National Biodiversity Strategy and Action Plan

BELIZE

2016 – 2020

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

This report was produced under the

"National Biodiversity Planning to Support the implementation of the CDB 2011 - 2020 Strategic Plan in Belize (National Biodiversity Enabling Activities)"

With funding from the United Nations Development Programme – Global Environment Facility

Consultants

Paul and Zoe Walker, Nellie Catzim (Wildtracks); Tristan Tyrrell (Tentera),
Mark Usher (Belize Environmental Technologies)

Please cite as: National Biodiversity Strategy and Action Plan, Belize. Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, Belmopan, Belize, 2016.

A Vision for Biodiversity
BELIZE

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

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 utilisation 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, recognised 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 Sarstoon 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 recognised 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 harbours 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 smalltooth 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 gillnets.

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 contribution to the Belize economy exceeding Bz$510 million in 2015 – 14.7% of the total GDP.

The main causes of biodiversity loss in Belize are well recognised:

CAUSES OF BIODIVERSITY LOSS	
Pressures and Threats to Biodiversity and Ecosystems	
▪ 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**
▪ Market demand ▪ Conflicting Government sector-specific policies ▪ Government incentives ▪ Livelihood diversification ▪ Culture / tradition ▪ Limited capacity for effective enforcement	▪ 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

▪ Household needs (food, water, shelter, income)	▪ 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 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 behaviour 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 prioritised 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

ABBREVIATIONS AND ACRONYMS

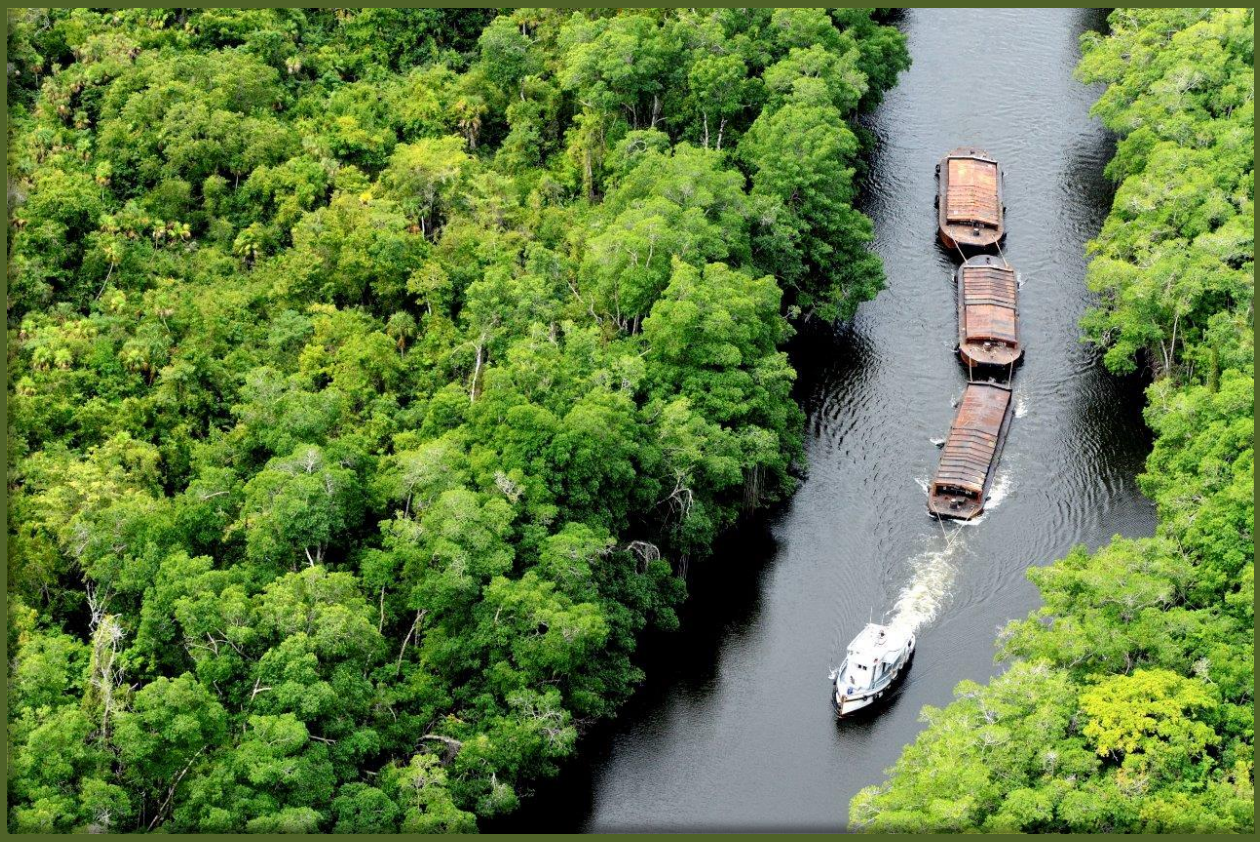
ALIDES	Alliance for the Sustainable Development of Central America
APAMO	Association of Protected Area Management Organizations
ASC	Aquaculture Stewardship Council
BAS	Belize Audubon Society
BFD	Belize Fisheries Department
BiO	Biodiversity Office (proposed)
BIOFIN	Biodiversity Finance Initiative
BNCCC	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 Organisation
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 Organisation
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
WTTC	World Travel and Tourism Council
WWC	Wildlife Conservation Society
WWF	World Wildlife Fund

NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, 2016 – 2020

BELIZE



"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

Photo: Wildtracks/Lighthawk. The sugar barge carried down the New River

Contents

ANNEXES:

INTRODUCTION

Belize has long been recognised 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 neighbours, 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 is temperature tolerance.

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

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.

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 utilisation 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 prioritising 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:

NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN GOALS

GOAL A. MAINSTREAMING: *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.*

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

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

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

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

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 summarises 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

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.

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.

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.

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 and regional institutional networks for the conservation of biodiversity. As an important component of the NBSAP, this section summarises 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

Photos: Left: TIDE. Lobster fisher in Port Honduras Marine Reserve
Centre: J. Andrewin Bohn. Fire on the pine savannah
Right: TIDE. Endangered yellow headed parrot, Payne's Creek National Park

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. 2014), 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., 2013). 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 smalltooth 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 neighbours, 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 Belizeans 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 ecoregions (Conservation International, 2004; Olson et al., 1998), with fourteen broad natural and two anthropogenically altered ecosystem types identified under the national ecosystem mapping (Meerman, 2011), further broken down into 68 ecosystems (Meerman, 2011). One of the goals of the National Protected Areas Policy and System Plan (NPAPSP; GoB, 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. Realignments 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.

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

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 (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

Key Ecosystem Types of Belize

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

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 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 in 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 et al., 2013).

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
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)				

Table 1: Ecosystem representation in the Marine Environment (TNC, 2015)

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 (Huq e al., 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 km^2) 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 (GoB, 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, 2014). 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 (Cooper et al., 2008). 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 (Cooper et al., 2008).

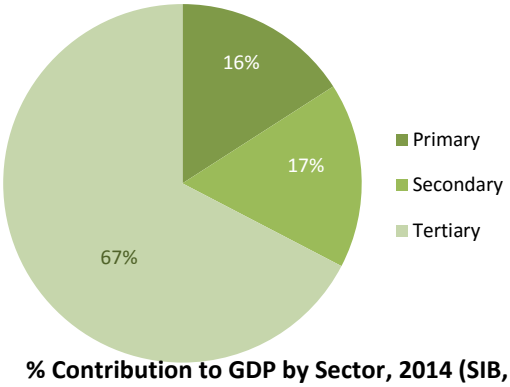
Filtration: There is increasing awareness of the importance of riparian vegetation and mangroves in providing a buffering filter against agrochemical contamination and sediment from land-based runoff for maintaining healthy rivers and reef. The importance of maintaining riparian vegetation is also highlighted in the DoE environmental guidelines, with identification of the critical need to leave the 66 foot buffer reserve along all water bodies (DoE, 2014). 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.

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 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



% Contribution to GDP by Sector, 2014 (SIB, 2015)

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 dessication 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 maintin 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*).

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, pers. com.). 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.

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)

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 results 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

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 contribution to the Belize economy 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, 2015). 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, 2015).

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 (MESTPU, 2012).

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 (GoB, 2012).

Belize is very rich in both surface and ground water, with internal renewable water resources estimated at 15.26km^3/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.

Critically Endangered Species of Belize

Staghorn Coral	*Acropora cervicornis*
Elkhorn Coral	*Acropora palmata*
Morelet's Treefrog	*Agalychnis moreletii*
Central American River Turtle	*Dermatemys mawii*
Goliath Grouper	*Epinephelus itajara*
Hawksbill Turtle	*Eretmochelys imbricata*
Smalltooth Sawfish	*Pristis pectinata**
Largetooth Sawfish	*Pristis pristis**
Cycad sp.	*Zamia prasina*

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

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 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 (Walker et al., 2007).

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, 1999).

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	
▪ 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**
▪ Market demand ▪ Conflicting Government sector-specific policies ▪ Government incentives ▪ Livelihood diversification ▪ Culture / tradition ▪ Limited capacity for effective enforcement ▪ Household needs (food, water, shelter, income)	▪ 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

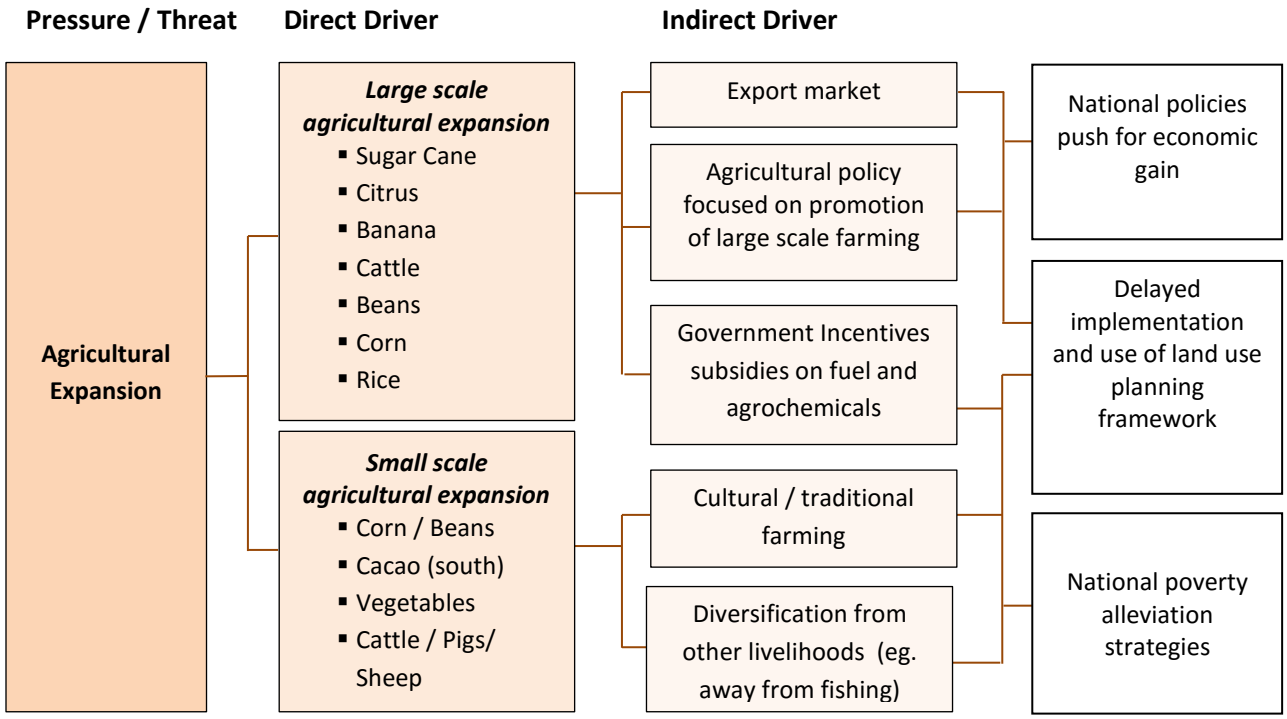
Table 3: Causes of Biodiversity Loss

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.

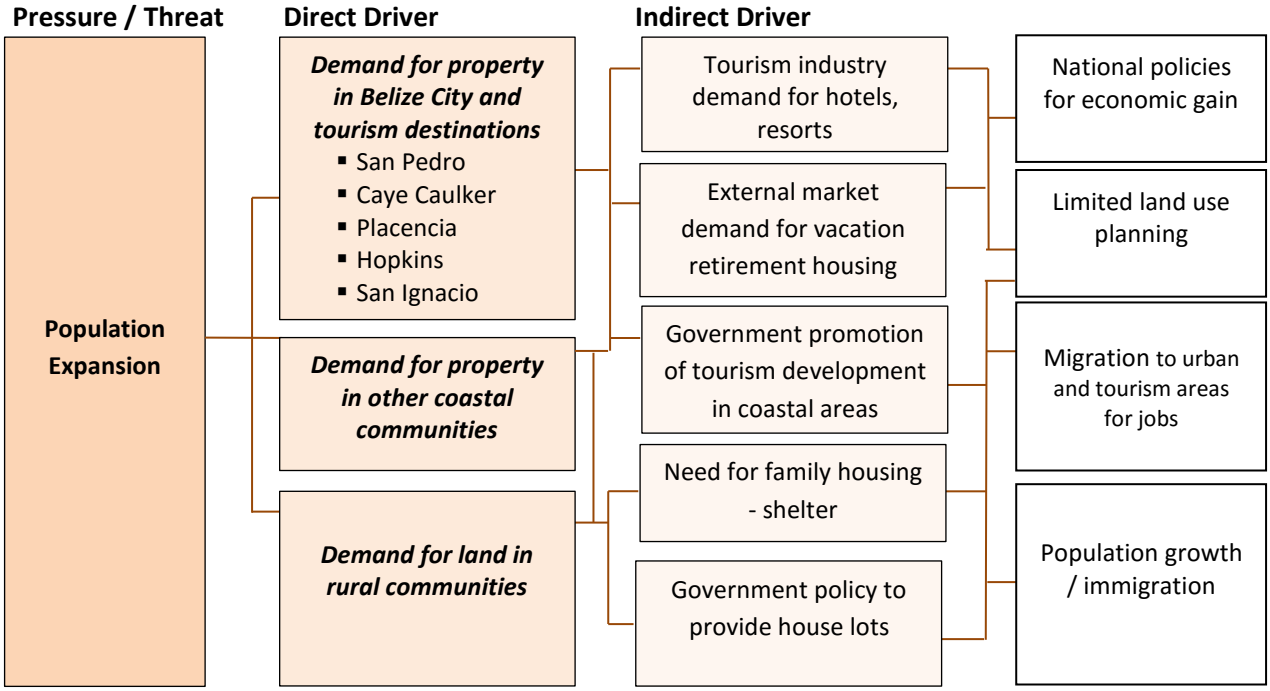
Current agricultural policies seek to provide financial incentives for investment in large scale agriculture, though these financial incentives do not yet include environmental sustainability as a component of the required criteria. However, large-scale agricultural areas do require an Environmental 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.



