the cane farming district, and agrochemical contamination from aerial spraying of crops has been detected throughout the Maya Mountains, despite their isolated nature (Kaiser, 2011). There is concern of the impacts this may have not only on upper elevation amphibians, many of which are critically endangered or endangered, but also on human health in communities supplied by these water catchment areas. Whilst not included within the assessment, there is also concern at the increasing number of cruise ships and other vessels visiting Belize, the level of pollution they bring with them and the potential for introduction of invasive species, particularly from bilge water. With heavy impacts from cruise ship tenders on manatee populations, particularly in the Belize River / Belize City area and a new cruise terminal being approved for a second key manatee area, there are additional concerns that not only will the solid waste, sewage, bilge water waste, air pollution and noise pollution associated with the berthed and moving cruise ships have a negative impact on the quality of the environment, but that the increased boat traffic will also result in an increase in water craft collisions with marine mammals in these sensitive areas.



Pollution: Drivers

The potential impacts of oil exploration and extraction, particularly in the marine environment has also raised concerns, with a significant wave of public opinion against oil exploration in the marine environment, with the knowledge that Belize does not currently have the capacity to cope with a similar incident, should it occur in Belize's territorial waters.

Key Consequences of Pollution

- Eutrophication of waterways with associated fish kills
- Increased algal blooms in the marine environment affecting reef and seagrass health and reducing resilience to climate change impacts
- Reduced viability / health of sensitive aquatic species – e.g. corals, amphibians, fish, increasing disease risk
- Bio-accumulation / trophic concentration of heavy metals – e.g. mercury and cobalt – in fish, crocodiles, manatees
- Potential for population declines in key species that provide ecosystem services – e.g. pollinators
- Reduced fecundity and feminization of male amphibians and fish
- Implications of impacts of potential seismic testing and oil exploration / noise pollution / oil spills in the marine environment – mass mortality, disrupted fishing and tourism industry

1.2.4 INVASIVE SPECIES

There is considered to be adequate (but by no means complete) information in Belize on invasive species, and for those species causing significant impacts to the economy, pathways have been identified and where feasible, management regimes have been put in place. There aren't, however, the human resources to address every invasive species, and a number such as tilapia and lionfish have become well established. Where they are a serious cause of concern to human health, agricultural production, or the fisheries industry however, measures have been put into place to control the impacts, where feasible.

In the terrestrial environment, the greatest concern is for vectors of human illness, such as the African yellow fever mosquito (*Aedes aegypti*) (also a vector for dengue) – the Ministry of Health is responsible for control of mosquito-carried diseases, and conducts spraying in towns and villages when risks are highest. The increased temperatures predicted with climate change will provide conditions favourable for other diseases such as yellow fever, the chikungunya and zika viruses to become more prevalent in Belize.

Invasive pests of the primary agricultural industries are also of high concern. BAHA is mandated to regulate the import of fruit, vegetables and vegetable material to Belize, to ensure that crop diseases do not enter the country. It also has the authority to prevent the transport of plant material and / or animals within Belize to stop the spread of infection through introduction of invasive vectors. Challenges to effective control are , however, many, and include the porous northern and southern borders, and the constant flow of illegal Mexican and Guatemalan fruit, vegetables and cattle crossing the borders, making regulation difficult.

The Citrus Research and Education Institute (CREI) established a monitoring Program in 2004 to conduct pro-active bi-annual surveys for exotic diseases known to be present in the region, but not

yet present in Belize. The primary agricultural pests include the citrus greening disease (carried by the Asian citrus psyllid (*Diaphorina citri*), and identified in Belize in 2009), the invasive pink hibiscus mealybug (*Maconellicoccus hirsutus*), from South East Asia (detected in 1999), and the medfly. Each of these has been addressed through targeted monitoring and action, bringing these diseases under control.

Two non-native herptiles are found in Belize - the Asiatic house gecko (*Hemidactylus frenatus*) arrived in Belize in the late 1980's, and has replaced the smaller dwarf gecko in urban areas and rural communities. The dwarf gecko (*Sphaerodactylus glaucus*) is now marginalised to natural environments. Asian tokay geckos (*Gecko gecko*), originating from South East Asia, and common in the US pet trade, were introduced onto South Water Caye in the early 1990's, and were first recorded in 1994. This species is thought to be the cause of declines in the local gecko population, as well as the local extinction of tuberculate leaf-toed gecko (*Phyllodactylus tuberculatus*) on that caye (Meerman et al., 2002). There have not been any attempts made to eradicate either of these two species. For the Asiatic house gecko, the potential for eradication is low, with this species now wide spread throughout the country, and in neighbouring countries.

For the marine and freshwater environment, the high connectivity means that control of invasive species has not been possible. Invasive lionfish (*Pterois volitans*), native to the Indian and Pacific Oceans, have had the most impact. First recorded in Belize in 2008, and spreading rapidly since then, this species is a voracious feeder, eating both juvenile fish and crustaceans, including commercial species such as grouper and lobster. The Belize Fisheries Department and NGOs are using organised lionfish fishing tournaments to help regulate this species, encouraging active fishing and have located an export market for fillet. However, despite this, it is

now acknowledged that this species is in Belize waters to stay. Fishermen are therefore now being encouraged to fish for this species as an alternative to the regular finfish species, and as a mechanism for controlling numbers. It is thought that numbers have stabilised to a density considered to be below the threshold of ecosystem collapse (Chapman, pers. com.).

Black tiger prawns (*Penaeus monodon*) have recently appeared in the fish catches, first reported in 2013, and are thought to have originated as a result of an accidental release from a South Carolina research facility in 1988 (TISI, 2014). There are concerns of the potential threat to native crustaceans – shrimp, lobster, and crabs – which may be susceptible to diseases carried by this new species. Strategies for control are similar to those for lionfish...targeted fishing and market creation.

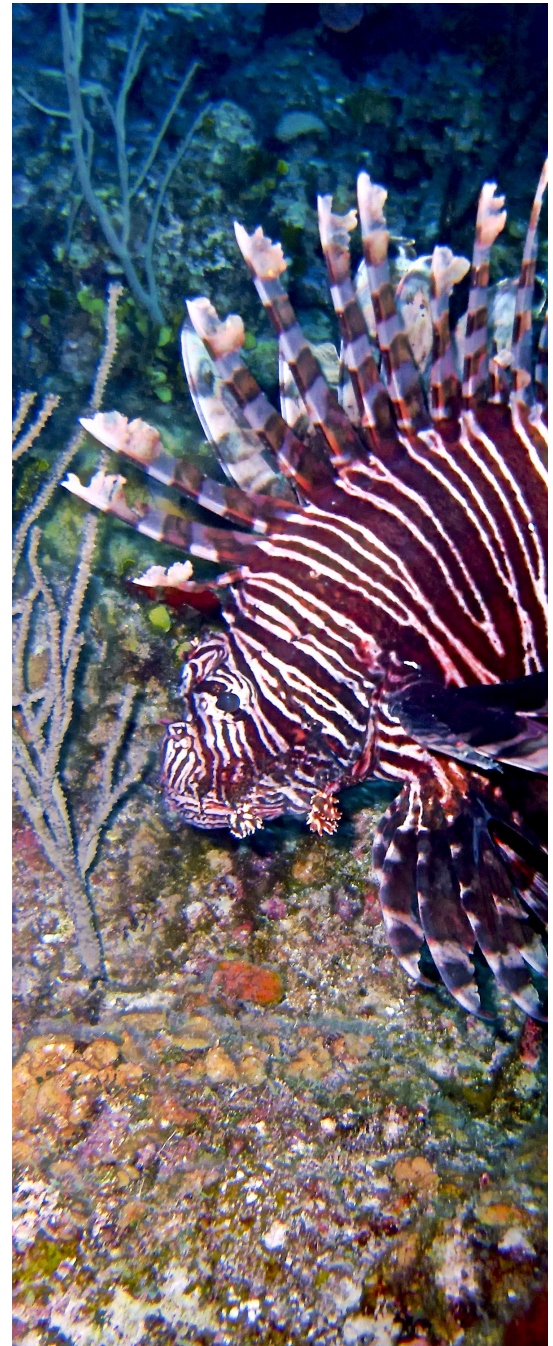
In the freshwater environment, Tilapia has become a part of the cichlid populations, often as the dominant species in many rivers and freshwater bodies. As with lionfish, removal of Tilapia is not considered realistic, through preferential fishing is encouraged. In some areas, freshwater communities appear to have stabilized, with partial recovery of native species (BAS, pers. com.). Armoured catfish were first reported in the Rio Bravo in 2012 and in the Rio Hondo in 2013. This species is of concern as it disturbs the substrate, impacting local native species by destroying nesting areas and food resources. This species also destabilizes river beds and banks, burrowing into banksides and removing riverine vegetation, increasing sedimentation, placing further strain on freshwater fish species already impacted by Tilapia. Efforts to remove this species from the waterways have not so far been successful.

Key Consequences of Invasive Species

- Impacts on marine and freshwater fish populations, with reduced native fish populations and reduced species richness,

impacting fisher incomes and availability of preferred native species

- Impacts on agricultural production, with reduced natural pest control and pollinators
- Reduced ecological integrity and species richness
- Genetic pollution / hybridization – loss of genetic integrity
- Increased fire risk with invasive grass species



1.2.5 TRANSBOUNDARY INCURSIONS

Between 2010 and 2012, 93% of deforestation in Belize occurred outside the protected areas. However, 6.4% (1,603 ha) of forest clearance between 2010 – 2012 occurred within the National Protected Areas System, primarily in protected areas that lie against the western border with Guatemala – Chiquibul National Park, Columbia River Forest Reserve, Caracol Archaeological Reserve and Vaca Forest Reserve.