Agricultural Expansion: Drivers

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

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



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.

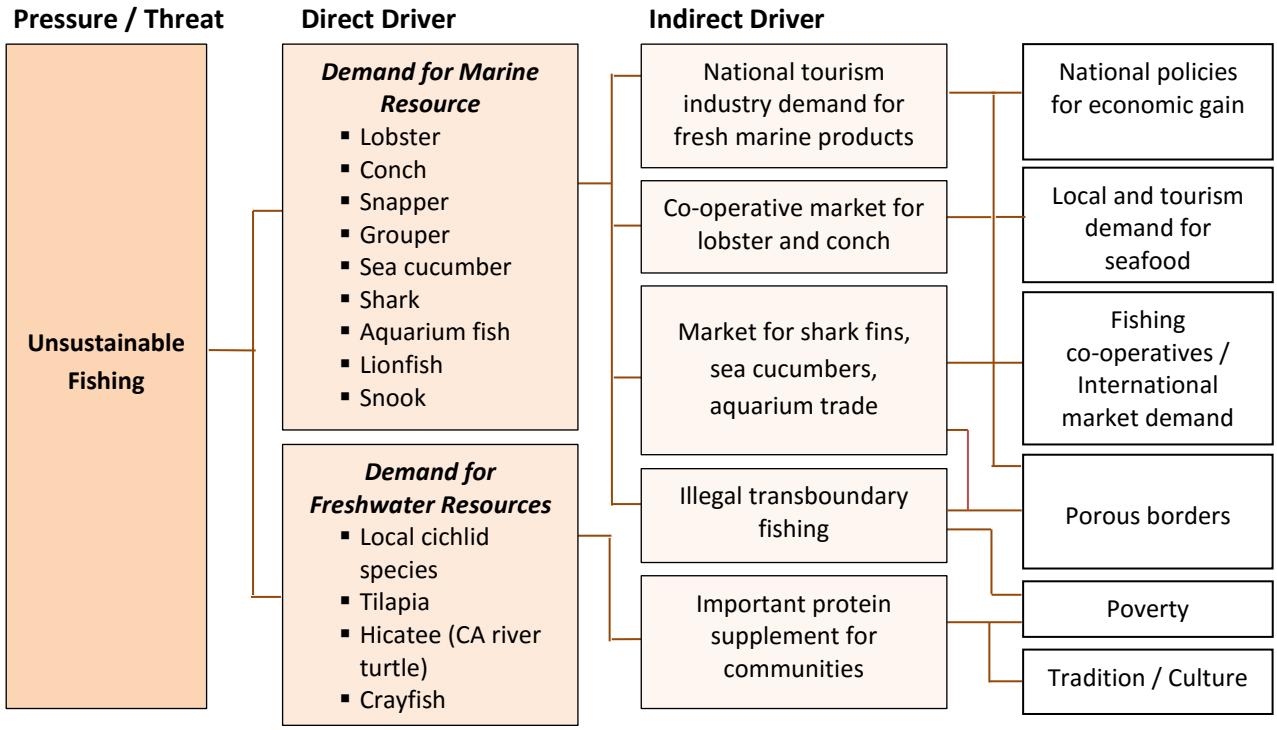
1.2.2 Unsustainable Harvesting of Natural Resources

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

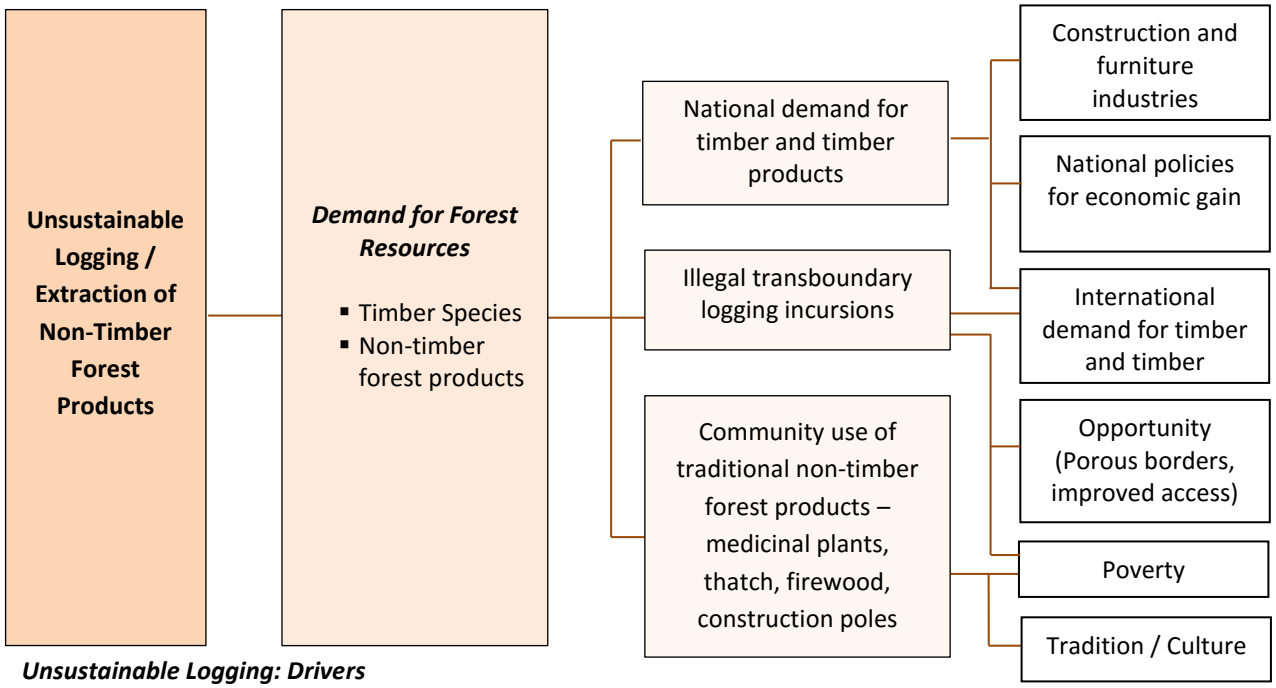
- Reduced marine product, impacting fisher livelihoods
- Reduced tourism value
- Declining threatened species - e.g. the critically endangered Goliath grouper and freshwater Central American river turtle ('hicatee'), and endangered great hammerhead
- Reduced populations of illegal species – parrotfish, 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.



Unsustainable Logging: Drivers

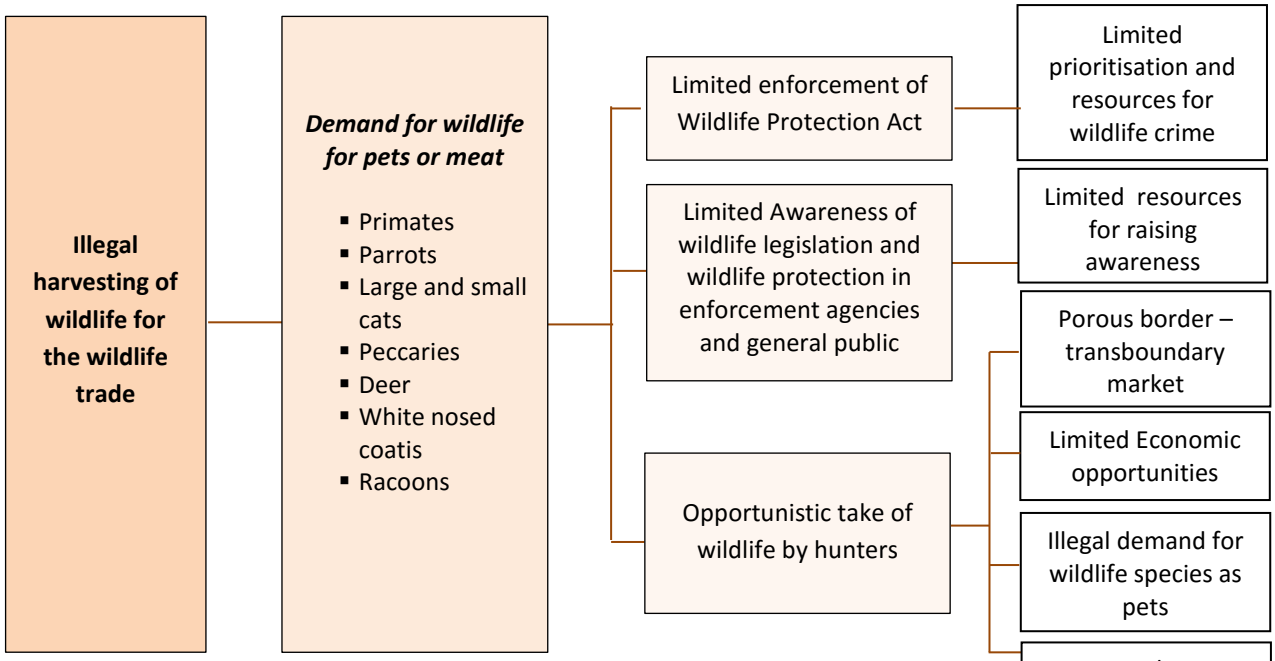
Key Consequences of Unsustainable Extraction of Timber and Non-Timber Resources

- 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.



Illegal Wildlife Trade: Drivers

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.

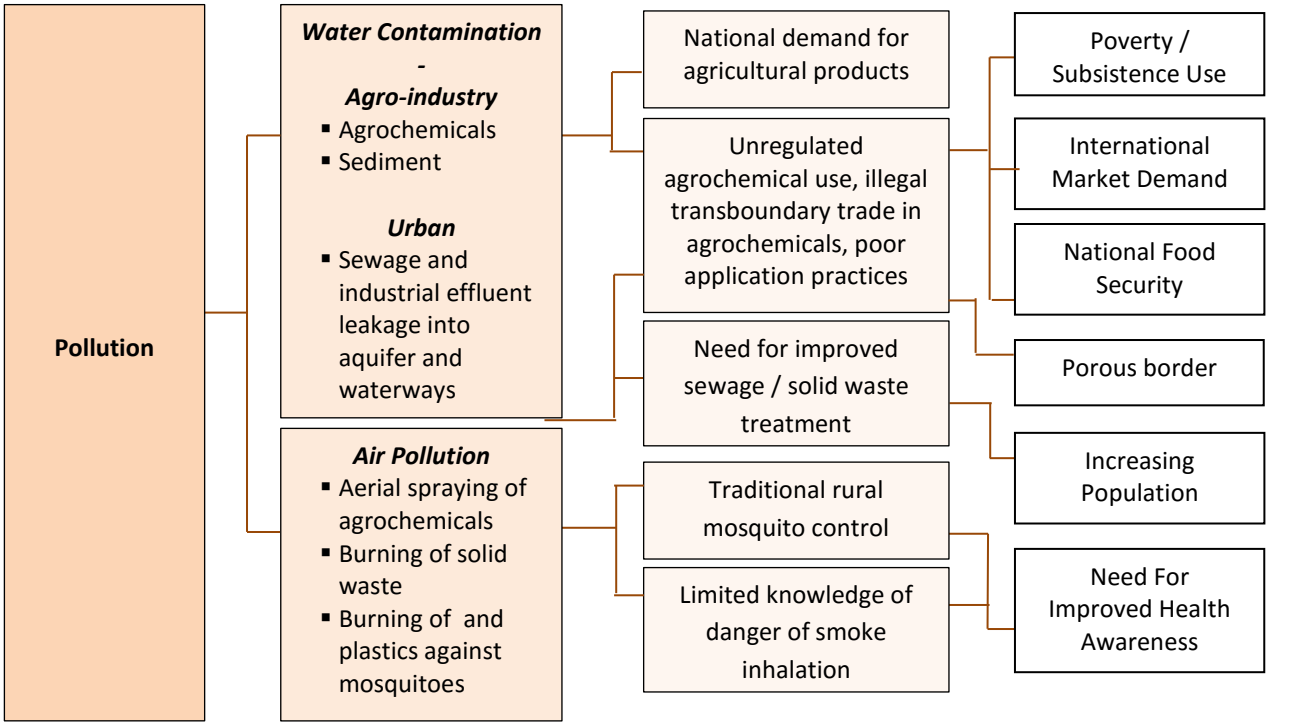
In the north, there are concerns about agrochemical runoff from the sugar cane, rice and cattle areas, as well as urban runoff and poor solid waste and sewage management. Two primary rivers drain the flat agricultural lowlands – the Rio Hondo and the New River – flowing into Corozal Bay, one of the largest 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 Ulua, 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.



Pollution: Drivers

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.

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 tuberculosus*) 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, four of the eleven known scarlet macaw nests were poached, with young being taken across the border illegally for the pet trade (FCD, 2013). In 2015, None of the monitored nests were poached in 2015, and a head-start programme ensured the successful rearing and release of eight at-risk chicks from non-monitored nests (FCD, 2016)

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 (NCCPSAP, 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 (NCCPSAP, 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 seal 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).

Predicted Climate Change Impacts	Current Status	25 - 50 yrs	100 yrs
Rainfall	▪ Mean annual rainfall over Belize has decreased at an average rate of 3.1mm per month per decade since 1960 (NCSP/UNDP)	▪ 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)[1]. ▪ 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. ▪ Increased concentration and seasonality of agrochemical delivery	▪ 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)[2].

[1] The Hadley Centre's regional climate model, PRECIS, is used to downscale the ECHAM5 GCM data for Belize at 25 km resolution using the SRES A1B scenario. The changes presented are changes over the mean daily rainfall rate (mm/day) during the period 1961-1990.
[2] ibid.

Predicted Climate Change Impacts	Current Status	25 - 50 yrs	100 yrs
Air Temperature	▪ Mean annual temperature has increased in Belize by 0.45°C since 1960, an average rate of 0.10°C per decade. ▪ 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).	▪ 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)[3].	▪ An increase of 2.5-4.3°C in projected in the 2070s and 3.2-4.9°C in the 2090s over the 1961-1990 values respectively (NCCPSAP 2015)[4].

[3] The PRECIS RCM with ECHAM5 boundary data, under the SRES A1B scenario was used to downscale the mean monthly temperature change (in degrees Celsius) for Belize.
[4] Ibid.

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.

> *"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**

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 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)

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

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 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 to 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.

1.3.3 Multilateral Agreements

INTERNATIONAL CONVENTIONS

- Convention on Biological Diversity (CBD, 1993)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (0, 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 Integratción 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)

Figure 2

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.

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** (SPAW), 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 responsibile 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 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 (Table 4)			
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**
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.*	***Policy:*** All relevant national policies	Endorsement of environmental policies at Cabinet level is not prioritized, resulting in significant challenges in effective implementation.	▪ Biodiversity Office / National Climate Change Office / Sustainable Development Unit to lead process of designing a policy harmonization framework and identifying synergies ▪ Prioritised endorsement and implementation of GSDS CSF3 policies ▪ 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
TARGET A2. *By 2020 Belize has legislated and implemented a national harmonized system of environmental standards and incentives that promote environmental responsibility and sustainability.*	***Policy:*** National Land Use Policy and Integrated Planning Framework National Food and Agriculture Policy ***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	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 Current legislated penalties are considered too low to be disincentives	▪ Develop policy initiatives in land use, agriculture and natural resource use frameworks that ensure sustainability ▪ Develop policy initiatives to promote adoption of existing and new regulatory standards by businesses in various sectors, with certification, regular monitoring and auditing ▪ Amend the EPA to include a national harmonized system of environmental standards ▪ Amend Land Tax Act to support incentives for maintenance of environmental services, and remove significant disincentives ▪ Strengthen regulations for tourism operations relevant to maintenance of environmental standards ▪ Establish standards for the guidance of sustainable forest and wildlife management and planning best practices related to

			ranching, harvest quotas, and improved restrictions

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, as is an understanding and appreciation of marine, freshwater and terrestrial biodiversity, its benefits and values.*			
NBSAP TARGETS	**POLICY /LEGISLATION**	**GAP/LIMITATION**	**RECOMMENDATIONS**
TARGET A3. *By 2020, 100% of relevant national development decisions in Belize take into consideration ecosystem services and biodiversity relevance to the national economy.*	***Policy:*** All biodiversity related policies. ***Legislation:*** National Integrated Water Resource Act National Protected Areas System Act Forest Act Fisheries Act /Fisheries Resource Bill (draft)	National decision making does not reflect the contribution of ecosystem services and biodiversity value to the national economy	▪ Implement recommendations from Target A1 ▪ Reflect natural capital accounting as an annual contribution towards national development ▪ Amend relevant acts to integrate ecosystem values and payment for ecosystem services
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**
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.*	***Policy:*** Forest Policy ***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	The need for nationally coordinated sustainable management plans for natural resource extraction	▪ 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 ▪ Amend listed Acts to reflect biodiversity considerations ▪ Revise Forests (Protection of Mangroves) Regulations ▪ Amend natural resource extraction legislation, regulations and permitting

	System Act Mines and Minerals Act		system, with increased penalties for lack of compliance.

GAPS AND LIMITATIONS IN BIODIVERSITY POLICIES AND LEGISLATION POTENTIALLY AFFECTING IMPLEMENTATION OF NBSAP			
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*			
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.*	***Policy:*** National Land Use Policy and Integrated Planning Framework (2011) Integrated Coastal Zone Management Plan (ICZMP) ***Legislation:*** Land Utilization Act National Lands Act Land Tax Act Environmental Impact Assessment Regulations	The Integrated Coastal Zone Management Plan (ICZMP) and National Land Use Policy are not yet being implemented	▪ 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* ▪ 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) ▪ Amend legislation to incentivize location of new developments on degraded lands rather than removing natural ecosystems critical for climate change resilience
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.*	***Policy:*** National Poverty Elimination Strategy and Action Plan, 2009-2013 (NPESAP). Forest Policy National Land Use Policy and Integrated Planning Framework (2011)	The NPESAP promotes strengthened land and natural resource management, including water resources, but with no requirements / incentives for restoration of degraded ecosystems.	▪ Include the restoration of degraded ecosystems in the NPESAP and other relevant polices.
TARGET B6. *By 2018, Belize has a strengthened system in place for early detection and effective management of invasive species.*	***Legislation:*** Belize Animal Health Authority Act Forest Act Fisheries Act //Fisheries Resource Bill (draft)		▪ Review and revise relevant legislation to ensure broad coverage for addressing management of potential invasive species

	CITES Act (draft)

GAPS AND LIMITATIONS IN BIODIVERSITY POLICIES AND LEGISLATION POTENTIALLY AFFECTING IMPLEMENTATION OF NBSAP			
GOAL C (PROTECTION): *Functional ecosystems and viable populations of Belize's biodiversity are maintained and strengthened*			
NBSAP TARGETS	**POLICY /LEGISLATION**	**GAP/LIMITATION**	**RECOMMENDATIONS**
TARGET C1. *By 2030 Belize's natural landscapes and seascapes are all functional and build biodiversity resilience to climate change.*	***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 **Legislation:** Environmental Protection Act and regulations Land Tax Act Forest Act Fisheries Act /Fisheries Resource Bill (draft)	The importance of functioning ecosystems and the provision of their environmental services is not adequately recognised by decision makers or expressed in policies The Integrated Coastal Zone Management Plan (ICZMP) and National Land Use Policy are endorsed, but not yet being effectively implemented	▪ 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 ▪ Integration of recommendations for planning for future ecosystem functionality and climate change resilience into Sustainable Land Use Policy and Integrated Planning Framework ▪ Strengthen integration of climate change adaptation considerations for biodiversity into NPAS and national development planning ▪ 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
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.*	***Legislation:*** National Protected Areas System Act Environmental Protection Act and regulations Land Tax Act Conservation Covenant Act (draft)	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	▪ Legally define the 3 key biological corridors (Northern, Central and Southern) through geo-referenced Statutory Instruments. ▪ 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

		jurisdiction. This may need to be balanced by tax incentives.	▪ Enact a Conservation Covenant Act.

GAPS AND LIMITATIONS IN BIODIVERSITY POLICIES AND LEGISLATION POTENTIALLY AFFECTING IMPLEMENTATION OF NBSAP			
TARGET C3. *Between 2016 and 2030, no species will become functionally extinct in Belize.*	***Legislation:*** Wildlife Protection Act National Protected Areas System Act Forests Act Fisheries Act Environmental Protection Act and regulations. Belize Tourism Board Act.	Species-based laws are currently inadequate for preventing extinctions, and require extensive strengthening.	▪ 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. ▪ Integration of National Threatened Species List into EIA process, national planning and decision making. ▪ Strengthen regulations for tour guide and tourism operations legislation against wildlife crimes.
TARGET C5. *By 2020, Belize is implementing a biosafety policy that safeguards against large-scale loss of biological integrity.*	***Policy:*** Biosafety Policy (draft).	The Biosafety Policy is currently being drafted.	▪ Finalize, endorse and implement the Biosafety Policy ▪ Ensure that the Biosafety Policy is supported by relevant legislation

GAPS AND LIMITATIONS IN BIODIVERSITY POLICIES AND LEGISLATION POTENTIALLY AFFECTING IMPLEMENTATION OF NBSAP			
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**
TARGET D1. *By 2025, key ecosystem services are sustainably managed and resilient to threats.*	**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 **Legislation:** National Lands Act Land Tax Act	The functioning of ecosystems and the provision of their environmental services is currently not adequately recognised by decision makers	▪ 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 ▪ Strengthen integration of ecosystem services into the National Land Use Planning Policy ▪ Review and strengthening legislation and regulations re. mangroves, 66' coastal and riparian ecosystems, protection of 25 degrees slopes ▪ Identify opportunities in policy and legislative revisions that provide for positive incentives for best practices that ensure maintenance and restoration of ecosystem functionality
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.*	Not specific to any policy.	Bio-prospecting is included within the revised Fisheries Resource Bill (draft) for the marine resources – still to be endorsed	▪ Develop and implement a national policy and legal framework for bio-prospecting, including sharing of benefits
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**
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.*	Not specific to any policy Limitations are primarily financial	Belize does not have a comprehensive strategy to guide mobilization of financial resources, and is dependent on international funding to implement identified critical activities.	▪ Ensure a policy / legislative environment tha t mainstreams natural capital and biodiversity across Ministries.

Belize's National Biodiversity Strategy

2.1 THE NATIONAL VISION

2.2 GUIDING PRINCIPLES

2.3 NATIONAL PRIORITIES AND TARGETS

2.4 NBSAP AND THE NATIONAL SUSTAINABLE DEVELOPMENT GOALS

Photos: Left: Wildtracks. Rangers tracking reintroduced howler monkeys , Fireburn Reserve
Centre: Wildtracks. Endangered Yucatan Black Howler Monkey
Right: Wildtracks: Banana plantations on the southern coastal plain

2.1 THE NATIONAL VISION

VISION

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

"collaboration"

"wise management"

"resilience"

"cultural heritage"

"social benefit"

"economic growth"

"participation"

"sustainable"

"restoration"

Development of the Vision for the National Biodiversity Strategy and Action Plan (NBSAP) was considered a key starting point for the process, ensuring extensive stakeholders participation in the preparation of the Plan were united in working towards a clear, national outcome. The Vision itself was developed through participatory input during a series of district and national workshops, and finalized with input from the NBSAP Task Force. The discussions in the development of the vision were focused on concepts such as wise management, sustainability, resilience, social benefit, economic growth, and collaboration.

The NBSAP Vision is to be achieved through strategies and activities linked to each of the five thematic areas:

A. MAINSTREAMING
B. REDUCING PRESSURES
C. PROTECTION
D. BENEFITS
E. IMPLEMENTATION

Left: values considered important by participants during the development of the NBSAP

2.2 THE GUIDING PRINCIPLES

The National Biodiversity Strategy and Action Plan is based on Belize's commitment to the conservation and sustainable development of national biological diversity, and is based on the following principles:

Respect

- Belize's biodiversity is of national and global importance both for its intrinsic value and the benefits it provides
- Belize's terrestrial and marine heritage is our national patrimony, to be conserved in-situ by everyone
- The well-being of Belizeans is intrinsically linked to environmental health, and both should be addressed together

Responsibility

- Effective management of Belize's biodiversity requires the combined efforts of all sectors of society
- We are all dependent on the socio-economic benefits from Belize's marine and terrestrial resources and have the duty to be responsible stewards, with fair and equitable sharing of the costs to conserve it
- Biodiversity management and benefits to Belize's people are strengthened through integration and collaboration at local, regional and global levels
- Science, technology, and the knowledge, innovations and practices of indigenous and local communities have shared roles in the management of biodiversity

Environment and Context

- Use, management and solutions to the conservation of Belize's biodiversity take place in a diverse and multicultural context
- Biodiversity conservation is best addressed through an integrated landscape / seascape approach
- Robust ecosystems housing rich biodiversity increase resilience to impending threats of a changing climate
- There are multiple escalating threats to Belize's natural heritage that warrant immediate measures to conserve, protect and manage it

Commitment

- The conservation of biodiversity is mainstreamed across all sectors through education, awareness raising and stakeholder engagement
- The involvement of local users in decision making and management planning ensures that access to and benefits from biodiversity resources are wisely managed and equitably shared
- Transparency, accountability, adequate financing and good governance are critical to the effective and efficient use and management of Belize's biodiversity
- Biodiversity conservation and sustainable use can be achieved when socio-economic needs are addressed through an integrated and holistic approach

2.3 NATIONAL PRIORITIES 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.

Mainstreaming is key to effective implementation of the NBSAP. It is recognized that positive behaviour change can only be achieved through fostering an understanding and appreciation of biodiversity, its benefits and values at all levels of society.

The targets focus on increasing awareness and good stewardship at all levels from primary schools to upper Government decision makers. Improved integration of the importance of Belize's biodiversity and ecosystem services into the primary and secondary school science Programs will provide a foundation for increased awareness in the next generation of leaders and the general public. They also call for creating and strengthening synergies between Government departments to harmonize sectoral policies and legislation designed to protect biodiversity, and for setting legislative frameworks and standards in public and private sector that improve the balance between national development and the need to protect ecosystem services and the environment.

TARGETS: MAINSTREAMING

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.