The origins of these incursions are communities along the Guatemalan side of border - over 63 communities (more than 52,700 people) live along the Chiquibul border in Guatemala, with an average annual population growth of 2.9%. These high-poverty communities have limited to no access to land in Guatemala, and as a result have crossed the border illegally to farm in Belize. In 2013, 43 milpas (small slash and burn farms) were documented within the Chiquibul National Park, with over 7,400 acres actively in use (FCD, 2013). The cumulative impact of illegal logging incursions is reported as covering an area in excess of 45,000 hectares or 174 square miles, with an economic of Bz\$60 million over the last 7 to 8 years - Bz\$32 million in mahogany losses and Bz\$28 million in cedar losses (FCD, 2015). Xateros have swept through the forest, harvesting xaté at unsustainable levels, removing leaves valued collectively at Bz\$1.2 million, for sale to suppliers in Guatemala. In 2013, 4 of the 11 known scarlet macaw nests were poached, with young being taken across the border illegally for the pet trade (FCD, 2013).

The scale of the incursions is beyond the ability of the co-management partner, Friends for Conservation and Development (FCD), to control, even with partnerships with the police and Belize Defence Force, particularly in view of the current border conflict that exists between Belize and Guatemala. FCD is, however, starting to make some impact through transboundary partnerships with

environmental organizations in Guatemala, working with these communities, to seek solutions to these issues. At national level, serious attention is now being paid to the situation, with significant investment planned for 2017 – 2018 to address the critical need for enforcement against these transboundary incursions.

Incursions are also occurring in the marine environment, with fishermen from Guatemala and Honduras entering Belize waters and either fishing directly or buying product from Belize fishermen – both illegal activities. These fishermen have no incentive to follow Belize regulations, and take undersized, out-of-season and prohibited species, including critically endangered marine turtles and ecologically significant parrotfish.

Key Consequences of Transboundary Incursions

- Loss of national forest cover, biomass and associated biodiversity
- Reduced ecosystem functionality of the Maya Mountains Massif – removal of seed dispersers, reduced ecosystem integrity, reduced water quality
- Increased ease of forest access from the border, with hunting for meat and wildlife pet trade, and logging incursions
- Increased fire risk from illegal clearance for agriculture and xaté / hunting camps
- Pollution of waterways from illegal gold mining and agricultural incursions
- In the marine environment, reduced commercial species, including sharks, impacting trophic integrity
- Reduced populations of threatened species – marine turtles

1.2.6 CLIMATE CHANGE

Belize is classified as a Small Island Developing State, contributing less than 0.01 percent to global emissions, yet global modelling has predicted that it will be one of the countries most at risk to the adverse impacts of climate change (UNFCCC, 2015). Belize is located in the highest risk zone in Central America for negative climate change impacts - tropical storms with predictions for an increase in the intensity of storm events, more frequent heat waves and droughts, unseasonal rainfalls with increased intensity, and rising sea levels. The long-term effects of climate change are predicted to undermine the resilience of the natural ecosystems and increase human vulnerability, increasing the urgency for tackling the challenge of ensuring Belize builds its resilience and puts adaptation strategies in place.

These impacts will be at their greatest in the north east of Belize where annual rainfall has already decreased significantly over the last 30 years and is predicted to continue decreasing, with lengthened dry seasons and reduced predictability of rainfall. Average accumulated precipitation during July, August and September is predicted to drop from 180mm (the 2008 baseline) to 120mm in 2020 – a reduction of 60mm - over 33% (Anderson et al., 2008). The average July temperature in the north east of Belize is predicted to rise from 28°C in 2008 to 29°C in 2020...to 33°C in 2080 (Anderson et al., 2008), with associated risks to health, agriculture and fish stocks, and implications to the long term viability of the northern aquifer. In the agriculture sector, a projected loss of production of between 10% and 20% is expected, with millions of dollars in lost revenue by the year 2100 (NCCO, 2016).

The increasing sea surface temperatures and the impacts of ocean acidification are predicted to have increasing impacts on Belize's reef, affecting both the fishing and tourism industries. The combined effects of reduced tourism demand, loss of infrastructure, loss of beaches and the loss of the barrier reef has been predicted to result in a reduced income of

approximately US\$24.2 million per year (NCCO, 2016).

The increasing number and intensity of tropical storm events has huge impacts on both urban and rural infrastructure, with increasing inundation of streets in Belize City, rural roads being destroyed and communities cut off by flood waters for weeks at a time, isolating communities and reducing access to fresh water, health care and schooling (Community consultations, Sarteneja, Chunox and Copper Bank, 2014). These storms have also contributed towards the nation's large fiscal debt, reducing funding availability for investment in areas such as natural resource management.

As a natural resource based economy, building resilience will be key to ensuring that Belize's natural systems are able to adapt to the projected impacts of climate change. Belize has established the National Climate Change Office to coordinate implementation of climate change mitigation and adaptation strategies, and established the Belize National Climate Change Committee (BNCCC) as a broad-based multi-stakeholder committee comprised of non-state, public and private sector representatives. The endorsement of Belize's five year National Climate Change Policy Strategy and Action Plan (NCCPSAP, 2016) is timely, as it aims to build capacity and resilience through both mitigation and adaptation measures that are intrinsically linked to biodiversity and ecosystems health. The action plan addresses eleven sectors and of those, forestry, fisheries, coastal and marine resources, water, agriculture and land use have cross linkages to biodiversity.



To improve Belize's capacity to adapt to climate change, the protected areas and biodiversity-focused policy and legislation should therefore be based on the following concepts (Usher, 2016):

- the need for resilience and resistance in ecosystems
- coherent ecological networks (including habitat restoration and creation)
- large reserve areas
- connectivity (corridor areas)
- ecological models to predict shifting ranges of species

The sectoral actions identified in the NCCPSAP have provided guidance in the elaboration of key strategies and actions needed in order to reduce the impacts of existing threats and respond to new threats as they emerge, allowing ecosystems to adapt and helping species to survive. There is still, however, a need to better integrate these actions into national development, agricultural and land use plans.

Key Consequences of Climate Change

Marine Environment

- Reduced health, and possible loss, of coral reef as a result of increasing water temperature, ocean acidification and increased storm impacts
- Declines in lobster, conch and finfish as reef health declines and ocean acidification increases
- Reduced income for the fishing industry and individual fishermen
- Reduced tourism revenues from diving and snorkelling as aesthetic appeal of reef decreases

- Loss of sandy beaches, as sea level rises, storm activity increases and ocean acidification reduces sand production
- Inundation of coastal lowlands, with migration of mangroves inland
- Increasing potential dredging activity for landfill as rising sea inundates cayes and coastline
- Reduced income from tourism and reduced viable employment opportunities, increasing fishing pressures as tour guides switch back to fishing
- Increase in illegal fishing practices as personal incomes decline
- Long term loss of coastal protection from barrier reef and atolls if reef growth can't keep up with sea level rise
- Increased risk to coastline, coastal and caye infrastructure from sea level rise, increased storms and storm surges
- Movement of coastal communities inland, increasing pressure on inland ecosystems

Terrestrial Environment

- Increased salination of aquifer, affecting ecosystems and water quality
- Loss of the more climate-sensitive species (e.g. amphibians) and the environmental services (e.g. pest control) they provide
- Reduced fecundity / survivorship with reduced reliability of water supply and associated impacts
- Increased damage to forests from tropical storms, with loss of species
- Ecosystem, economic and health impacts from increasing droughts and flooding
- Increased habitat loss with shifts in human footprint

Predicted Climate Change Impacts	Current Status	25 - 50 yrs	100 yrs
Sea level rise	Increased global average sea level rise rate of 1.8mm per year from 1961 – 2003 (IPCC, 2007). Current average increase in sea level rise in the Mesoamerican region is estimated at 3.1mm per year (IPCC, 2007).	The Hadley Centre’s Unified Global Climate Model (GCM), HadGEM2-ES provides additional data to the IPCC reports (IPCC 2007, 2013) for the three Representative Pathways Projection - RCP 2.6 (low emission), RCP 4.5 (medium emission), and RCP 8.5 (high emission) scenarios. In all three scenarios, the coastal sea level is projected to exceed 10 cm by the 2030s; 22, 23, and 38 cm respectively are projected for the low, medium and high emission scenarios by 2050 (NCCPSAP 2015).	By the end of the Century, the Hadley Centre’s Unified GCM, HadGEM2-ES projects coastal sea level to rise by 34, 56, 120 cm respectively for the low, medium and high emission scenarios (NCCPSAP 2015).
Sea surface temperature rise	Water temperature has increased by 0.74°C between 1906 and 2005 Current levels of increase are estimated at 0.4°C per decade (Simpson et al., 2009)		Predicted regional increase of temperature by up to 5°C by 2080, with the greatest warming being experienced in the north-west Caribbean (including Belize) (WWF, 2009).
Increased intensity of storms	Increased storms from 1999 onwards, with annual fluctuations. More storms during La Nina, fewer El Nino. Stronger storms >Cat 4 / 5		
Ocean acidification (corals, lobster / conch)	Atmospheric CO ₂ concentration has increased from 280 parts per million (ppm) in 1880 to 385 ppm in 2008 - 35% increase in hydrogen (Simpson et al., 2009). 48% of all atmospheric CO ₂ resulting from burning of fossil fuels has been taken up by the ocean (Hartley, 2010)	Predicted atmospheric CO ₂ levels of 450 by 2040 (Simpson et al., 2009) Predicted 30% decrease in pH Predicted decrease in calcification rate by 20 - 50% by 2050	Some experts predict a 35% reduction in coral growth by 2100 (Simpson et al., 2009) Decrease of between 0.3 and 0.5 units by 2100 (Hartley et. al. 2010).