To date the conservation and sustainable use of natural resources in Belize is perceived by politicians and the general public as being the responsibility of the conservation community. All too often, conservation is viewed as the domain of special interest groups. The reality – that biodiversity conservation is a cornerstone of Belize's economic and social development, essential for the health and wellbeing of all Belizeans – is not broadly understood. With the future of all sectors intimately entwined with the health of the natural resources of Belize, their conservation and sustainable use is the responsibility of all, for all. All economic and developmental sectors must take responsibility for the integration of maintenance of natural resources, ecosystem services and climate change adaptation into their policies and actions, work together to reduce negative impacts on the environment, and ensure increased sustainability of resource use – ensuring continued natural resources for all generations to come.

Policies based on short-term gains with long-term costs need to be considered in the context of policies that are based on planning for long term sustainability and increased resilience to climate change.

> *"… there is a critical need to strengthen the level of engagement of Government in actively making decisions that reflect the connection between the environment, and poverty alleviation, disaster risk management, climate change adaptation and the tourism industry.*
>
> ***National Stocktaking Report, 2015***

With 46% percent of the population of Belize living in urban areas (22% primarily in the old and new capitals of Belize City and Belmopan; CSO, 2016), there is the recognition that many people are to all intents and purposes separated from the natural environment, with little knowledge of how impacts to the environment can affect them – the links between maintenance of forest cover and the provision of clean drinking water, for example. Recognition of the importance of the maintenance of ecosystem services will become even more critical as the impacts of climate change are heightened. In Belize, ecosystem services and more importantly ecosystem management are key approaches to climate change adaptation.

Also important is the recognition that immigration is fast changing the cultural landscape in Belize. 15% of the population is now estimated to be composed of immigrants, the majority of them from Central America, and establishing new communities in rural areas. With low income and limited English skills, many of these immigrants make the most of the relatively abundant wildlife, hunting and fishing with little knowledge of the laws that have been put in place to ensure sustainable natural resource use. A smaller number of immigrants also come from China, Europe and North America. Each sector brings its own cultural outlook on the environment – some not as environmentally sensitive as those who are Belize-born and raised with a basic knowledge of the laws and protected areas of Belize. It is important that awareness and engagement activities are also adapted to target these immigrant sectors.

> *"Public and political awareness of the importance of the National Protected Areas System's contribution to the national economy, in watershed protection, and water security, natural disaster mitigation, and climate change buffering, is considered inadequate, threatening the long-term security of Belize's social and financial investments in its protected areas."*
>
> ***Status of Protected Areas report (2010)***

Limited awareness is identified as a critical threat. This transcribes to an unwillingness to adequately defend the National Protected Areas System, the natural and cultural resources it protects, and the environmental services provided, even though this is for the benefit of the nation. A key component of the NBSAP is therefore engagement, participation and advocacy – providing opportunities that not only educate people across all levels of society, but also lead to their support and advocacy for protection of the environment and wise use of national resources. One of the highest priorities is the integration of environmental education throughout the school curricula, to create and nurture environmental youth leaders with the potential to become decision makers later in life.

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 maintaining and improving the status of existing biodiversity through reducing direct and indirect pressures on terrestrial, freshwater and marine ecosystems. Strategies such as the 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. This is highlighted in national legislative, policy and planning documents such as the Growth and Sustainable Development Strategy, Integrated Land Use Planning Framework, the Integrated Coastal Zone Management Plan, and National Climate Change Policy, Strategy and Action Plan.

Priorities include the need to improve sustainable management of primary industries such as agriculture, fisheries and forestry through strengthened mechanisms such as the implementation of a national rights-based, managed fisheries areas Program and long term sustainable forest management. These will ensure maintained and improved natural resource sustainability, continued ecosystem services and improved long term viability of livelihoods directly linked to the natural resources. Addressing the direct threat of fires through collaborative fire management initiatives is also a priority, as is maintaining flood control services provided by wetlands such as Crooked Tree Wildlife Sanctuary.

TARGETS: REDUCING PRESSURES

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 prioritised natural ecosystems / areas to no more than 0.6% per year.

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.

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.

The need to strengthen the national response to marine and terrestrial threats is also prioritised, supported by appropriate legislative policies and standards for the maintenance of biological diversity by reducing the

rate of land use change, the level of land-based pollution and the increasing transboundary incursions for extraction of Belize's natural resources, both in the terrestrial and marine environments.

As the sea temperature and acidification increase, the health of the coral reefs, the basis of both the tourism and fishing economies in Belize, are being significantly impacted. Over a forty year period, Belize has seen a reduction of average coral cover from 55+% in the 1970's (Jackson et al., 2013) to between 16% and 18% in 2015. Whilst Belize is not in a position to make a significant contribution to the global reduction of carbon emissions, it is in a position to increase reef resilience, by reducing land based and other anthropogenic threats on the marine environment. This is becoming more urgent if Belize is going to be effective at increasing the resilience of this important ecosystem and the services it provides to predicted climate change impacts.

> *"Despite the statements on the importance of the environment in Horizon 2030, there is a critical need to strengthen the level of engagement of Government in actively making decisions that reflect the connection between the environment, and poverty alleviation, disaster risk management, climate change adaptation and the tourism industry.*
>
> ***National Stocktaking Report, 2015***

National planning calls for a significant increase in renewable energy generation, focused primarily on solar, wind, hydro and biofuels, moving towards reducing Belize's level of dependency on fossil fuels. Developing large scale renewable energy sources can come with an environmental cost, footprint and impacts that need to be taken into account and balanced with the energy production benefits. Integration of biodiversity values into planning of large-scale contributors in this sector is critical if Belize is to successfully "go-green" in its power generation. The siting of biofuel production and hydro-electricity developments, if selected as options, needs to take into consideration their impacts on critical ecosystem services, vulnerable ecosystems, the roles and values of the watersheds being impacted, cost effectiveness, and long term viability in the context of predicted climate change impacts. Solar power systems for home or industrial use should be encouraged through the removal of tariffs and permit requirements for the importation of battery banks.

PROTECTION

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

TARGETS

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.

Belize has an enviable record of maintaining its natural resources – with forests that form 25% of one of the last remaining regionally important expanses of forest and a World Heritage Site that encompasses one of the world's best examples of coral reef, supporting an important community-based fishing industry. Natural vistas and plentiful wildlife, both terrestrial and marine, provide the foundation for a tourism industry that is critical in supporting the national economy. The increasing rate of land use change, however, is threatening functionality of ecosystems and reducing the viability of species. This has significant implications not only for Belize, but also for regional initiatives towards biodiversity protection.

Compounding this threat is the uncertainty associated with climate change, which is going to have a significant impact on ecosystems and species.. Belize is projected to experience an increase in atmospheric and sea temperatures, a rising sea level and changes in rainfall patterns - all of which will impact biodiversity. What is uncertain at this point is the level of impact it will have as climatic conditions change over time. It is therefore critical for Belize to institute management actions that will provide ecosystems with the best possible chance of adapting to those changes. This requires extensive research and monitoring, the protection of areas most resilient to climate change and ensuring connectivity, supported by a strong legislative framework and close collaboration between the Biodiversity Office (to be established) and the National Climate Change Office.

Key legislative revisions, including the Wildlife Protection Act and Fisheries Resources Bill and the development of a Biosafety Policy will strengthen actions to ensure continued viability of both terrestrial and marine species. However, strategies for protection shouldn't focus only on strengthening the national protected areas system and species protection, but also look beyond, at the role and importance of natural ecosystems in the larger landscapes and seascapes. They should take into account the need to build Belize's climate change resilience to ensure ecosystems and species are able to adapt to the changing climate, the need to retain forest cover and connectivity across the landscape for maintenance of water catchment and other environmental services, and long term ecosystem and species viability.

Strengthening of species-specific strategies is also considered important, particularly for threatened, ecologically and economically important species, with the development of national Species Conservation Plans and the strengthening of multi-agency enforcement, national species working groups and endangered species, rescue and rehabilitation Programs.

BUILDING CORAL REEF RESILIENCE

Fragments of Hope is a community-based not-for-profit organization registered in Belize, that works closely with the Belize Fisheries Department. It identifies resilient corals - those that are tolerant of rapidly changing water temperatures and collects fragments, which are cultured on ceramic discs, ropes or steel rods in the clear, sheltered waters of selected nursery areas across Belize.

The coral fragments are allowed to grow until they are ready to plant out, when they are transplanted to sites where they building resilience to climate change. Resilient corals planted out in 2010 are already spawning, providing the parent stock that has the potential to assist in the future recovery of reefs throughout Belize.

BENEFITS

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

TARGETS

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.

Belize has the benefit of still having approximately 60% of its terrestrial natural ecosystems intact, providing ecosystem services such as water, clean air, flood control and inspirational natural beauty. The Maya Mountains Massif, 1.2 million acres of forested wilderness, is a critical source of water for urban communities in both Belize and Guatemala. For many rural communities, ecosystem services are provided at a local level, with water supply and flood control coming from upstream watersheds, for example. In the marine environment, the coastal waters have supported local traditional fishers for generations, and the marine protected areas provide an important destination for tourism – Belize's number one foreign exchange earner. The importance of pollinators for agriculture, of sweeping natural vistas, rich wildlife and vibrant coral reefs for tourism, of medicinal plant use for traditional cultures – all these benefits and ecosystem services need to be safeguarded, with equitable benefit to all stakeholders.

With an increasing rate of deforestation and an expanding human footprint, there is recognition that informed land use planning at national level is required for development to be sustainable. As a country at high risk from climate change impacts – increasing air and sea temperatures, a rising sea level and increasing droughts and floods - climate change resilience for ecosystems and their services also has to be planned for. The NBSAP strategies identify the need to support implementation of the Integrated Land Use Planning Framework and Integrated Coastal Zone Management Plan, both of which focus on balancing development needs whilst maintaining ecosystem services.

Integration of local and traditional knowledge for protected area management planning is required under the National Protected Areas System policy, with management strategies being developed in collaboration with community stakeholders. Management planning requires that traditional knowledge through stakeholder consultation and participation be incorporated into the management planning process, and that managers identify ways of incorporating community customs and traditions into protected area management.Traditional knowledge in Belize is focused primarily on medicinal plants and need to preserve knowledge of medicinal plant use. Whilst a strong traditional healer movement existed in the 1980's, the lack of structured implementation of NBSAP strategies supporting this 1998 Thematic Area faltered. More recently, the traditional healer sector has strengthened again as community capacity increases, and as this sector becomes integrated into the strategic plans of the Institute for Social and Cultural Research (ISCR), a unit under the National Institute of Culture and History (NICH). Ix Chel Research Centre is active in promotion of knowledge of medicinal plants in young people. The Belize Indigenous

Training Institute / Q'eqchi' Healer's Association has been working closely with Cleveland University to improve knowledge of medicinal plants in southern Belize. This partnership also looked at identifying regions where medicinal plant species are located in the Maya Mountains Massif, and providing prioritization and identification and application of in-situ and ex-situ conservation strategies to ensure long term viability of medicinal plants and the ecosystems in which they live.

PROVIDING BENEFITS

The clear, coastal waters of Belize provide benefits for local coastal communities beyond fishing and tourism. In seeking ways to diversify their income base, fishermen in Placencia have turned to seaweed farming as a viable alternative. Seaweed farming builds on the existing skills and knowledge of the fishermen and their understanding of the sea, while providing income diversification for those fishermen involved.

Fishermen of the Placencia Producers Cooperative Society Ltd. (PPCSL) are successfully farming seaweed in the shallow, clear waters adjacent to Little Water Caye. It is harvested by hand, and dried in the sun, to be sold as dried seaweed, or processed to form a seaweed gel, used in seaweed shakes and as a thickener in cooking.
Seaweed gel can also be used in cosmetics and soap - an avenue currently being explored by the seaweed growers.

The seaweed occurs naturally in Belize. Seaweed fragments are tied to 50' long ropes or placed in nets, stretched out across the sea floor, and weighed down with anchors. These seaweed farms have a very small environmental footprint, and provide additional habitat for juvenile lobster, squid, shrimp, fish and other marine life.

The seaweed is dried in the sun, then soaked overnight in water, forming a gel for use in seaweed shakes and as a thickener in cooking. It can also be used in cosmetics and soap - an avenue currently being explored by the seaweed growers. Both dried seaweed and seaweed the identification of a lucrative export market.

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, tasked with the implementation of the plan and coordination with partner Ministries, civil society and general public actions. Effective implementation of the NBSAP requires a national effort – the responsibility lies not just with Government, but also private sector and the general public. This is to be achieved through increased awareness, investment and capacity building, and the establishment of effective mechanisms for integrated public participation and informed decision making.

TARGETS

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.

There is currently very little accounting of the economic value of Belize's natural resources, of the status of the ecosystems that provide services, and of the value of those services. Information is also limited on the status of biodiversity generally, and more specifically, on threatened species. This lack of information for informing decisions has led to limited prioritization on the part of the Government, and limited investment in biodiversity management. This revised NBSAP recognizes the limitations of current available information, and the need to assess the status of Belize's ecosystems and species to develop an improved understanding of their functionality and relationship, for strengthened landscape / seascape and species management. Information strategies also focus on the strengthening of the National Biodiversity Monitoring Program to ensure efforts are effectively prioritized with cost effective investment, improved data management and information dissemination through the establishment of an effective clearing house mechanism, and the establishment of biodiversity reporting systems.

Effective monitoring and evaluation of NBSAP implementation and outputs is considered critical if Belize is to achieve the outcomes it desires, with a rapid annual review of implementation, a mid-term review and evaluation of implementation and outputs, repeated at the end of the five year life of the plan to guide its revision.

2.4 ALIGNING THE NBSAP TARGETS WITH GLOBAL SUSTAINABLE DEVELOPMENT GOALS

NBSAP TARGET	SUSTAINABLE DEVELOPMENT GOALS
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.	**SDG 17:** Strengthen the means of implementation and revitalize the global partnership for sustainable development **SDG 15:** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss ***15.9*** *By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts*
TARGET A2. By 2020 Belize has legislated and implemented a national harmonized system of environmental standards and incentives that promote environmental responsibility and sustainability.	**SDG 9:** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation ***9.4*** *By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities*
TARGET A3. By 2020, all relevant national development decisions in Belize take into consideration ecosystem services and biodiversity relevance to the national economy	**SDG 17:** Strengthen the means of implementation and revitalize the global partnership for sustainable development ***17.14*** *Enhance policy coherence for sustainable development*
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	**SDG 4:** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all ***4.7*** *By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development* **SDG 11:** Make cities and human settlements inclusive, safe, resilient and sustainable ***11.7*** *By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities* **SDG 12.** Ensure sustainable consumption and production patterns ***12.6*** *Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle* ***12.7*** *Promote public procurement practices that are sustainable, in accordance with national policies and priorities* ***12.8*** *By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature*

NBSAP TARGET	SUSTAINABLE DEVELOPMENT GOALS
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	**SDG 12:** Ensure sustainable consumption and production patterns ***12.2*** *By 2030, achieve the sustainable management and efficient use of natural resources* ***12.5*** *By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse* **SDG 14:** Conserve and sustainably use the oceans, seas and marine resources for sustainable development *14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics* *14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation* *14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism* **SDG 15:** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss *15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally*

Belize's National Biodiversity Action Plan

3.1 NBSAP ACTION PLAN

A. MAINSTREAMING

B. REDUCING PRESSURES

C. PROTECTION

D. BENEFITS

E. IMPLEMENTATION

3.2 NBSAP AND NATIONAL DEVELOPMENT GOALS

3. NATIONAL ACTION PLAN

3.1 THE ACTION PLAN

The following Action Plan is formatted to provide guidance in critical areas through the following information, presented in the tables as follows:

HEADER	CONTENTS
GOAL	Identification of the Goal being addressed: Goal A: Mainstreaming Goal B: Reducing Pressures Goal C: Protection Goal D: Benefits Goal E: Implementation
TARGET	The higher level target, or objective, for each of the strategic areas
ACTION	The strategic actions required to achieve the Target
ACTIVITIES	The activities required to achieve the Strategic Actions
INDICATOR	Relevant indicators for measuring success of output and outcomes. Where these are linked to the National Biodiversity Monitoring Program, the indicators are followed by (NBMP)
LEAD AGENCY	Identification of the Lead Agency / Agencies and supporting agencies
SYNERGIES	Identification of synergies with other national legislation, policies and plans with similar objectives, for effective mainstreaming implementation of the NBSAP. Synergies also include alignment with SDG goals and Aichi Targets.
TIME FRAME	The time frame suggested for implementation

The priority of the Action is indicated to the left hand side of the table:

HIGH	
MEDIUM	
LOW	

GOAL A: MAINSTREAMING: *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*

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.						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*A1.1 Develop the framework to guide the harmonization of policies that positively impact biodiversity, across all Government departments*	▪ Policy review to identify areas of synergy for harmonization ▪ Identify guiding principles to ensure harmonization of new and existing policies ▪ Develop and implement proposed integrated coordinating mechanism	▪ Report on the policy recommendations and proposed framework for coordinating mechanism (yes / no) ▪ Adoption of the policy recommendations and proposed framework for integrated coordinating mechanism (yes / no) ▪ Trends in integration of biodiversity and ecosystem service values into sectoral and development policies	Biodiversity Office National Climate Change Office Sustainable Development Unit ***Other*** Forest Department NIWRA Lands Department DoE	Integrated Land Use Planning Framework BIOFIN ICZMP NEAP NEAP 3.1.1 (3) NEAP Target 12.1.1 NEAP 12.1.1 (1) IWRMP KBA Output 2.2a KBA Output 3.1a EPA Act SDG 15 SDG 19	2017 - 2018
TARGET A2: By 2020 Belize has legislated and implemented a national harmonized system of environmental standards and incentives that promote environmental responsibility and sustainability.						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*A2.1 Strengthen national environmental standards / adopt international standards where necessary and develop new standards where gaps exist*	▪ Identify existing environmental standards and gaps ▪ Develop identified additional standards, harmonize with existing standards and socialise	▪ Nationally adopted environmental standards and incentives (yes / no) ▪ Trends in compliance to environmental standards - number of fines, level of fines	***Lead*** Department of the Environment ***Other*** Forest Dept Wildlife Program BTB	GSDS NC1.5: Action 12 GSDS NC1.5: Action 13 NEAP 4.1.3 (3) EPA Forest Policy FD Wildlife Strategy (draft) STDP SDG 9	2017 -2018

TARGET A2: By 2020, Belize has legislated and implemented a national harmonized system of environmental standards and incentives that promote environmental responsibility and sustainability (continued)						
Action		**Activities**	**Indicators**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*A2.2 Identify incentives that promote environmental responsibility and sustainability*	▪ Legislative review with identification of potential incentives ▪ Identify additional incentives for increased environmental responsibility and integrate into legislation ▪ Integrate commitment to environmental sustainability into financial incentives proposed under the Agricultural Policy for private sector investment in agriculture	▪ Number of positive incentives ▪ Number of initiatives using positive incentives ▪ Government incentives for conservation and sustainable business (Eco-Audit) ▪	***Lead*** Ministry of Finance and Economic Development Department of the Environment ***Other*** Solicitor General's Office Dept. of Agriculture Dept. of Lands Hydrology PCB BTB	GSDS NC1.5: Action 12 GSDS NC1.5: Action 13 NEAP 4.1.3 (3) SDG 9	2017 - 2020
HIGH	*A2.3 Remove significant disincentives that prevent environmental responsibility and sustainability*	▪ Address issue of productive land concession rate through legislative amendment ▪ Address other disincentives	▪ Removal/ amendment of productive land concession rate (yes / no) ▪ % of disincentives identified that have been addressed ▪ Trends in the number and value of incentives, including subsidies harmful to biodiversity, removed, reformed or phased out (NBMP)			2017-2018

TARGET A3: By 2020, all relevant national development decisions in Belize take into consideration ecosystem services and biodiversity relevance to the national economy						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*A3.1 Improve information on the value of ecosystem services and assess best resource use for decision making at national level*	▪ Conduct key ecosystem services valuation ▪ Assess best use for long term sustainability based on cost benefit analysis of ecosystem services and development ▪ Socialisation of ecosystem services and values across Ministries, civil society and the general public	▪ Report on valuation of key ecosystem services (yes / no) ▪ % of national development decisions that reflect ecosystem service values and their maintenance / restoration	***Lead*** Forest Department Belize Fisheries Department, NIWRA, Dept. of Environment ***Other*** Lands, BWSL, CZMAI, ERI, Ministry of Finance; Ministry of Economic Development	Integrated Land Use Planning Framework NEAP Target 12.1.4 Horizon 2030 GSDS BIOFIN	2017 - 2019
	A3.2 Integration of ecosystem services into land use and coastal zone planning decisions	▪ Implementation of BIOFIN (Biodiversity Finance Initiative	▪ % of national development decisions that reflect ecosystem service values ▪ Trends in integration of biodiversity and ecosystem service values into sectoral and development policies. (NBMP)	***Lead*** Department of the Environment ***Other***	SDG 15.9 Integrated Land Use Planning Framework BIOFIN	2016 - 2018
	A3.3 Integration of natural capital (including ecosystem services) into national accounting	▪ Implementation of BIOFIN (Biodiversity Finance Initiative	▪ Indication of integration of total estimated value of natural capital in the national budget	***Lead*** Ministry of Finance ***Other***	BIOFIN REDD+	2016 - 2018

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						
Action		**Activities**	**Indicators**	**Agencies**	**Synergies**	**Timeframe**
HIGH	*A4.1 Develop and implement a National Public Awareness and Engagement Strategy to improve understanding of the role and importance of biodiversity and increase active good stewardship*	▪ Develop and implement awareness and engagement strategies targeted at key stakeholder groups identified as potential advocates/champions for biodiversity ▪ Initiate education awareness Programs focussing on the impacts of Climate Change, targeted at relevant sectors and measures to adapt and mitigate those anticipated impacts.	▪ % of Government Ministers engaged in NBSAP implementation ▪ Number of identified youth leaders engaged in NBSAP implementation ▪ % of PA co-management partners engaged in NBSAP implementation ▪ Trends in awareness, attitudes and public engagement in support of biological diversity and ecosystem service (NBMP) ▪ Trends in public engagement with biodiversity (NBMP) ▪ Trends in number of community based conservation initiatives (NBMP)	***Lead*** Forest Department Fisheries Department NPAS Department of the Environment Belize Tourism Board	GSDS NC1.5: Action 12 GSDS NC1.5: Action 13 NEAP 4.1.3 (3) National Wildlife Awareness Strategy (draft) NPAS Communication Strategy NCCPSAP SDG 4 SDG 11 SDG 12	2017 – 2020
HIGH	*A4.2 Improved integration of environmental education into classroom activities*	▪ Engage Ministry of Education for effective integration of environmental education at all levels	▪ Number of schools / colleges with active environmental groups ▪ Number of schools integrating outdoor environmental activities into the school year ▪ Trends in awareness and attitudes to biodiversity (NBMP)	***Lead*** Ministry of Education ***Others*** Forest Department Belize Fisheries Department NGOs	GSDS NC1.5: Action 12 GSDS NC1.5: Action 13 NEAP 4.1.3 (3) Draft National Wildlife Awareness Strategy NPAS Communication Strategy	2017 – 2020

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 (continued)						
Action		**Activities**	**Indicators**	**Agencies**	**Synergies**	**Timeframe**
HIGH	*A4.2 Improved integration of environmental education into classroom activities (cont.)*	▪ Develop materials and lesson plans in collaboration with Ministry of Education to support improved integration of environmental education into classroom activities ▪ Training and support of teachers in integrating environmental education in the classroom ▪ Engagement of PA NGOs for synergised education in local communities	▪ Trends in public engagement with biodiversity (NBMP) ▪ Trends in awareness and attitudes to biodiversity (NBMP) ▪ Number of schools / colleges with active environmental groups	***Lead*** Ministry of Education ***Others*** Forest Department Belize Fisheries Department NGOs	GSDS NC1.5: Action 12 GSDS NC1.5: Action 13 NEAP 4.1.3 (3) National Wildlife Awareness Strategy (draft) NPAS Communication Strategy	2017 – 2020
HIGH	*A4.3 Develop and implement national communication strategies for key components of the NBSAP*	▪ Endorsement and implementation of National Wildlife Awareness Strategy ▪ Implementation of National Protected Areas Communication Strategy and Implementation Plan ▪ Develop and implement other key communication plans (e.g. re. climate change, ICZMP)	▪ National Wildlife Awareness Strategy is endorsed and is being implemented (yes / no) ▪ National Protected Areas Communication Strategy and Implementation Plan is being actively implemented (yes/no) ▪ Trends in awareness and attitudes to biodiversity (NBMP)	***Lead*** Forest Department, Belize Fisheries Dept. NCCO, CZMAI ***Others*** Belize Tourism Board NGOs	National Wildlife Awareness Strategy (draft) NPAS Communication Strategy	2017 – 2020

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

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 (continued)

	Action	Activities	Indicator	Lead Agency	Synergies	Timeframe
HIGH	*effective management and monitoring of natural resource extraction in the terrestrial, freshwater and marine environments by the regulatory agencies*	of the Forest and Fisheries Departments for effective monitoring of natural resource extraction ▪ Strengthen partnerships between enforcement agencies for collaborative management and monitoring of natural resource extraction	▪ critical funding required for effective annual monitoring of natural resource extraction	Forest Department Fisheries Department NIWRA Belize Coast Guard Police Department Belize Defense Force Institute of Archaeology PA management partners Ministry of Finance	SDG 14.3 NEAP 1.1.1 (1)	2016 – 2017
	B1.3 Develop /strengthen and implement sustainable natural resource use management plans and permitting systems	▪ Strengthen and update natural resource management plans, and develop new plans, where needed, incorporating climate change considerations based on projected impacts and vulnerability ▪ Ensure effective monitoring and enforcement of natural resource management plans	▪ % of natural resource management plans required that are updated and being actively implemented ▪ % natural resource use plans that include climate change considerations ▪ Trends in status of biodiversity subjected to extractive use ▪ Trends in pressures from unsustainable agriculture, forestry, fisheries and aquaculture (NBMP)	***Lead*** Forest Department Fisheries Department Department of the Environment ***Other*** PA management partners Environmental Research Institute	Managed Access Belize Fisheries Dept. species-specific sustainable use plans for conch, lobster, sea cucumber Sustainable Forestry Plans e.g. Rosewood SDG 12 SDG 14 SDG 15	2016 - 2020 2016 - 2020
	B1.2 Strengthen enforcement of natural resource extraction legislation and regulation	▪ Amend natural resource extraction legislation and regulations for increased, more punitive penalties for lack of compliance ▪ Finalise and endorse Fisheries Resource Bill ▪ Trends in population and extinction risk of utilized species, including species in trade (NBMP)	▪ Number of illegal extraction incidents reported per year ▪ % of illegal extraction incidents taken to court that are effectively prosecuted	***Lead*** Forest Department Belize Fisheries Department Department of the Environment **Other** Belize Coast Guard Police Department Belize Defense Force Institute of Archaeology PA management partners	KBA	2017 - 2018

MEDIUM	*B1.4 Develop / promote and monitor national and international environmental certification of key extractive industries*	▪ Assess and review existing national and international certification for key extractive industries, and strengthen where necessary ▪ Develop additional certification for key extractive industries where necessary ▪ Ensure effective monitoring and reporting of compliance to standards	▪ % of key extractive industries with valid environmental certification ▪ % of agricultural lands under certified sustainable management ▪ % of aquaculture initiatives recognized by international certification (ASC)	***Lead*** Agriculture Department Forest Department Fisheries Department ***Other*** Timber concessionaires and licensees Environmental Defence Fund PA management partners Belize Shrimp Growers Association	Forestry Stewardship Council certification BTB Sustainable Tourism and Responsible Practices for Small Hotels (draft) Aquaculture Stewardship Council	2016 - 2020