<p>Rainfall</p>	<p>Mean annual rainfall over Belize has decreased at an average rate of 3.1mm per month per decade since 1960 (NCSP/UNDP)</p>	<p>Predictions suggest that between 2030/2040, the entire country will be characterized by reduced precipitation, with exceptions only in early and late parts of the wet season (May and Nov). The largest decreases of 2-5 mm/day are projected in the Stann Creek District with May and November marked by an increase of 1-3 mm/day in the Stann Creek, Cayo and Orange Walk Districts. 2050/2060 projections are for an enhancement of the 2030s pattern of reduced rainfall (-1 to -4 mm/day) in the dry season (December – April). Increased precipitation of 2-7 mm/day is projected during the early and late (Oct May - Nov) parts of the wet season in the Stann Creek and Cayo Districts (NCCPSAP 2015).</p> <p>Predicted ecological shifts up the altitudinal gradient of the Maya Mountains Massif may remove the cloud forest, and the catchment functionality important for maintaining rivers in dry season in the south of Belize, and impact the provision of essential nutrients to the reef environment.</p> <p>Increased concentration and seasonality of agrochemical delivery</p>	<p>In the decades of the 2070s and 2090s the surge in precipitation in the early part of the wet season (May) is no longer apparent, but instead, the Belize landscape is marked by reduced rainfall from December through to September. The largest reduction of up to -7 mm/day is projected in the Stann Creek District during the mid-wet season dip in June. The end of the wet season (Oct - Nov) maintains increased rainfall of 2 – 5 mm/day in the western Toledo, Stann Creek, Orange Walk and Corozal Districts (NCCPSAP 2015).</p>
<p>Air Temperature</p>	<p>Mean annual temperature has increased in Belize by 0.45°C since 1960, an average rate of 0.10°C per decade.</p> <p>Average number of ‘hot’ days per year in Belize (days exceeding 10% of current average temperature) has increased by 18.3% between 1960 and 2003 (NCSP/UNDP).</p>	<p>Through each decade, a broad nation-wide increase of approximately 1°C is projected in the decade of the 2020s, 1-1.8°C in the 2030s, 1.8-2.9°C in the 2050s over the 1961-1990 values respectively (NCCPSAP 2015).</p>	<p>An increase of 2.5-4.3°C is projected in the 2070s and 3.2-4.9°C in the 2090s over the 1961-1990 values respectively (NCCPSAP 2015).</p>

1.3 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

Biodiversity conservation, sustainable use and benefit sharing in Belize is conceptualized in various policy measures formally adopted by the Government of Belize (GOB), regulated through various national legislative and regulatory measures, and in its international commitments. These are administered by various GOB ministerial and departmental measures, with assistance from global and national environmental non-governmental organizations (NGOs) and local community-based organizations (CBOs).

These policy and legislative measures may be divided into two sub-categories: (i) biodiversity related policy and legislative measures, and (ii) policy and legislative measures applicable to sectoral activities affecting biological diversity.

1.3.1 NATIONAL SUSTAINABLE DEVELOPMENT FRAMEWORK

National development planning is geared towards achieving the Sustainable Development Goals, and articulated through the **Growth and Sustainable Development Strategy, 2015 - 2018 (GSDS)**. The GSDS is guided by **Horizon 2030 (2010-2030)**, a long-term national development plan, endorsed by Government in 2013.

Horizon 2030 recognizes the importance of the environment as one of its two core thematic areas - “caring for the environment as the source and basis of economical and social progress”, and reflects this in the first statement of its vision...

“Belize is a country of peace and tranquillity, where citizens live in harmony with the natural environment”

The Horizon 2030 plan provides a sustainable development context for the country, with a clear strategic focus on social and economic development. Environment is seen as the “bricks and mortar” on which development is founded, and is associated with a number of key statements:

- “people and the environment are at the core of the long term development framework. The health of citizens throughout their lives and the health of the natural environment in which they live are the critical factors that will help to determine their quality of life.”
- As its vision for the environment, Horizon 2030 states “Belizeans have a deep appreciation and love for Belize’s natural

resources and work collectively to protect the natural heritage and the economic value of these natural resources is quantified and officially recognized.”

- An integrated key stakeholder statement on the natural environment is that it is “valued and protected as the basis for all economic activity and therefore development planning is based on the principles of environmental sustainability.”

“The management of Belize’s natural resources including its natural habitats, water ways, and archaeological sites is a key feature of sustainability and a societal responsibility with government charged as the steward. In the Belizean context, taking into account the needs of future generations has involved questions concerning the exploitation today of natural resources such as oil, the forests, and the reef to help raise the living standard of current generations vs. policies that support conservation aimed at positioning Belize’s future generations for an improved standard of living.”

Belize Central Bank, 2012

The Horizon 2030 framework and the key environmental sustainability initiatives linked to it are used as the framework to guide international investment into Belize's development.

The GSDS places the environment as one of four Critical Success Factors - CSF3: Sustained or Improved Health of Natural, Environmental, Historical and Cultural Assets. CSF3 - "Sustained or Improved Health of Natural, Environmental, Historical and Cultural Assets" is considered vital for achieving national development, integrating the environment, biodiversity, and ecosystem health more firmly into national development goals, to be achieved through implementation of this National Biodiversity Strategy and Action Plan. Implementation of the NBSAP is considered crucial for achieving not only CFS3, but also CSF1 (Optimal National Income and Investment), CSF2 (Enhanced Social Cohesion and Resilience) and CSF4 (Enhanced governance and citizen security). The integrated management of our natural capital as expressed through the wealth of biological diversity is a central pillar of the economy, of social well-being and promotes good transparent governance. The GSDS also recognizes that biodiversity has intrinsic value in and of itself, and that "Belize's natural assets contribute to a sense of national identity, and their unique characteristics contribute to the profile of Belize in the international community."

The GSDS identifies a number of Flagship Actions for priority implementation between 2015 and 2018, including:

- Completion and implementation of the National Land Use Policy and Integrated Planning Framework
- Completion of the Water Master Plan, a National Groundwater and Surface Water Assessment, and a Water Vulnerability Profile
- Implementation of sustainable forest management, including protected areas management, as a tool to ensure watershed protection for water and food security

- Continued implementation of the Solid Waste Management Project (SWMP); and replication in northern and southern regions
- Continued mainstreaming of climate change considerations into national development planning
- Implementation of the Integrated Coastal Zone Management Plan (ICZMP)
- Effective implementation of the National Protected Areas System and its related Policies and Plans of Action
- Implementation of the National Environmental Policy and Strategy 2014-2024; and National Biodiversity Strategy and Action Plan
- Completion and implementation of other critical policies, plans, and projects, in the area of forests, fisheries, oil spill contingency, land-based and marine pollution, readiness for the Green Climate Fund, sustainable livelihoods, and technology for climate change mitigation and adaptation

The **National Poverty Elimination Strategy and Action Plan (NPESAP)** provides a comprehensive plan for policy and programmatic actions, and for the environment, was originally focused on achieving Millennium Development Goal 7 (MDG7: Ensure Environmental Sustainability). With relevance to biodiversity, the NPESAP has sought to support improvement in the land management framework and in natural resource management practices. Important strategies include:

1. Supporting development of an articulated policy for comprehensive land management
2. Modernisation of forest management legislation
3. Ensuring that indigenous land practices are effectively integrated into the national land management framework
4. Increasing value and sustainability of alternative livelihood activities implemented in and by rural communities
5. Ensuring that sustained levels of fresh water are available to all

In the revision of the strategy in 2009, biodiversity and the environment are also integrated into disaster management strategies, with the recognition that natural ecosystems provide one of Belize's primary defences in building resilience to climate change impacts:

“...a need for adequate mitigation and adaptation measures such as rehabilitation of land and marine systems and shifts toward sustainable land, water and other natural resource use practices. The latter would include changes in farming and water extraction practices, and continued focus on improving ecosystems through biodiversity protection.”

NPESAP 2009 - 2013

As a result, poverty alleviation Programs now integrate disaster risk management in environmental, social and infrastructure projects to minimize vulnerability of poor and marginalized persons to natural disasters, with targets that

include reducing the rate of biodiversity loss, and improving water quality and water security.

Despite the statements of Horizon 2030 and the investments in the drafting and revision of key environmental policies and legislation, integration of the environment into the national budget and focus on reviewing and endorsing environmental policies at Cabinet level are not prioritised, resulting in significant challenges in effective implementation. This gap is partially addressed through external funding and through partnerships with the NGO community and ERI (University of Belize) - through co-management agreements for protected areas, scientific research and monitoring, wildlife rehabilitation and environmental education and awareness. The Belize Government has, to a certain degree, developed a reliance on external funding and local partners in the management of its natural resources that has allowed it to consistently cut national budgets and human resources in those departments associated with the environment, impacting effective implementation of existing legislation, by those departments



1.3.2 BELIZE'S LEGISLATIVE FRAMEWORK

There are eighteen principal laws and accompanying regulations which are to some extent in compliance with Belize's commitments under the CDB and other biodiversity MEAs, in that they seek to conserve and sustainably use Belize's biodiversity and its products (Usher, 2016; Figure 1)

These laws represent a good foundation for achieving satisfactory biodiversity conservation and sustainable use in Belize, and as such are a necessary element of any good biodiversity legal and administrative framework. However, they do not represent a sufficient legal basis for achieving full compliance with the CBD as they lack various minimum required elements that biodiversity laws should contain. Many of the key Acts date back to the 1940's or earlier (Forest Act, 1927; Fisheries Act, 1948), but have been amended since their establishment to meet new challenges in the evolving national context (for example, the Forests (Protection of Mangroves) Regulations, 1989). Remaining shortcomings have however long been noted at the technical level and a number are currently in the process of being, or have recently been, revised, including the Fisheries Act, National Protected Areas System Act, Wildlife Protection Act, and Protected Areas Conservation Trust Act.

Species-based Laws

The Fisheries Act, Forest Act and Wildlife Protection Act are the three primary species-based biodiversity laws. All three are focused on the regulation of use (hunting, logging and fishing regulations), though with the inclusion of some conservation and protection elements. However it is recognised that there is a gap between these current laws and those that would be required to ensure maintenance of viable populations of Belize's biodiversity. The current framework should be extended to include specific monitoring protocols for the collection of adequate information, the provision of adequate management measures and the provision of

RELEVANT ENVIRONMENTAL LAWS

- Fisheries Act and Regulations
- High Seas Fishing Act
- Forests Act and Regulations
- Private Forests Conservation Act
- Forest Fire Protection Act
- Wildlife Protection Act
- Cruelty to Animals Act
- Animals (Control of Experiments) Act
- Meat and Livestock Act
- Bees Control Act
- Belize Animal Health Authority Act
- Environmental Protection Act and Regulations
- Protected Areas Conservation Trust Act
- Coastal Zone Management Act
- National Integrated Water Resources Act
- National Protected Areas System Act
- National Institute of Culture and History Act
- Protection of New Plant Varieties Act

adequate legal and institutional measures by which to assess the sustainable use of these species.

These species-based laws would also be strengthened by being linked to habitat and sustainable use measures, to indigenous and local community issues, such as customary use, and through the inclusion of species recovery measures, based on sound scientific information, when it is evident that use is diminishing populations to critical levels.

Species protection and recovery measures would also benefit from being enshrined in the same Act and not in separate Acts - with conservation and sustainable use measures disconnected, the important point that recovering and maintaining species in sustainable numbers is the ultimate biodiversity, species-based objective, is easily forgotten.

Ecosystem protection-based Laws

Belize has five primary ecosystem-based laws:

- National Protected Areas System Act
- Protected Areas Conservation Trust Act
- Coastal Zone Management Act
- National Integrated Water Resources Act
- National Institute of Culture and History Act

All seek to balance maintenance of environment and environmental services with national development needs. The National Protected Areas System Act (2015) has been significantly strengthened in comparison with the original National Parks System Act, with inclusion of provisions for the establishment of national biological corridors, and recognition of private protected areas. However, incentives for private sector involvement and the long term commitment of private lands to conservation have not yet been fully integrated - the latter would be significantly strengthened through the enactment of a Conservation Covenant Act.

Genetic resource-based Laws

Whilst the National Protected Areas System Act includes ensuring the maintenance and protection of in-situ genetic resources, Belize has no specific law or legal framework for addressing the conservation and sustainable use of genetic resources nor the legal status of genetic material from animals, plants and micro-organisms in in-situ and ex-situ conditions. Neither does it address the need to create a framework to facilitate access to genetic resources, inclusive of addressing such issues as negotiating mutually agreed terms, prior informed consent (PIC), research participation and sharing benefits, or regulation of use and release of living modified organisms (LMOs). A Biosafety Policy is currently being developed to address some of these gaps.

Laws Addressing Activities Damaging or Potentially Damaging to Biodiversity

Activities that are considered to have a potential or actual impact on biodiversity are well documented, and many are addressed under Belize legislation. The Environmental Protection Act and associated regulations (including the Environmental Protection (Impact Assessment) Regulations, Effluent Limitations Regulations and the Pollution Regulations), have entrenched minimum requirements, and provide for regulation of environmentally harmful activities, though are restricted to developments over a certain size, or situated on or near fragile ecosystems (primarily the coral reef and wetlands, or adjacent to protected areas). The big gap, as with many of Belize's laws, is the issue of effective enforcement.

The Environmental Protection (Impact Assessment) Regulations (EIA regulations) are focused on ensuring that developments take into account the need for conservation and sustainable use of Belize's biodiversity. EIAs, by law, include a description of the likely significant direct and indirect effects on the environment of a development, and possible impact on human beings, biodiversity / natural resources, water, air, climate, material assets including the cultural heritage and landscape, and any other environmental factors that need to be taken into account, with the identification of the least environmentally damaging alternative. EIAs do not currently require an assessment of species or ecosystems relative to their national context – proposed developments are often assessed based only on site specific data, and don't take into consideration, for example, the landscape or seascape role of the area in maintaining viable species (e.g. provision of critical mangrove fish nursery functionality in coastal lagoons, or annual species migration corridors).

Belize's Legal Framework and Climate Change

The implications of climate change impacts on species and ecosystems – the migration of species into new areas, the need to ensure migration of ecosystems as climate changes, and the current limited knowledge and modelling of what these shifts may look like - means that Belize will need a resilient and adaptive legal and institutional framework for management of biodiversity and ecosystem services moving into the future (Usher, 2016). A series of recommendations for key principles to ensure that Belize's biodiversity laws remain valid through these climate change shifts include:

Principle 1: Monitor and Study Everything All the Time: Belize has only a limited understanding of the complex, multivariable, nonlinear, cross-scale and changing socio-ecological systems that exist even prior to climate change impacts. A climate change resilient and adaptive biodiversity policy, legal and institutional framework will need to ensure integration of provision of funding into legislation for ongoing prioritised monitoring and basic scientific

and economic research, inked to the National Biodiversity Monitoring Plan to promote understanding of climate change impacts at all scales and across sectors, to assist policymakers in avoiding overly simplistic “solutions” to climate change adaptation.

Principle 2: Reduce / Eliminate Non-Climate Change Stresses and Promote Resilience: A climate change resilient and adaptive biodiversity policy, legal and institutional framework should focus on strengthening the regulatory and punitive measures in existing environmental laws which regulate anthropogenic, non-climate change stressors such as development and polluting industrial activities, improving ecosystem resilience. This would include reducing pollution, developing climate change-based sustainable yield standards, removing perverse incentives that encourage negative environmental impacts, and ensuring continued ecosystem connectivity.

A more in-depth review of climate change implications and the Belize's legal framework is presented in the annexes.



1.3.3 SECTOR-SPECIFIC PLANS, STRATEGIES AND POLICIES

Sector-specific plans, strategies and policies in different Ministries provide the operational direction and framework for national sustainable development action. These include the

- Agriculture Development Management and Operational Strategy (ADMOS),
- Belize Rural Area Development Strategy (BRADS)
- National Land Use Policy and Planning Framework (NLUPP)
- National Sustainable Tourism Master Plan (NSTMP)
- National Integrated Water Resources Management Policy
- National Environmental Action Plan (NEAP)
- National Environmental Policy and Strategy
- National Protected Areas Policy and Systems Plan (NPAPSP)
- National Health Plan and Policy
- National Climate Change Policy, Strategy and Action Plan (NCCPSAP)
- National Biosafety Policy
- The National Program of Action for the Control of Land Based Sources of Pollution in Belize (NPA LBS)
- National Implementation Plan on Persistent Organic Pollutants
- Integrated Coastal Zone Management Plan
- National Energy Policy

...and this document – the National Biodiversity Strategy and Action Plan.

The **National Land Use Policy and Integrated Framework for Land Resource Development** (endorsed in 2011, but not yet being implemented) is designed to serve as the planning framework to guide Belize in the environmentally and socially responsible use of its land resources. It integrates policies dealing with forests, agriculture and human

settlements to facilitate the integration of land use planning into development planning. It provides the guidance for management of Belize's land resources in an equitable, sustainable, fully representative and accountable manner. The Policy recognizes as part of its guiding principles that:

- the “management and protection of the integrity of natural resources and the natural environment in general is essential for the long-term, sustainable utilization of land”
- the “development of land should be undertaken on the basis of sustainability”
- “there are certain lands where the best use is conservation due to a variety of factors ranging from watershed protection, to landscape values, to ecosystem importance.”
- conservation of biodiversity and natural resources as well as the associated retention of a variety of environmental services required is harmed by fragmentation and thus requires large blocks of land.
- climate change adaptation and mitigation issues must be considered and mainstreamed into land use planning

National Land Use Policy, 2011

This Policy strengthens mechanisms to address the past weaknesses of fragmented and uncoordinated implementation of previous policies across Ministries, and attempts to ensure that it integrates cross-sectoral policies where relevant, supporting other policies rather than replicating them. Fifteen strategies are included specifically for effective land use planning for natural resources and conservation. These include:

- The recognition and maintenance of the intrinsic value of the land and of Belize's biodiversity and ecosystems.
- The need to ensure the maintenance of key environmental services - maintaining the integrity of key watersheds, a sustainable supply of timber and non-timber resources,

and of mangroves, in their roles in mitigating storm impacts, preventing erosion, and as nurseries for many economically important marine species.