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

Action		Activities	Indicator	Lead Agency	Synergies	Timeframe
HIGH	*B2.1 Extension of requirement for Environmental Impact Assessments (EIAs), Compliance Plans (ECPs) and environmental standards to lands of 100 acres and above, coastal and cayes, with protection of sensitive / priority ecosystems*	▪ Amend EIA SI and regulations to include lands of 100 acres and more ▪ Strengthen DoE human resource and operation capacity for increased level of work required	▪ % of identified impacting businesses and industries covered by ECPs ▪ % of identified impacting businesses and industries compliant with ECP	***Lead*** Department of the Environment ***Others*** Forest Department Fisheries Department Lands Department Department of Agriculture CZMAI	KBA Project EPA	2017 - 2018 2017 - 2020
HIGH	*B2.2 Incorporate climate change considerations into the EIA process*	▪ Review and revise the EIA framework to include climate change vulnerability assessment and recommendations	▪ EIAs are required to include a climate change component (yes / no)	***Lead*** Department of the Environment National Climate Change Office ***Others***	NEAP: 11.1.1. (4)	2017 - 2018

				Forest Department Fisheries Department University of Belize-ERI		
HIGH	*B2.3 Strengthening monitoring of environmental impacts (particularly key areas (key ecosystems, biological corridors))*	▪ Strengthen DoE resources for effective monitoring of ECP compliance ▪ Strengthen DoE partnerships with other Departments, PA managers and civil society in monitoring ECPs and other environmental issues	▪ % of identified impacting businesses and industries compliant with ECP	***Lead*** Department of the Environment ***Others*** Forest Department Fisheries Department PA co-managers Civil Society Organizations	KBA NEAP: 11.1.1. (4)	2016 - 2020

TARGET B2. By 2020, 80% of businesses monitored in Belize are compliant with environmental standards (continued)						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*B2.4 Strengthen enforcement of ECPs and other environmental regulations with appropriate penalties for lack of compliance*	▪ Amend EPA for higher fines for non compliance with ECP ▪ Strengthen DoE for more effective prosecution of environmental offences ▪ Strengthen enforcement of existing and proposed policies and legislation protecting key ecosystems and ecosystem services	▪ Increased fines in amended environmental regulations ▪ % DoE non-compliance cases successfully prosecuted	***Lead*** Department of the Environment ***Others*** LIC	Revision of Mangrove Regulations	2017 - 2018 2016 - 2020
HIGH	*B2.5 Strengthen solid and liquid waste management*	▪ Improve best practices in solid and liquid waste in the private sector ▪ Extend solid waste	▪ % communities considered to have adequate solid waste management ▪ % communities considered	***Lead*** Department of the Environment	SDG 6	2016 - 2020

		management Program nationally	to have adequate liquid waste management ▪ Trends in water quality in aquatic ecosystems (NBMP)			

TARGET B3. Between 2016 and 2020, Belize has limited its net rate of land use change for natural ecosystems / areas to no more than 0.6% per year						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*B3.1 Implementation of the National Land Use Policy and Integrated Planning Framework across all relevant Ministries*	▪ Finalize, endorse and socialize National Land Use Plan across Ministries	▪ National Land Use Policy and Framework is endorsed (yes / no) ▪ % technical staff at relevant Ministries aware of and using the National Land Use Policy and Framework ▪ Trends in policies considering ecosystem services in environmental impact assessment and strategic environmental assessment (NBMP)	***Lead*** Lands Department Policy Unit	GSDS NCCPSAP NIWRA ICZMP	2016 - 2017 2017
HIGH	*B3.2 Support prioritized natural ecosystem maintenance through incentives for private landowners*	▪ Identify and map priority ecosystems, and lodge shapefile with LIC ▪ Identify and implement positive incentives for maintenance of prioritized natural ecosystem ▪ Amend Land Tax Act to include incentives for the long term commitment of land to conservation / maintenance of environmental services	▪ Priority ecosystems mapped and integrated into LIC datasets (yes / no) ▪ Incentive scheme for maintaining prioritized natural ecosystems has been created (yes / no) ▪ % change in land use in prioritized areas ▪ Land Tax Act is amended (yes / no) ▪ Trends in extent of selected biomes, ecosystems and habitats (NBMP) ▪ Trends in fragmentation of natural habitat (NBMP)	**Lead** Ministry of Finance National Protected Areas Secretariat ***Other*** Forest Department Fisheries Department BAPPA	BIOFIN REDD+ Green Climate Fund	2016 - 2017 2017 - 2020 2017 - 2018

TARGET B3. Between 2016 and 2020, Belize has limited its net rate of land use change for natural ecosystems / areas to no more than 0.6% per year (continued)						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
MEDIUM	*B3.4 Incentivise location of new developments on degraded lands rather than removing natural ecosystems critical for climate change resilience*	▪ Identify and implement positive incentives for development on degraded lands ▪ Identify and map degraded lands eligible for development incentives, and lodge with LIC	▪ Incentives available for development on degraded lands ▪ Map of degraded lands eligible for incentives, lodged with LIC ▪ Rate and extent of natural habitat conversion (NBMP) ▪ Trends in proportion of degraded / threatened habitats (NBMP)	***Lead*** Forest Department Lands Department Dept of Environment ***Others*** National Protected Areas Secretariat National Climate Change Office	NCCPSAP NPAS Rationalization report NFAP 3.1.1.(5) NFAP 3.1.1.(6) Integrated Coastal Zone Management Plan National Integrated Water Resources Act	2017 - 2020
MEDIUM	*B3.3 Integrate environmental change limits into land conveyances for prioritised ecosystems*	▪ Establish incentives for use of degraded lands through BELTRAIDE and other key stakeholders ▪ Develop legislative framework for integration of environmental change limits into land conveyances	▪ Identified environmental change limits incorporated into legislation ▪ Extent and distribution of large scale development (NBMP) ▪ % change in land use in prioritized areas	***Lead*** Lands Department Solicitor General's Office ***Others*** National Protected Areas Secretariat Forest Department	Integrated Coastal Zone Management Plan National Integrated Water Resources Act NPAS Rationalization report	2017 - 2020
HIGH	*B3.5 Promote shift to more environmentally sustainable agriculture, reducing rate of deforestation*	▪ Improve zoning of land according to its suitability for agriculture ▪ Promote more environmentally sustainable management systems ▪ Establish environmental change limits across Lands Department, Association of Real Estate Brokers, attorneys, BELTRAIDE and other key stakeholders	▪ Revised policies and zoning according to suitability for agriculture/ development, lodged with LIC ▪ Rate of deforestation ▪ % change in agricultural areas using environmental sustainable management systems ▪ Agricultural expansion rate (NBMP)	***Lead*** Department of Agriculture ***Other*** National Climate Change Office	National Land Use Plan and Integrated Framework NAFP PE4 (draft) NCCPSAP	2016 - 2020

TARGET B3. Between 2016 and 2020, Belize has limited its net rate of land use change for natural ecosystems / areas to no more than 0.6% per year (continued)						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*B3.5 Encourage shift to increased environmental sustainability of agriculture, reducing rate of deforestation*	▪ Promote reduced deforestation through intensification and increased productivity in areas under cultivation ▪ Promote integrated management of the environment in agricultural production systems. ▪ Develop national cropping, livestock, and fisheries plans taking into account climate change consideration and agro-ecological conditions ▪ Develop and implement soil and water conservation measures for agricultural ▪ Develop and implement action plans to enhance watershed management and reduce land degradation	▪ Rate of deforestation / Rate and extent of natural habitat conversion (NBMP) ▪ % large agricultural areas using environmental sustainable management systems ▪ Agricultural expansion rate (NBMP)	***Lead*** Department of Agriculture	Land Use Plan and Integrated Framework NAFP PM4 (draft) NCCPSAP	2016 – 2020
MEDIUM	*B3.6 Implement effective fire management across Belize*	▪ Coordinated implementation of National Wildland Fire Management Policy and Strategy ▪ Develop, socialise and implement best practices for the management of fires related to agricultural land clearing	▪ Number of agencies that actively respond to large-scale fires ▪ Trends in proportion of degraded / threatened habitats (NBMP) ▪ Frequency, distribution and extent of fires by land use type (NBMP)	***Lead*** Forest Department TIDE ***Other*** Department of Agriculture Department of Environment	National Wildland Fire Management Policy and Strategy NAFP PM4 (draft)	2016 - 2020

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						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
MEDIUM	*B4.1 Develop and implement a restoration plan for identified priority ecosystems and ecosystem services essential for increasing Belize's resilience to climate change*	▪ Identify and map degraded ecosystems / ecosystem services and prioritise for restoration ▪ Develop, build capacity for, and implement restoration plans to re-establish priority ecosystems / ecosystem services and to prevent future degradation	▪ Restoration plans for priority ecosystems (Yes / no) ▪ Trends in extent of selected biomes, ecosystems and habitats (NBMP) ▪ Trends in proportion of degraded / threatened habitats (NBMP)	***Lead*** Forest Department Fisheries Department ***Other*** National Climate Change Office Department of the Environment	Activities under B3.3 NCCPSAP NBMP SDG 15.3 SDG 15.3 UNCCD	2017 - 2018
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						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*B5.1 Strengthen protection of natural resources from transboundary pressures*	▪ Strengthen transboundary cooperation agreements ▪ Improve national investment in demarcation, surveillance and enforcement of national borders (terrestrial and marine)	▪ Annual national investment in addressing illegal natural resource from transboundary incursions ▪ Area of new / active illegal farms as a result of transboundary incursions ▪ Number of arrests for illegal natural resource extraction as a result of transboundary incursions	***Lead*** Ministry of Foreign Affairs National Security Council ***Others*** Enforcement agencies (Police Dept., BDF, Coastguard, Dept. of Immigration, Customs Dept.) Relevant NGOs (FCD, SATIIM, SACD)	GSDS NC3.1.1a GSDS NC4.5 (1) Environmental Agreement between Belize and Guatemala (November 2014) Transboundary Agreement with Mexico	2016 - 2020

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						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*B5.1 Strengthen protection of natural resources from transboundary pressures*	▪ Strengthen the National Security Council and enforcement agencies for prioritization of protection of Belize's natural resources from transboundary incursions	▪ Number of successful prosecutions for illegal natural resource extraction as a result of transboundary incursions	***Lead*** Ministry of Foreign Affairs National Security Council ***Others*** Enforcement agencies (Police Dept., BDF, Coastguard, Dept. of Immigration, Customs Dept.) Relevant NGOs (FCD, SATIIM, SACD)	GSDS NC3.1.1a GSDS NC4.5 (1) Environmental Agreement between Belize and Guatemala (November 2014) Transboundary Agreement with Mexico	2017 - 2020
TARGET B6. By 2018, Belize has a strengthened system in place for early detection and effective management of invasive species						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*B6.1 Develop and implement an action plan to identify and address prevention and / or management of invasive species*	▪ Identify, assess and map current and potential invasive species impacts and species entry pathways ▪ Develop and implement Action Plans (control and eradication strategies) to address issues of priority invasive species ▪ Build capacity of Customs, Agriculture and BAHA officers to recognise invasive species	▪ Invasive Species Action Plans (yes / no) ▪ Number of new invasive species per year ▪ Trends in number and distribution of invasive species (NBMP)	**Lead** Belize Agricultural Health Authority Department of Agriculture Fisheries Department ***Others*** Forest Department Customs Department Ministry of Health Citrus Growers Association	Citrus Growers Association	2017 - 2020

TARGET B6. By 2018, Belize has a strengthened system in place for early detection and effective management of invasive species						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*B6.1 Develop and implement an action plan to identify and address prevention and / or management of invasive species (continued)*	▪ Strengthen policies and implementation re. importation of exotic species ▪ Strengthen public awareness of the issue of invasive species	▪ Number of new invasive species per year ▪ Trends in number and distribution of invasive species (NBMP)	**Lead** Belize Agricultural Health Authority Department of Agriculture Fisheries Department ***Others*** Forest Department Customs Department Ministry of Health Citrus Growers Association	Citrus Growers Association	2017 - 2020

GOAL C: PROTECTION: *Functional ecosystems and viable populations of Belize's biodiversity are maintained and strengthened*

TARGET C1. By 2030, Belize's natural landscapes and seascapes are all functional and build biodiversity resilience to climate change						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*C1.1 Institute national research and monitoring to guide management and sustainable use for strengthening ecosystem resilience*	▪ Finalize and implement the National Biodiversity Monitoring Program with integration of monitoring for climate change and climate change impacts and revision to align with the NBSAP ▪ Conduct research on the vulnerability and sustainability of terrestrial, freshwater and marine resources to climate change.	▪ Finalized National Biodiversity Monitoring Program that fully integrates monitoring for climate change and climate change impacts	***Lead*** Biodiversity Office National Climate Change Office ***Other*** University of Belize-ERI Department of the Environment Healthy Reefs NGO partners	NBMP NCCPSAP Healthy Reefs Report Card Healthy Reefs Eco-audit National Coral Reef Monitoring Network	2016 - 2020
HIGH	*C1.2 Identify and implement improved adaptive management regimes for critical landscape / seascape ecosystems based on anthropogenic threats and climate change vulnerability*	▪ Socialise and implement the National Climate Change Policy, Strategy and Action Plan ▪ Promote the development of institutional mechanisms that l enhance Belize's planning and response capacity to climate change	▪ Proportion of national territory under protected area status (terrestrial and marine) ▪ % of identified resilient reef sites protected ▪ % of KBA area under protection ▪ Ecosystem extent ▪ Distribution trends of terrestrial species indicative of drier climates: e.g. Yucatan tree species, Yucatan jay ▪ Proportion of key ecosystems lost ▪ Trends in proportion of degraded / threatened habitats (NBMP)	***Lead*** National Climate Change Office ***Other*** Sustainable Development Unit Forest Department Fisheries Department NIWRA, Department of Agriculture, Department of the Environment, Lands Planning Unit NGO partners	NCCSPAP SDG 13.2 GSDS NC3.1.1b Water Authority Project: Activity 1A.5 Integrated Land Use Planning Framework and NAFP (draft) NPAPSP Goal 4: National Climate Change Policy: Fisheries Sector NPAS Rationalization report (includes projected impacts per protected area)	2016 – 2020