- The effective maintenance of the National Protected Areas System
- The development and implementation of policies for effective management of the seabed and cayes
- The establishment of biological corridors for ensuring ecosystem connectivity
- Maintenance of the 66 foot reserve along watercourses, of natural cover on slopes steeper than 25 degrees, and of caves and sink holes

The Policy also recognizes the importance of adaptation to climate change. However, despite its national acceptance in 2011 and its strengths, the framework and policy is not yet being implemented, and is currently being revised.

The **Belize Rural-Area Based Development Strategy (BRADS)**, developed under the Ministry of Labour, Local Government, Rural Development, NEMO and Immigration (MLLRD), and approved in 2013, has as its Vision:

The rural areas of Belize have significantly improved quality of life; both human and of the ecosystems, through innovation, and informed decision-making capabilities of their populations, while appreciating and respecting their cultural identities and the potential of each rural area with robust and integrated institutions responsible for inclusive and sustainable development.

The policy, part of a larger, regional initiative - the 2010-2030 Central American Strategy for Rural Area-based Development (ECADERT) - focuses on addressing the issue of limited employment opportunities in the rural communities and reducing the associated migration of people to more urban areas. It seeks to promote broad-based economic growth in rural areas and the reduction of the incidence of poverty through capacity building, strategic infrastructure development, and micro-enterprise. Whilst BRADS does not specifically

integrate the environment directly, it is addressed within the larger, ECADERT project (“ECADERT Strategic Objective 5...foster improved environmental management...adapting their practices to the requirements for renewal of ecosystems and biodiversity conservation”), and international funding agencies are linking this with strengthening natural resource use management within their investment strategies for Belize.

The **National Food and Agricultural Policy** is directed towards ensuring Belize can meet its food production needs, and has traditionally been focused on food production, largely to the exclusion of environmental considerations. The Policy is currently being revised to strengthen integration of maintenance of ecosystem services and adaptation to climate change, to better balance agricultural development with the environment.

The **National Climate Change Policy, Strategy and Action Plan (NCCPSAP, 2016)** provides an overarching policy that presents comprehensive strategies to strengthen Belize’s capacity to adapt to the current and future impacts of climate change. Its role is to mainstream climate change adaptation into national development planning, providing an integrated and well-coordinated approach to climate change adaptation and mitigation across all sectors (agriculture, coastal zone, energy, environment, fisheries, forestry, health, housing, local government, tourism, transportation, and water resources).

Implementation of the Policy will be by the National Climate Change Office, through coordination across Government Ministries and departments, non-governmental and civil society entities involved in addressing climate change in Belize. The **National Climate Resilience Investment Plan** (NCRIP; MoFED, 2013, endorsed in 2014) provides the framework for an efficient, productive and strategic approach to building economic and social resilience and development.

The **National Protected Areas Policy and System Plan (NPAPSP)** is the primary tool for protected area planning and management, and was endorsed by the Government of Belize in 2005/6. It has recently been revised and updated (2015) and provides the framework for ongoing effective management of Belize's natural resources within protected areas, through the Ministry of Agriculture, Fisheries, Forestry, the Environment and Sustainable Development. As part of this national initiative, Belize has:

- developed a strengthened co-management agreement with co-management partners, a protected area management planning framework and a framework for assessment of protected area management effectiveness at the national level
- conducted a gap analysis to ensure that the NPAS includes representative ecosystems and maintains ecosystem services
- assessed protected areas (including private protected areas) for their contribution and prioritisation to the NPAS and resilience to climate change
- used system-level planning units to ensure protected areas are better managed and more cost effective within the landscape / seascape complex

The Forest Department, is in the process of revising the **Forest Policy** and the **Wildlands Fire Policy** for improved management of the forestry sector. The focus is on long term sustainable forest licenses with a shift from short term licenses to 20 to 40 year timber concession agreements for the Forest Reserves based on long term sustainability, encouraging investment in replanting and effective management of timber stocks. These new agreements include conservation of biodiversity within their remit, strengthening biodiversity conservation within the extractive Forest Reserves.

The Wildlife Protection Act provides a framework for management and protection of Belize's wildlife, and is being strengthened through the development of a three-year National Wildlife Strategy (draft, 2016). The penalties and fines in the current Wildlife

Protection Act are considered to be too low to be a serious disincentive, and the Act is scheduled for revision in early 2017.

Belize has endorsed the **National Integrated Water Resources Management Policy (2008)**, and established the Water Authority for the protection and regulation of water catchment areas, aquifers, and surface water, with the responsibility of controlling water quality and quantity. The policy also seeks to harmonize relations with Mexico, and, to a lesser extent, Guatemala in the areas of recharge rates, impacts, and, for the Mexico / Belize Rio Hondo system, includes early warning systems for floods.

Management of the water resource is considered to be of increasing importance following recent droughts that have significantly affected rural communities and the agricultural sector. The Environmental Impact Assessment process has been strengthened, with large scale agricultural, industrial and tourism developers being required to provide more information on water extraction and water use. The issues of large scale removal of forest and the impacts on rainfall are now also being investigated, with a recognised need for the development of guidelines to ensure sufficient forest is maintained to recharge the aquifer. The associated **National Integrated Water Resources Act** has extensive implications, especially with the inclusion of a clause that states "...this act supersedes other acts". This overlaps with the mandate of the Forest Department for management of the headwaters through the Forest Act, and the National Protected Areas System Act, guiding management of the National Protected Areas System within which the majority of the watersheds are located.

The **National Solid Waste Management Policy (NSWMP)**, supported by the **National Solid Waste Management Strategy and Implementation Plan**, has the overall goal of ensuring that "the system for managing solid wastes in Belize is financially and environmentally sustainable, and contributes to improved quality of life", whilst also contributing to sustainable development goals by promoting re-use,

recycling and / or recovery of waste wherever feasible and beneficial.

The cross-cutting **National Environmental Strategy and Action Plan**, developed by the Department of the Environment with multi-sectoral participation. This has as its Vision “To be leaders in environmental stewardship for sustainable development both nationally and regionally”, with the Mission of “ensuring that Belize’s development is sound through effective environmental management for present and future generations.” The Action Plan was developed as an operational and management tool for the mobilization of resources, development of capacity (both institutional and legal), and as guidance for addressing gaps and improving the execution of the Government of Belize’s environmental protection and natural resources management efforts (BET, 2014).

The Department of the Environment (DoE) promotes a number of key policies – including The DoE **Environmental Impact Assessment (EIA)** framework, perhaps one of Belize’s strongest environmental protection mechanisms, with developments being legally bound to follow Environmental Compliance Plans. These include policy guidelines for the maintenance of the 66’ reserve (protecting the riparian and coastal belt), and the steep slope protection afforded to slopes with gradient of over 25°, making them legally enforceable. The EIA framework is being significantly strengthened through the Key Biodiversity Project, and is identified as a critical strategy in the Government toolbox of environmental management.

The Coastal Zone Management Authority and Institute (CZMAI) was mandated to develop a **National Integrated Coastal Zone Management (ICZM) Plan**, which was finalized and endorsed in 2016. The Plan recommends actions that will ensure sustainable coastal resource use by balancing conservation ideals with the economic and social needs of Belize. The plan presents an “Informed management scenario, balancing conservation and development, based on assessments of use, value,

ecosystems, socio-ecological vulnerability and resilience, socio-economic vulnerability, ecosystem adaptation” and has support from the general public in Belize for its implementation. It should be noted, however, that the CZMAI, established as a Statutory Authority under the Coastal Zone Management Act in 1988, has no mandate for implementation, so relies on mainstreaming the plan, with adoption and implementation by the respective Government and NGO agencies.

The Fisheries Department and NGO partners are leading the region in establishing Managed Access across coastal waters. This rights-based fishery management tool is designed to increase sustainability of commercial fishing and strengthen ecosystem-based management within Belize’s Marine Reserves. The framework for fisheries management is being strengthened through the revision of the Fisheries Act, as the **Fisheries Resources Bill**, incorporating the main elements of a modern and robust fisheries law, including:

- improved definitions
- strengthening of principles governing conservation and management (including the Precautionary Approach, Ecosystems Approach and the protection of biodiversity)
- fisheries management planning (including species management and development of species recovery plans)
- better definition of the role of cooperatives
- better definition of the role of a Fisheries Advisory Board (or Council)
- strengthening of surveillance and enforcement, jurisdiction and evidence issues, offences and penalties

The **National Sustainable Tourism Master Plan** (2010) is focused primarily on economic growth of the tourism sector, providing guidelines for tourism development in different areas of Belize. Despite the recognition of the importance of the environment for tourism development, there is limited integration of environmental safeguards in the NSTMP. This may

be balanced, however, by the renewed interest in the Responsible Tourism Policy.

The **National Institute of Culture and Heritage** (NICH), the statutory body responsible for the Archaeological Reserves and cultural heritage of Belize, launched the **National Cultural Policy**, which integrates the protection of the environment. This recognition of the importance of environmental protection, and in fact the environment in general, in the Cultural Policy is a demonstration of the increasing mainstreaming of environment across Ministries.

“Attention is called to the pivotal importance of environmental awareness and protection in the global environmental system, for example climate change. Cultural practices impact the environment in both positive and negative ways and should therefore be evaluated.”

It is also interesting to note, however, that the environment is not mentioned in the NICH 2010 – 2015 Strategic Plan, and that biodiversity protection is not a focus of planning for the Archaeological Reserves.

The **National Energy Policy Framework** addresses barriers to options for energy efficiency, sustainability and resilience over the next 30 years. It is supported by the Sustainable Energy Action Plan, a

tool focused on achieving Belize’s renewable energy while also meeting the Government’s economic social and environmental goals. A **Low Carbon Development Roadmap** was prepared for Belize in 2015 / 2016, identifying and assessing challenges and gaps to following a low-carbon economy path in the agriculture, forestry, energy, tourism and transport sectors, towards achieving the national Growth and Sustainable Development Strategy (GSDS), based on local socio-economic and development priorities. There is, however, a need to better integrate this into the different departments and across different sectors.

National biodiversity research and monitoring activities are prioritised, and guided by the **National Environmental and Natural Resources Management Research Agenda**, developed by the University of Belize – Environmental Research Institute, through multi-stakeholder Government and non-Government participation. The associated **National Biodiversity Monitoring Program** has been designed to measure success of Belize’s natural resource management outputs, and will be adapted to provide the vehicle for monitoring success of outputs of the National Biodiversity Strategy and Action Plan.

Whilst Belize has many good policies and strategies across different sectors, there is a need for tighter alignment, particularly between agricultural policies, energy policies and climate change adaptation policies, as the three identify conflicting land uses for the remaining unprotected forested areas.



1.3.4 MULTILATERAL AGREEMENTS

Belize is Party to a number of global Multilateral Environmental Agreements (MEAs) that focus on biodiversity issues. It is also a party to a number of key regional environmental agreements (Figure 2). Many of these, these are legally binding, and Belize is required to fulfil the obligations, with the integration of these requirements within the national legislative framework. It has not, however, signed on to two - the Convention on Conservation of Migratory Species of Wild Animals (Bonn Convention, 1979) and the International Treaty on Plant Genetic Resources for Food and Agriculture. Belize is also a party to a number of regional biodiversity conventions.

The **Convention on Biological Diversity (CBD)** is perhaps the most important instrument of international law addressing biodiversity protection and sustainable use. Belize signed the CBD on 13th June 1992 in Rio de Janeiro, Brazil; and ratified it on 30th December 1993. The objectives of this legally binding Convention are:

- the conservation of biological diversity
- the sustainable use of its components
- the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, taking into account all rights over those resources and to technologies, and by appropriate funding

(CBD, 2016).

Under Article 7 (c) of the CBD, Belize is committed to identification of processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and other techniques; while Article 8 (l) requires that where a significant adverse effect on biological diversity has been determined, Belize is required to regulate or manage the pressures and impacts.

INTERNATIONAL CONVENTIONS

- Convention on Biological Diversity (CBD, 1993)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1975)
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar, 1971)
- Convention on World Heritage Sites (WHC, 1972);
- International Plant Protection Convention (IPPC, 1952).
- Convention on Climate Change (UNFCCC, 1994)
- Convention to Combat Desertification (UNCCD, 1998)
- Convention on Persistent Organic Pollutants (POP, 2010)
- International Convention for the Prevention of Pollution From Ships (MARPOL, 1978);

REGIONAL AGREEMENTS

Central America

- Alliance for the Sustainable Development of Central America (ALIDES) (1994)
- Sistema de la Integración Centramericana (SICA) (Tegucigalpa Protocol 1991)
- Central American Commission for Environment and Development (CCAD) (1989)
- Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OPESCA)
- Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (1983)
- Cartagena Convention Protocols on Oils Spills and Land Base Sources of Marine Pollution

Wider Caribbean

- Revised Treaty of Chaguaramas (RT, 2001)
- Inter-American Convention for the Protection and Conservation of Sea Turtles
- Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region
- Caribbean Regional Fisheries Mechanism (CRFM) Agreement (2002)

As a requirement of the CBD (Article VI (a)), the CBD focal point in Belize, the Forest Department, is required to develop and implement the National Biodiversity Strategy and Action Plan (NBSAP) to regulate and manage activities that have or are likely to have significant adverse impacts on the conservation, sustainable use and the sharing of the benefits of Belize's biological diversity.

Belize is a party to the **United Nations Framework Convention on Climate Change (UNFCCC)** which, whilst not an MEA, is closely associated to the environment, and sets an overall framework for intergovernmental efforts to tackle the challenge posed by climate change. Belize is considered a Small Island Developing State under this convention, with the impacts of climate change far outweighing the contribution to emissions, and at high risk of negative impacts from climate change. It has recently submitted its Nationally Determined Contribution (NDC), following decision 1 CP/21 of the Paris Agreement. Belize is also an active participant in the Intergovernmental Panel on Climate Change, in the Conference of Parties to the UNFCCC, in meetings at regional level focused on addressing climate change issues.

At the regional level, Belize is included in both Central American and Wider Caribbean agreements. The **Sistema de la Integración Centramericana (SICA)**, provides a regional coordination and collaboration framework for Central America. Under this is the **Central American Commission for Environment and Development (CCAD)**, the regional organization of Heads of State formed under SICA, responsible for the environment of Central America. CCAD initiated the regional Mesoamerican Biological Corridors and Mesoamerican Barrier Reef Systems Programs. The **Alliance for the Sustainable Development of Central America (ALIDES)** calls for sustainable development with strategies for improved management of more sustainable resource extraction.

As a signatory to the Cartagena Convention, Belize has ratified the Land-Based Sources of Pollution Protocol as part of a concerted global effort to

address the impacts of land-based sources of pollution on the marine environment. As part of its obligations, it produced the **National Program of Action for the Control of Land Based Sources of Pollution in Belize (NPA LBS)** in 2008, under the Department of the Environment. The plan addresses the issues of domestic sewage and waste water, reduction of bilge and sewage discharge into the marine environment, nutrient runoff, deforestation / land use change, and solid waste management.

Under the Cartagena Convention, Belize has ratified the **Specially Protected Areas and Wildlife Protocol (SPA)**, signed in 1990 by Belize as a contracting party to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region. This is focused on "protecting critical marine and coastal ecosystems in the Wider Caribbean Region, whilst promoting regional co-operation and sustainable development", safeguarding sensitive habitats and protecting endangered and critically endangered species.

Belize is also a signatory of the regional **Revised Treaty of Chaguaramas**, which, as well as establishing the Caribbean Single Market Economy (CSME), also addresses common environmental and sustainable use issues under Article 12 (h): "promote and develop policies for the protection of and preservation of the environment and for sustainable development". Whilst this treaty seeks to open opportunities to all members of CARICOM, amendments exempt its application to the fisheries sector, preserving the status quo of the Fisheries Act, with the fisheries sector limited to access by Belizean nationals only (Edeson et al., 2010). Fishery initiatives currently seek to standardize the size limits and seasons for lobster across the region, though this is still an ongoing process. The **Caribbean Regional Fisheries Mechanism (CRFM) Agreement** is targeted at the efficient management and sustainable development of marine and other aquatic resources, as well as cooperative management of shared / migratory resources.

1.4 LESSONS LEARNT FROM THE 1998 NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN

The first National Biodiversity Strategy and Action Plan (NBSAP, 1998 – 2003), whilst never formally endorsed, has provided an informal framework for the guidance of biodiversity conservation in Belize over the years, and has been used by successive Governments, NGOs and CBOs in the prioritisation and justification of biodiversity conservation activities. Perhaps the most lasting contribution of the NBSAP was to bring the conservation community together – from the Government Authorities to the community participants - to decide on common goals, for the first time in Belize, opening the way to a much more participatory approach.

Since 1998, the National Protected Areas System has grown to meet most national and international commitments, and Managed Access has significantly strengthened natural resource management in the marine environment, with Belize becoming a regional leader for these two accomplishments, and for its strong community participation ethos and co-management framework. Sustainable forest management is also being strengthened. Generally, however, this has not been as a result of active implementation of the NBSAP. The Plan has been hampered by uncoordinated implementation, and many key strategies have not yet been fully achieved even now, 16 years later – including the revision of the Forest and Fisheries Acts, the Wildlife and Mangrove Protection Acts, and the Forest Policy.

A number of historical and current short and long term barriers have been identified to the effective implementation of the NBSAP:

The Need for:

National Endorsement: Despite its very strong and highly participatory development, lack of formal endorsement of the draft 1998 NBSAP by the Government of Belize reduced the impact of the document, resulting in limited mainstreaming once it was completed.

Mainstreaming: Most activities that have been implemented have been in areas under the mandate of authorities responsible for natural resource management (for example, under the Forest and Fisheries Departments, and the Department of the Environment), and those areas of specific or site-level interest to NGOs. Within these agencies, the NBSAP has been used to some extent to develop workplans and justify funding for activities. In other Ministries, the NBSAP was not well known or disseminated, and therefore not well integrated into workplans or subsequent strategic plans. This resulted in limited wider implementation across the national landscape / seascape.

Integrated Coordination: The lack of a dedicated coordinating body or focal point was a severe limitation until the formation of the National Biodiversity Office in 2002. Once created, the limited availability of experienced, dynamic people with the expertise and experience to fill the post and lead implementation of the NBSAP forward in Belize proved to be a major constraint. The National Biodiversity Office eventually became defunct.

There was also an issue of limited communication and coordination between the agencies sitting on the National Biodiversity Committee, and therefore theoretically involved in coordinating implementation, with these being housed within different Ministries. The National Biodiversity Committee, too, eventually became inactive.

Broad Distribution: The NBSAP was printed in two volumes and distributed to workshop participants, with a particular focus on ensuring community participants had access. However, based on the very low level of recognition and use shown by participants from departments across Ministries during this review, dissemination beyond participants appears to have been very low. With the very limited follow-up beyond the dissemination stage, the NBSAP never became firmly meshed into

other Departmental policies, and biodiversity and the environment never made it into the original list of national priorities.