TARGET C1. By 2030 Belize's natural landscapes and seascapes are all functional and build biodiversity resilience to climate change (continued)						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*C1.2 Identify and implement improved adaptive management regimes for critical landscape / seascape ecosystems based on anthropogenic threats and climate change vulnerability (cont.)*	▪ Ensure close collaboration between the NCCO, NPAS and BiO offices ▪ Integrate recommendations for planning for future ecosystem functionality and climate change resilience into NPAS and key national development plans strategies, laws, regulations and budgeting ▪ Collaborative broad stakeholder implementation of landscape / seascape climate change adaptation measures	▪ Proportion of national territory under protected area status (terrestrial and marine) ▪ % of identified resilient reef sites protected ▪ % of KBA area under protection ▪ Ecosystem extent ▪ Distribution trends of terrestrial species indicative of drier climates: e.g. Yucatan tree species, Yucatan jay ▪ Proportion of key ecosystems lost ▪ Trends in proportion of degraded / threatened habitats (NBMP)	***Lead*** National Climate Change Office ***Other*** Sustainable Development Unit Forest Department Fisheries Department NIWRA, Department of Agriculture, Department of the Environment, Lands Planning Unit NGO partners	NCCSPAP SDG 13.2 GSDS NC3.1.1b Water Authority Project: Activity 1A.5 Integrated Land Use Planning Framework and NAFP (draft) NPAPSP Goal 4: National Climate Change Policy: Fisheries Sector NPAS Rationalization report (includes projected impacts per protected area)	2016 – 2020
HIGH	*C1.3 Provide positive incentives for best practices that ensure the maintenance and restoration of ecosystem functionality, vulnerable ecosystems and high biodiversity value areas*	▪ Identify, implement and socialise incentives for maintenance and restoration of critical ecosystems on private lands	▪ Incentives available for maintenance of critical ecosystems ▪ Trends in integration of biodiversity, ecosystem services and benefits sharing into planning, policy formulation and implementation, and incentives (NBMP)	***Lead*** Ministry of Finance ***Other*** National Protected Areas Secretariat BAPPA		2017 - 2018

TARGET C1. By 2030 Belize's natural landscapes and seascapes are all functional and build biodiversity resilience to climate change (continued)						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*C1.4 Lobby for implementation of legislative policies identified in the Growth and Sustainable Development Strategies (CSF3) and the institutionalization of the National Climate Change Office*	▪ Meetings with key decision makers and through office of the PM and relevant CEOs	▪ Endorsement / implementation of: National Land Use Policy and Integrated Planning Framework Sustainable Forest Management Integrated Coastal Zone Management Plan NPASP NEAP NCCPSAP Solid Waste Management Project ▪ Institutionalization of the National Climate Change Office ▪ Trends in integration of biodiversity, ecosystem services and benefits sharing into planning, policy formulation and implementation, and incentives (NBMP)	***Lead*** MAFFESD ***Other*** Relevant Ministries NGO partners	GSDS priorities	2016 - 2017

TARGET C2. By 2020, three key corridors identified under the NPAPSP are physically and legally established, and effectively managed effectively						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*C2.1 Assess the current legal framework for biological corridors and strengthen if necessary*	▪ Legal assessment of biological corridor content of NPAS Act – amendment if necessary to strengthen	▪ Number of legally established corridors ▪ Number of physically established corridors ▪ % corridors with current CAP plans ▪ % effectiveness of corridor management per corridor ▪ Level of forest / natural vegetation connectivity within each corridor ▪ Trends in connectivity of PAs and other area- based approached integrated into landscapes and seascapes (NBMP) ▪ Trends in distribution and abundance of species requiring high connectivity ▪ Trends in fragmentation of natural habitats (NBMP)	***Lead*** Solicitor General's Office National Protected Areas Secretariat Lands Department ***Other*** Forest Department NGO partners	NPAS Act NPAS Policy (revised) NPAS Rationalization report National Land Use Plan and Integrated Framework	2016 - 2017
	C2.2 Define the 3 key biological corridors (Northern, Central and Southern) legally and physically, and implement management	▪ CAP planning with communities and private land owners for corridor agreements ▪ Define the area and boundaries of the three corridors in an NPAS Act Schedule ▪ Survey and demarcation of corridors ▪ Implement CAP actions for establishment and management of the Central Belize Corridor		***Lead*** National Protected Areas Secretariat Forest Department - Biodiversity Office ***Other*** Lands Department NGO partners	Integrated Land Use Planning Framework. NPAS Act Central Corridor CAP	2016 - 2020

TARGET C2. By 2020, three key corridors identified under the NPAPSP are physically and legally established, and effectively managed (continued)						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*C2.2 Define the 3 key biological corridors (Northern, Central and Southern) legally and physically, and implement management (cont.)*	▪ Develop and implement Conservation Action Plan North East Biological Corridor (Section 1) ▪ Develop and implement Conservation Action Plan for North East Biological Corridor (Section 2) (Freshwater Creek FR to Rio Bravo) ▪ Update and Implement Southern Conservation Action Plan	▪ Number of legally established corridors ▪ Number of physically established corridors ▪ % corridors with current CAP plans ▪ % effectiveness of corridor management per corridor ▪ Level of forest / natural vegetation connectivity within each corridor ▪ Trends in connectivity of PAs ▪ Trends in distribution and abundance of species requiring high connectivity	***Lead*** Forest Department - Biodiversity Office ***Other*** Lands Department Relevant PA NGOs / CBOs Institute of Archaeology	NPAS Act NPAS Rationalization report Integrated Land Use Planning Framework North East Corridor Initiative IoA establishment of Kakantulix as an Archaeological Reserve Maya Mountain Marine Corridor; Golden Stream Watershed /Maya Golden Landscape	2016 - 2020

TARGET C3. Between 2016 and 2030, no species will become functionally extinct in Belize					
Action	**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**

HIGH	*C3.1 Update and approve Belize's National Threatened Species List*	▪ Produce updated, prioritised National Threatened Species List and socialise ▪ Integration of National Threatened Species List into EIA process, national planning and decision making	▪ National Threatened Species List (yes / no) ▪ Number of species that are considered to have become functionally extinct in Belize over the time frame of the NBSAP ▪ Trends in abundance, distribution and level of risk of extinction of priority species (NBMP)	***Lead*** Forest Department Fisheries Department Biodiversity Office ***Other*** University of Belize – ERI NGO partners Wildlife stakeholders	National Threatened Species List (draft, 2005) 2010 Status of Protected Areas NBMP SDG 15.5	2016 - 2017 2017 - 2020
HIGH	*C3.2 Strengthen enforcement of the Wildlife Protection Act, and prosecution of wildlife crimes*	▪ Revise and strengthen the Wildlife Protection Act and other relevant legislation ▪ Build capacity of enforcement and prosecution personnel ▪ Build collaborative partnerships and capacity of other enforcement agencies in recognition and reporting / enforcement of wildlife legislation	▪ Revised Wildlife Protection Act (yes / no) ▪ % of SOPA indicator species considered to be decreasing ▪ % of wildlife crimes reported that are responded to successfully ▪ % of wildlife crime reports originating from general public ▪ % of wildlife crime reports originating from non FD enforcement agencies	***Lead*** Forest Department Fisheries Department Biodiversity Office ***Other*** University of Belize – ERI NGO partners Wildlife stakeholders PA managers	KBA project FD USFWS Project	2016 - 2017 2016 - 2020

TARGET C3. Between 2016 and 2030, no species will become functionally extinct in Belize (continued)					
Action	**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**

HIGH	*C3.3 Strengthen direct management and conservation of species*	▪ Strengthen national working groups	▪ Number of active working groups (meeting quarterly with quorum) ▪ Number of valid recommendations to Gov. from Working Groups ▪ Trends in abundance, distribution and extinction risk of selected species (NBMP)	***Lead*** Forest Department Fisheries Department ***Other*** University of Belize – ERI NGO partners Wildlife stakeholders PA managers	Hicatee Working Group National Manatee Working Group Coral Monitoring Network SPAG Working Group Bird Working Group Turtle Working Group	2016 - 2020
		▪ Support and strengthen mandated wildlife rehabilitation centres for threatened species	▪ % of rehabilitation centres with effective post-release success ▪ % of rehabilitation centres meeting site assessment standards and MoU conditions ▪ Trends in abundance, distribution and extinction risk of selected species (NBMP)	***Lead*** Forest Department Fisheries Department ***Other*** Wildlife Rehabilitation stakeholders	Manatee and Primate Rehabilitation Centres (Wildtracks) Belize Bird Rescue American Crocodile Education Sanctuary	2016 - 2020
		▪ Develop and implement national species management / recovery plans	▪ Number of national species recovery plans accepted and being implemented ▪ Trends in abundance, distribution and extinction risk of selected species (NBMP)	***Lead*** Forest Department Fisheries Department ***Other*** NGO partners Wildlife stakeholders PA managers	NMWG - manatees	2016 - 2020
		▪ Ratify the Convention on Migratory Species	▪ Ratification of the Convention on Migratory Species	***Lead*** Forest Department	***Lead*** Forest Department Fisheries Department ***Other*** Bird Working Group ECOMAR MARFund	2016 - 2018

TARGET C3. Between 2016 and 2030, no species will become functionally extinct in Belize (continued)					
Action	**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**

HIGH	*C3.4 Improve sensitization of the general public to wildlife and the environment*	▪ Finalize and implement the National Wildlife Awareness Strategy	▪ Finalized and approved National Wildlife Awareness Strategy ▪ Trends in awareness and attitudes to biodiversity (NBMP)	***Lead*** Biodiversity Office ***Other*** Forest Department Fisheries Department NGO partners Belize Tourism Board	National Wildlife Awareness Strategy (draft)	2016 - 2020
TARGET C4. By 2020, average management effectiveness of the National Protected Areas System has increased to 80%						
Action		**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**
HIGH	*C4.1 Implement the revised National Protected Area System Plan (NPAS) and supporting NPAS Rationalization report*	▪ Strengthen the National Protected Areas Secretariat for effective implementation of the NPASP ▪ Strengthen operational capacity of PA regulatory agencies	▪ 2016 and 2020 Management Effectiveness reports (yes / no) ▪ Mean PA management effectiveness ▪ Averaged score of Status of Protected Areas ▪ % of SOPA indicator species considered to be decreasing ▪ % of outputs of the NPASP successfully implemented ▪ Updated ecosystem map for Belize (yes / no) ▪ Trend in ecosystem coverage inside and outside NPAS ▪ % of ecosystems not meeting NPASP 2005 ecosystem minimum coverage criteria ▪ Trends in coverage, condition, representativeness and effectiveness of PA and other area-based approached (NBMP)	***Lead*** National Protected Areas Secretariat ***Other*** Biodiversity Office Forest Department Fisheries Department PA managers BAPPA Private landowners Land Information Centre	NPASP: Goal 1: 1.3.1 NPASP: Goal 1.1.2	2016 - 2020
		▪ Effectively integrate private protected areas into the National Protected Areas System		***Lead*** National Protected Areas Secretariat		2016 - 2018
		▪ Ensure that the NPAS protects representative examples of all ecosystems as per the NPAPSP 2005 targets		***Other*** Biodiversity Office Forest Department Fisheries Department PA managers	NPAS Rationalization report. NPASP Activity 1.4.2 and 4.1.3	2016 - 2020
		▪ Implement the NPAS communication strategy		National Protected Areas Secretariat		2016 - 2020
TARGET C4. By 2025, average management effectiveness of the National Protected Areas System has improved to 80%						

Action		Activities	Indicator	Lead Agency	Synergies	Timeframe
HIGH	*C4.1 Implement the revised National Protected Area System Plan (NPASP) and supporting NPAS Rationalization Report (cont.)*	▪ Re-assess and amend inaccurate protected area SI's / boundaries where necessary ▪ Assess implementation and output success of NPASP in 2020 and revise and update to inform management decisions from 2020 onwards	▪ % of recommendations of the NPAS Rationalization report successfully implemented ▪ CAP plan per system level unit (yes / no) ▪ % of recommendations of CAP plans successfully implemented ▪ Trends in coverage of NPAS (NBMP) ▪ Trends in representative coverage of PAs and other area-based approaches (NBMP) ▪ Trends in connectivity of PAs ad other area-based approaches integrated into landscapes and seascapes (NBMP)	***Lead*** National Protected Areas Secretariat ***Other*** Biodiversity Office Forest Department Fisheries Department PA managers BAPPA Private landowners Lands Information Centre	MCCAP PA Realignment exercise KBA Outcome 1.1 NPASP Activity 1.4.3 Current CAPs: Northern Belize Coastal Complex	2016 - 2018
		▪ Conduct a legal assessment of the co-management framework of NPAS Act for strengthening if necessary		***Lead*** National Protected Areas Secretariat Solicitor General's Office ***Other*** APAMO		2016 - 2017
		▪ Strengthen system level management units through effective development and implementation of system level CAPs		***Lead*** National Protected Areas Secretariat ***Other*** Forest Department Fisheries Department PA managers		2016 - 2020
		▪ Training and capacity building for improved protected area management		***Lead*** National Protected Areas Secretariat ***Other*** University of Belize – ERI	University of Belize-ERI Protected Areas Training Program	