Greater Structure of the Action Plan: Belize was ahead of its time in developing its NBSAP, but as a result, did not incorporate a number of the strengthening mechanisms found in more recent NBSAPs from other countries. These include specific, well-worded, achievable targets, and integrated evaluation and indicator frameworks. The Action Plan was extremely detailed, but the large number of individual activities made implementation a daunting task. Many activities also had multiple agencies listed as “Proposed Responsible Agencies”, with no identification of a single lead agency to take responsibility for implementation.

Realism: The budget for the implementation of the NBSAP was estimated at Bz\$40 million – at that time, with a national economy struggling to overcome a series of national disasters and a focus on national recovery, Belize’s ability to achieve implementation was seriously undermined. Whilst it is broadly recognized that the management of biodiversity and natural resources in general needs a far higher level of prioritization by the Government of Belize and an appropriate level of financial allocation in the national budget, the cost of implementation of the original NBSAP would still be beyond realistic expectations.

Connectivity of Ownership: There was extensive cross sectoral participation from across Ministries in Belize, both in membership of the National Biodiversity Committee and in the workshops for development of the NBSAP strategies. However, there was limited connectivity between the people who participated in the creation of the NBSAP, and those in a position to implement it, particularly following the change in Government in 1998. This resulted in shifts of attention away from strategies developed by the previous Government, with reshuffling of personnel in the implementing agency, and initially no single champion to lead the implementation process or to ensure the start-up process successfully engaged cross sectoral buy-in.

The structural Governance shift from Permanent Secretaries to politically appointed Chief Executive Officers in the year 2000 also reduced institutional connectivity, both across time and between Ministries. Permanent Secretaries were engaged based on their knowledge and experience in the natural resource management sector, with a longer tenure and greater long-term relevant experience and commitment providing greater continuity within Ministries, and facilitating improved cross Ministerial collaboration. This shifted to a system of Chief Executive Officers, appointed by the Ministers, generally based on their political affiliations and knowledge of the process of governance, often without prior experience in the natural resource management field, and without the historical knowledge of activities in this sector. This has resulted in less stable departments that have to withstand frequent changes in management linked to the national election cycles, reducing the potential for taking a project such as the NBSAP from development through to implementation.

MEDIUM-TERM BARRIERS

Limited Long-term Awareness: During the review process, it became very clear that the NBSAP was a very short-lived plan. Conservatively, fewer than 50% of participants knew that Belize had a previous NBSAP, and fewer than 20% had actually seen it. Only a handful of participants had read the document, the majority of those being either involved in its original development, or in the NGO sector and using it to leverage funding. The Plan itself contains key strategies, many of which have been or are being implemented by both Government and NGOs alike – but not as a result of active, implementation of the Plan itself.

No Monitoring and Evaluation Process: Whilst the need for periodic review and revision is recognized within the NBSAP, there is no framework or timeline for the review and revision process within the Plan, and there has been no in-depth review / revision of the NBSAP since its development (however, this is more a result of the short term barriers to

implementation, rather than the lack of a review mechanism).

Out of Date: The NBSAP is now considered out-of-date. It has not been updated to incorporate more recent CBD requirements, such as valuation of ecosystem services, Aichi Targets and climate change adaptation. Whilst it is possible to download the NBSAP as a scanned image document in many individual PDFs from the CBD website, it cannot be considered a living document in this format, being neither easily accessible nor easy to revise.

The more recent National Protected Areas Policy and System Plan (2005/6) benefitted from more advanced planning tools and the identification of the weaknesses of the NBSAP, and is a far stronger, better disseminated, more implementable plan. As such, it was formally endorsed by the Government of Belize in 2006 and became the blueprint for biodiversity management. However it has a specific focus on the management of investments and activities linked to the National Protected Areas System. In the absence of a stronger NBSAP, this has left the biodiversity and natural resources of the wider landscape outside the protected area system largely off the radar in terms of governance at the national level.

Changing Perspectives: Following the development of the NBSAP in 1998, the intervening period was a time of perceived conflict between Belize's development agenda and its natural resource / conservation agenda, with a widening gap between the two sectors. However, more recently, there have been steps taken towards integration of environment into national development planning through Belize's commitment to the global Sustainable Development Goals and national Growth and Sustainable Development Strategy. There has also been the recognition and acceptance at the Government technical level of the importance of the environment and environmental services in building national resilience and adaptation to the predicted climate change impacts. These two advances provide a springboard for this revision of the NBSAP, and mainstreamed across Government and civil society.

Challenges

As with all Governments, Belize has been faced with the challenge of balancing economic progress with environmental sustainability (NHDAC, 2013), and the environment has often been marginalised or ignored in national decisions.

There is only limited recognition of the critical importance of the environmental services provided to Belize, and the lack of value placed on the environmental services results in biodiversity conservation and sustainable use not being line-itemed in the yearly financial appropriations. At cabinet level, there is a need for strengthened understanding of the critical importance of the interconnectivity between the environmental services that support Belize's economy and the health and wealth of its people. This gap, combined with political and personal interest agendas, have marginalised the environmental agenda, with little effort to truly integrate it into the national development agenda. Despite the statements of Horizon 2030 and the priorities set by GSDS, and the international investments in drafting and revision of key environmental policies and legislation, integration of the environment into the national budget and review and endorsement of environmental policies at Cabinet level are not prioritised, resulting in significant challenges in effective implementation. Environmental values are not accurately reflected in monetary terms as an asset in Belize's natural balance sheet, and natural resources used for commercial or personal purposes are undervalued, as are the fines imposed for misuse. This is also reflected in the limited finances allocated for implementation of these policies, even those for ensuring future water security and in building Belize's resilience to climate change.

A further challenge to implementation is the wide gap between the land use/agricultural frameworks that promote land development/agricultural production and the policies that promote biodiversity conservation and sustainable use. This has led to a position of conflict between the two stands, with conservation often being seen as a

barrier to development. This situation, however, is changing as Belize moves forward, the priority being to achieve policy coherence and a collaborative framework for implementation of policies in a structured, coordinated, cost effective manner, with mainstreaming of biodiversity to overcome historical barriers. There is also a need to strengthen policies within the legislative framework to facilitate effective implementation and enforcement. Recommendations for addressing gaps and challenges are presented in the following matrices (Table 4).

With the establishment of the National Integrated Water Resource Authority (NIWRA), the endorsement of the Integrated Coastal Zone Management Plan (ICZMP), and the multi-sectoral participation in the development of both the NBSAP and the National Environmental Action Plan (NEAP). Belize is gradually integrating adaptation to climate change into national policies, and recognizes the resilience that can be provided by its relatively unfragmented forests, ecosystem services and biodiversity.



**GAPS AND LIMITATIONS IN BIODIVERSITY POLICIES AND LEGISLATION
POTENTIALLY AFFECTING IMPLEMENTATION OF NBSAP**

GOAL A (MAINSTREAMING): Improved environmental stewardship is demonstrated across all society in Belize, with an understanding and appreciation of marine, freshwater and terrestrial biodiversity, its benefits and values.

NBSAP TARGETS	POLICY /LEGISLATION	GAP/LIMITATION	RECOMMENDATIONS
<p>TARGET A1. By 2020, a framework has been designed and adopted to guide the harmonization of policies that positively impact biodiversity, across all Government departments.</p>	<p>Policy: All relevant national policies</p>	<p>Endorsement of environmental policies at Cabinet level is not prioritized, resulting in significant challenges in effective implementation.</p>	<p>Biodiversity Office / National Climate Change Office / Sustainable Development Unit to lead process of designing a policy harmonization framework and identifying synergies</p> <p>Prioritised endorsement and implementation of GSDS CSF3 policies</p> <p>A directive from the Prime Minister's office for integration of biodiversity into all relevant national policies, with identification of a Biodiversity Focal Point in each Ministry</p>
<p>TARGET A2. By 2020 Belize has legislated and implemented a national harmonized system of environmental standards and incentives that promote environmental responsibility and sustainability.</p>	<p>Policy: National Land Use Policy and Integrated Planning Framework National Food and Agriculture Policy</p> <p>Legislation: Environmental Protection Act (EPA) Land Tax Act Belize Tourism Board Act Forests Act Fisheries Act / Fisheries Act / Fisheries Resource Bill (draft) Wildlife Protection Act</p>	<p>Both National Land Use Policy and Integrated Planning Framework (2011) and National Food and Agriculture Policy (2002 – 2020) promote incentives harmful to biodiversity conservation and sustainable use</p> <p>Current legislated penalties are considered too low to be disincentives</p>	<p>Develop policy initiatives in land use, agriculture and natural resource use frameworks that ensure sustainability.</p> <p>Develop policy initiatives to promote adoption of existing and new regulatory standards by businesses in various sectors, with certification, regular monitoring and auditing.</p> <p>Amend the EPA to include a national harmonized system of environmental standards.</p> <p>Amend Land Tax Act to support incentives for maintenance of environmental services, and remove significant disincentives.</p> <p>Strengthen regulations for tourism operations relevant to maintenance of environmental standards.</p> <p>Establish standards for the guidance of sustainable forest and wildlife management and planning best practices related to ranching, harvest quotas, and improved restrictions.</p>
<p>TARGET A3. By 2020, 100% of relevant national development decisions in Belize take into consideration ecosystem services and biodiversity relevance to the national economy.</p>	<p>Policy: All biodiversity related policies.</p> <p>Legislation: National Integrated Water Resource Act National Protected Areas System Act Forest Act Fisheries Act /Fisheries Resource Bill (draft)</p>	<p>National decision making does not reflect the contribution of ecosystem services and biodiversity value to the national economy</p>	<p>Implement recommendations from Target A1</p> <p>Reflect natural capital accounting as an annual contribution towards national development</p> <p>Amend relevant acts to integrate ecosystem values and payment for ecosystem services</p>

GOAL B (PRESSURES): Direct and indirect pressures on Belize’s marine, freshwater and terrestrial ecosystems are reduced to sustain and enhance national biodiversity and ecosystem services

NBSAP TARGETS	POLICY /LEGISLATION	GAP/LIMITATION	RECOMMENDATIONS
<p>TARGET B1. By 2020 primary extractive natural resource use in terrestrial, freshwater and marine environments is guided by sustainable management plans, with improved biodiversity sustainability.</p>	<p>Policy: Forest Policy</p> <p>Legislation: Forest Act Forests (Protection of Mangroves) Act Fisheries Act / Fisheries Resource Bill (draft) Wildlife Protection Act National Integrated Water Resource Act National Protected Areas System Act Mines and Minerals Act</p>	<p>The need for nationally coordinated sustainable management plans for natural resource extraction</p>	<p>Policies and legislation need strengthened requirements for nationally coordinated sustainable management plans for natural resource use, with effective monitoring and evaluation frameworks, integrating climate change considerations</p> <p>Amend listed Acts to reflect biodiversity considerations</p> <p>Revise Forests (Protection of Mangroves) Regulations</p> <p>Amend natural resource extraction legislation, regulations and permitting system, with increased penalties for lack of compliance.</p>
<p>TARGET B3. Between 2016 and 2020, Belize has limited its net rate of land use change for prioritized natural ecosystems/areas to no more than 0.6% per year.</p>	<p>Policy: National Land Use Policy and Integrated Planning Framework (2011) Integrated Coastal Zone Management Plan (ICZMP)</p> <p>Legislation: Land Utilization Act National Lands Act Land Tax Act Environmental Impact Assessment Regulations</p>	<p>The Integrated Coastal Zone Management Plan (ICZMP) and National Land Use Policy are not yet being implemented</p>	<p>Implement Activity B2.1: Extension of use of Environmental Compliance Plans, and environmental standards to lands of 100 acres and above, coastal and cayes, with targeted protection of sensitive / priority ecosystems</p> <p>Amend Land Tax Act to incentivise long term commitment of land to conservation / maintenance of environmental services (as supported by the National Land Use Policy)</p> <p>Amend legislation to incentivize location of new developments on degraded lands rather than removing natural ecosystems critical for climate change resilience</p>
<p>TARGET B4. BY 2020 Belize is restoring 30% of degraded ecosystems to maintain and improve the status of ecosystems and ecosystem services essential for increasing Belize’s resilience to climate change impacts.</p>	<p>Policy: National Poverty Elimination Strategy and Action Plan, 2009-2013 (NPESAP). Forest Policy National Land Use Policy and Integrated Planning Framework (2011)</p>	<p>The NPESAP promotes strengthened land and natural resource management, including water resources, but with no requirements / incentives for restoration of degraded ecosystems.</p>	<p>Include the restoration of degraded ecosystems in the NPESAP and other relevant policies.</p>
<p>TARGET B6. By 2018, Belize has a strengthened system in place for early detection and effective management of invasive species.</p>	<p>Legislation: Belize Animal Health Authority Act Forest Act Fisheries Act //Fisheries Resource Bill (draft) CITES Act (draft)</p>		<p>Review and revise relevant legislation to ensure broad coverage for addressing management of potential invasive species</p>



GOAL C (PROTECTION): Functional ecosystems and viable populations of Belize’s biodiversity are maintained and strengthened

NBSAP TARGETS	POLICY /LEGISLATION	GAP/LIMITATION	RECOMMENDATIONS
<p>TARGET C1. By 2030 Belize’s natural landscapes and seascapes are all functional and build biodiversity resilience to climate change.</p>	<p>Policy: National Poverty Elimination Strategy and Action Plan, 2009-2013 (NPESAP) National Land Use Policy and Integrated Planning Framework National Protected Areas System Plan National Climate Change Policy and Strategic Action Plan Forest Policy</p> <p>Legislation: Environmental Protection Act and regulations Land Tax Act Forest Act Fisheries Act /Fisheries Resource Bill (draft)</p>	<p>The importance of functioning ecosystems and the provision of their environmental services is not adequately recognised by decision makers or expressed in policies</p> <p>The Integrated Coastal Zone Management Plan (ICZMP) and National Land Use Policy are endorsed, but not yet being effectively implemented</p>	<p>Integrate the critical role of natural resources and ecosystem services in poverty alleviation and disaster risk-mitigation in future revisions and implementation of the NPESAP</p> <p>Integration of recommendations for planning for future ecosystem functionality and climate change resilience into Sustainable Land Use Policy and Integrated Planning Framework</p> <p>Strengthen integration of climate change adaptation considerations for biodiversity into NPAS and national development planning</p> <p>Identify opportunities in policy and legislative revisions that provide for positive incentives for best practices that ensure maintenance and restoration of ecosystem functionality, vulnerable ecosystems and high biodiversity value areas</p>
<p>TARGET C2. By 2020, three key corridors identified under the National Protected Areas Policy and System Plan are physically and legally established, and effectively managed.</p>	<p>Legislation: National Protected Areas System Act Environmental Protection Act and regulations Land Tax Act Conservation Covenant Act (draft)</p>	<p>Establishing biological corridors will require the inclusion of both national and private lands. The voluntary inclusion of private land would be the preferred option through the use of Conservation Covenants, which are not yet recognized in Belize’s common law jurisdiction. This may need to be balanced by tax incentives.</p>	<p>Legally define the 3 key biological corridors (Northern, Central and Southern) through geo-referenced Statutory Instruments.</p> <p>Integrate biological corridors into the EPA Act / regulations, with requirement for EIAs for all developments that take into account the connectivity required for the biological corridors</p> <p>Enact a Conservation Covenant Act.</p>
<p>TARGET C3. Between 2016 and 2030, no species will become functionally extinct in Belize.</p>	<p>Legislation: Wildlife Protection Act National Protected Areas System Act Forests Act Fisheries Act Environmental Protection Act and regulations. Belize Tourism Board Act.</p>	<p>Species-based laws are currently inadequate for preventing extinctions, and require extensive strengthening.</p>	<p>Revise and strengthen Wildlife Protection Act, with inclusion of identified key threatened species, sustainable resource management standards and sustainable harvesting framework, increased fines, and recognition of requirement for protection of critical habitats / key areas for threatened species.</p> <p>Integration of National Threatened Species List into EIA process, national planning and decision making.</p> <p>Strengthen regulations for tour guide and tourism operations legislation against wildlife crimes.</p>

<p>TARGET C5. By 2020, Belize is implementing a biosafety policy that safeguards against large-scale loss of biological integrity.</p>	<p>Policy: Biosafety Policy (draft).</p>	<p>The Biosafety Policy is currently being drafted.</p>	<p>Finalize, endorse and implement the Biosafety Policy</p> <p>Ensure that the Biosafety Policy is supported by relevant legislation</p>
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GOAL D (BENEFITS): Strengthened provision of ecosystem services, ecosystem based management and the equitable sharing of benefits from biodiversity.

NBSAP TARGETS	POLICY /LEGISLATION	GAP/LIMITATION	RECOMMENDATIONS
<p>TARGET D1. By 2025, key ecosystem services are sustainably managed and resilient to threats.</p>	<p>Policy: National Poverty Elimination Strategy and Action Plan, 2009-2013. National Land Use Policy and Integrated Planning Framework National Integrated Water Resources Act National Protected Areas Policy</p> <p>Legislation: National Lands Act Land Tax Act</p>	<p>The functioning of ecosystems and the provision of their environmental services is currently not adequately recognised by decision makers</p>	<p>Integrate the critical role of natural resources and ecosystem services in poverty alleviation and disaster risk-mitigation in any revision and implementation of the NPESAP</p> <p>Strengthen integration of ecosystem services into the National Land Use Planning Policy</p> <p>Review and strengthening legislation and regulations re. mangroves, 66' coastal and riparian ecosystems, protection of 25 degrees slopes</p> <p>Identify opportunities in policy and legislative revisions that provide for positive incentives for best practices that ensure maintenance and restoration of ecosystem functionality</p>
<p>TARGET D3. By 2025, access to genetic resources and associated traditional knowledge is regulated and benefits arising from utilization are shared in a fair and equitable manner.</p>	<p>Not specific to any policy.</p>	<p>Bio-prospecting is included within the revised Fisheries Resource Bill (draft) for the marine resources – still to be endorsed</p>	<p>Develop and implement a national policy and legal framework for bio-prospecting, including sharing of benefits</p>

GOAL E (IMPLEMENTATION): The National Biodiversity Strategy and Action Plan is implemented effectively through capacity building, informed strategic decision making and integrated public participation.

NBSAP TARGETS	POLICY /LEGISLATION	GAP/LIMITATION	RECOMMENDATIONS
<p>TARGET E1. By 2020, all relevant government Ministries, 75% of relevant civil society, and 25% of the private sector and general public are effectively involved in the implementation of the NBSAP.</p>	<p>Not specific to any policy</p> <p>Limitations are primarily financial</p>	<p>Belize does not have a comprehensive strategy to guide mobilization of financial resources, and is dependent on international funding to implement identified critical activities.</p>	<p>Ensure a policy / legislative environment that mainstreams natural capital and biodiversity across Ministries.</p>