TARGET C4. By 2025, average management effectiveness of the NPAS has improved to 80%

Action		Activities	Indicator	Lead Agency	Synergies	Timeframe
HIGH	*C4.2 Improve financial sustainability mechanisms for the NPAS*	▪ Strengthen legal, regulatory and policy support for improved revenue generation ▪ Increase investment for management presence, infrastructure and equipment for Protected Areas ▪ Implement Sustainable Financing Strategy and Plan ▪ Training of PA partners in business planning, financial sustainability opportunities	▪ % of recommendations of Sustainable Financing Strategy and Plan successfully implemented ▪ % of annual GoB budget invested in management of protected areas ▪ Trends in total NPAS funding – both Governmental and non-governmental	***Lead*** Ministry of Finance National Protected Areas Secretariat ***Other*** Biodiversity Office Forest Department Fisheries Department	PACT BIOFIN NPASP Goal 3: 3.2.1 and 3.2.2. BIOFIN; NPASP Goal 3: 3.1 Recommendations from: Development of Strategies and Guidelines for investing in Protected Areas in Belize Sustainable Financing Strategy and Plan;	2016 - 2020
HIGH	*C4.3 Conduct 2016 and 2020 Assessments of management effectiveness of protected areas and implement recommendations*	▪ Regional workshops, validation workshop	▪ Mean PA management effectiveness ▪ Averaged score of Status of Protected Areas indicators for benefits ▪ % of SOPA indicator species considered to be decreasing	***Lead*** National Protected Areas Secretariat ***Other*** Forest Department Fisheries Department Wildtracks	Status of Protected Areas reports 2006, 2010	2016, 2020
		▪ Implement recommendations of 2016 national management effectiveness assessment	▪ % recommendations that have been successfully implemented ▪ Trends in PA condition / management effectiveness including more equitable management (NBMP)	***Lead*** National Protected Areas Secretariat ***Other*** Forest Department Fisheries Department		2017 - 2020

TARGET C4. By 2025, average management effectiveness of the NPAS has improved to 80%

Action		Activities	Indicator	Lead Agency	Synergies	Timeframe
HIGH	*C4.4 10% of PAs have demonstrated economic value and direct livelihood support through PA /ecosystem services*	▪ Conduct a pilot economic evaluation of ecosystem services of a protected area as a pilot study ▪ Provide capacity building and resources for protected area managers for replication of pilot study in other protected areas	▪ PA valuation pilot study (yes / no) ▪ % of targeted pas with completed valuations	***Lead*** National Protected Areas Secretariat ***Other*** Biodiversity Office Forest Department Fisheries Department PA managers	BIOFIN	2017 - 2018 2018 - 2020
HIGH	*C4.5 Engage buffer communities for collaborative stewardship of the NPAS*	▪ Ensure protected area management mechanisms for participation of local communities in collaborative stewardship	▪ % of protected areas that have mechanisms that promote participation of local communities in collaborative stewardship	***Lead*** National Protected Areas Secretariat ***Other*** PA managers	GSDS NC2.5: 4 GSDS NC3.1.1a Managed Access KBA MCCAP	2016 - 2020
		▪ Identify and implement economic alternatives and / or opportunities for buffer communities	▪ % of alternative livelihood projects considered successful ▪ Number of people benefitting from PA-related alternative livelihood projects	***Lead*** National Protected Areas Secretariat ***Other*** Ministry of Rural Development Department of Agriculture PA managers		

TARGET C5. By 2020, Belize is implementing a biosafety policy that safeguards against large-scale loss of biological integrity					
Action	**Activities**	**Indicator**	**Lead Agency**	**Synergies**	**Timeframe**

MEDIUM	*C5.1 Revise and implement the Biosafety policy*	▪ Raise awareness of biosafety issues among policy and decision makers, public ▪ Legal drafting, submission and enactment of Biosafety Policy	▪ Approved Biosafety Policy (yes / no)	***Lead*** Belize Agricultural Health Authority ***Other*** Dept. of Agriculture		2016 – 2017
		▪ Implement Biosafety legislation				2018 - 2020

GOAL D: BENEFITS: *The provision of ecosystem services, ecosystem-based management, and the equitable sharing of benefits from biodiversity is strengthened.*

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

Action	Activities	Indicators	Agencies	Synergies	Timeframe
HIGH *D1.1 Identify and prioritise maintenance of key ecosystem services and integrate into national development planning (cont.)*	▪ Legislative review and strengthening of ecosystem services legislative framework ▪ Identification and mapping of priority ecosystems ▪ Integration of priority ecosystems into development decisions	▪ Trends in distribution, condition and sustainability of ecosystem services for equitable human well-being (NBMP) ▪ List of priority ecosystems (yes / no) ▪ Awareness of and use of priority list in LIC, by DoE, Lands Dept., Dept. of Agriculture, Ministry of Works	***Lead*** NIWRA NPAS NCCO CZMAI Forest Department Fisheries Department ***Other*** BiO DoE WWF	***Lead*** NIWRA NPAS NCCO ***Other*** CZMAI Forest Department Fisheries Department BiO DoE NGO partners	GSDS NC3.1.2 GSDS NC3.1.2 KBA project, BIOFIN, MCCAP, CC policy, NEAP, NESAP, Ag CC resilience, NIWRA NEAP 1.1.1 (6) NEAP 1.1.1 (7) Healthy Reefs	2016 – 2018 2016 - 2017
	▪ Review / develop the Institutional framework for effective management of ecosystem services	▪ Clear institutional framework for ecosystem management (yes / no)			
HIGH *D1.2 Review, develop /update and operationalize national management strategies for each key ecosystem service*	▪ Update / develop ecosystem services management strategies ▪ Operationalise management strategies for effective sustainable management of ecosystem services, with monitoring of ecosystem condition ▪ Assess ecosystem services and evaluate value and integration into national economy ▪ Build capacity for management of key ecosystem services ▪ Sensitize the Belize population, at all levels, to the importance of ecosystem services and the management strategies for their protection ▪ Strengthen integration of ecosystem service management into Integrated Land Use Planning Framework, National Integrated Water Resource Act, EIAs and PA management plans	▪ Monitoring Program to assess ecosystem health (yes / no) ▪ % identified environmental services that have approved management strategies ▪ Trends in condition of ecosystem services ▪ % identified environmental services that have been evaluated ▪ Trends in distribution, condition and sustainability of ecosystem services for equitable human well-being (NBMP) ▪ % general public that recognizes ecosystem values and link to human well-being ▪ Trends in value of ecosystem service being managed ▪ Legislative framework protecting and managing ecosystem services (yes / no) ▪ % management strategies that are being effectively implemented			2016 - 2020
	▪ Identify and prioritise site-specific ecosystem services "essential" to vulnerable communities, and gaps in management ▪ Develop and implement local community environmental services strategies and plans	▪ Status and trends in extent and condition of habitats that provide carbon storage (NBMP) ▪ % communities with community development plans that integrate ecosystem services ▪ Trends in well-being of communities who depend directly on local ecosystem goods and services (NBMP)	***Lead*** Rural Development NIWRA ***Other*** BiO NPAS NCCO CZMAI PA managers		Community Climate Change Adaptation Plans	2016 – 2020

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						
Action		**Activities**	**Indicators**	**Agencies**	**Synergies**	**Timeframe**
MEDIUM	*D2.1 Develop and implement a national framework for bioprospecting, including sharing of benefits*	▪ Develop a national legislative framework for bioprospecting that defines mandates, roles and responsibilities for management of genetic resources	▪ National legislative framework for bioprospecting (yes / no)	***Lead*** BiO Forest Department Fisheries Department	Fisheries Resource Bill (draft)	
		▪ Determine whether Belize will sign Nagoya Protocol, and if so, align national framework	▪ National decision on signing of Nagoya Protocol	***Lead*** Forest Department		2016 - 2017

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

TARGET E1. By 2018, 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						
Action		**Activities**	**Indicators**	**Agencies**	**Synergies**	**Timeframe**
HIGH	*E1.1 Establish the Biodiversity Office to lead implementation of the NBSAP*	▪ Establish, institutionalise and operationalise the Biodiversity Office (BiO) under the Ministry responsible for Forestry, Fisheries and Protected Areas ▪ Ensure effective communication and collaboration between BiO, NPAS, NCCO, Forestry and Fisheries Depts. and DoE	▪ Biodiversity Office is operational with adequate staff and resources (yes / no)	***Lead*** Forest Department	NPAS NCCO PACT	2016 - 2017 2016 - 2020
HIGH	*E1.2 Sustainable biodiversity financing is identified and invested in the implementation of the NBSAP*	▪ Develop and implement Belize's BIOFIN Biodiversity Financing and Resource Mobilisation Plan	▪ Belize has a Biodiversity Financing and Resource Mobilisation Plan (yes / no) ▪ Trends in level of financial support for implementation of the NBSAP generated by the BIOFIN plan implementation	***Lead*** Biodiversity Office Forest Department	BIOFIN	2016 - 2020
HIGH	*E1.3 Socialize the NBSAP at all levels*	▪ Develop and implement communication and engagement plan for reaching target groups ▪ Identify and engage Ministries and private sectors, key synergies, lines of responsibility, and benefits of alignment	▪ NBSAP Communication Plan developed and being implemented (yes/no) ▪ Number of Ministries actively engaged in NBSAP implementation	***Lead*** Biodiversity Office Forest Department	NPAS Communication Plan	2016 - 2020

TARGET E1. By 2018, 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 (continued)						
Action		**Activities**	**Indicators**	**Agencies**	**Synergies**	**Timeframe**
HIGH	*E1.4 Identify and implement mechanisms for civil society and the general public's effective involvement in the implementation of the NBSAP*	▪ Develop and implement communication and engagement plan for reaching target groups ▪ Resources and capacity needs assessment of target groups for NBSAP Implementation ▪ Provide support to key target groups in implementation of the NBSAP	▪ % population surveyed that are aware of the NBSAP and know what it is ▪ Number of groups actively implementing the NBSAP ▪ Trends in public engagement with biodiversity (NBMP) ▪ Trends in number of community-based conservation initiaitives (NBMP)	***Lead*** Biodiversity Office Forest Department		
TARGET E2. By 2020, accurate and current data on Belize's natural resources and environmental services informs relevant national development decisions						
Action		**Activities**	**Indicators**	**Agencies**	**Synergies**	**Timeframe**
HIGH	*E2.1 Centralize information on status of biodiversity and ecosystems and valuations of biodiversity and ecosystem services*	▪ Identify existing and required data needs ▪ Establish the Clearing House Mechanism - a data management platform	▪ Effective Clearing House Mechanism is accessible on line (Yes / No)	***Lead*** Forest Department Biodiversity Office ***Other*** University of Belize - ERI	KBA NBMP	2016 - 2018
HIGH	*E2.2 Establish reporting framework for tracking biodiversity and NBSAP implementation and disseminate outputs to relevant Ministries and sectors*	▪ Develop, disseminate and utilise summary indices (adopt Healthy Reefs Index and develop Terrestrial, Freshwater and Environmental Health) for biennial scorecards ▪ Utilise and disseminate data on natural capital accounting	▪ Reporting framework developed for tracking NBSAP progress ▪ Summary indices available for disseminating information on biodiversity health	***Lead*** Biodiversity Office Clearing House Mechanism ***Other*** University of Belize - ERI Healthy Reefs Statistics Institute of Belize	BIOFIN NBMP	2016 - 2020

Target E3: By 2020, Belize's NBSAP is being implemented effectively, monitored and evaluated, and achieving desired outcomes.						
Action		**Activities**	**Indicators**	**Agencies**	**Synergies**	**Timeframe**
	E3.1 Assess implementation and measure success of outcomes / results of the NBSAP	▪ Implement the NBSAP Monitoring and Evaluation framework on a biennial basis ▪ Disseminate report on status of NBSAP implementation and recommendations ▪ Revise NBSAP based on recommendations	▪ Trend in NBSAP implementation success ▪ Trend in NBSAP outcome success	***Lead*** Biodiversity Office		2018, 2020

3.2 MAINSTREAMING INTO NATIONAL DEVELOPMENT GOALS

To be effective in mainstreaming the NBSAP it is important to link the NBSAP targets with the national development framework and sectoral plans and policies.

MAINSTREAMING – LINKS TO NATIONAL STRATEGIES AND FRAMEWORKS			
National Strategy / Framework	**Link to Biodiversity**	**Relevant NBSAP Target(s)**	**Recommendations**
Growth and Sustainable Development Strategy (2016) (Horizon 2030)	The NBSAP is aligned to fully integrate and support Horizon 2030 and GSDS goals and objectives, strengthening the links between biodiversity, ecosystem services and national development	**All** NBSAP targets are relevant to CSF3: *Sustained or Improved Health of Natural, Environmental, Historical and Cultural Assets.* Of particular relevance : **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.	▪ Strengthen integration of ecosystem services management in the landscape into the Integrated Land Use Planning Framework, National Integrated Water Resource Act and national, system and site level PA management plans.
National Poverty Elimination Strategy and Action Plan, 2009-2013 (NPESAP)	The NPESAP promotes strengthened land and natural resource management, including water resources	Most NBSAP targets are relevant to NPESAP. Of particular relevance to water resources and risk-mitigating environmental services: **TARGET A3.** By 2020, all relevant national development decisions in Belize take into consideration ecosystem services and biodiversity relevance to the national economy	▪ Clear articulation of the critical role of natural resources and ecosystem services in poverty alleviation and disaster risk-mitigation in any revision and implementation of the NPESAP.

MAINSTREAMING – LINKS TO NATIONAL STRATEGIES AND FRAMEWORKS (continued)			
National Strategy / Framework	**Link to Biodiversity**	**Relevant NBSAP Target(s)**	**Recommendations**
National Poverty Elimination Strategy and Action Plan, 2009-2013 (NPESAP) (continued)	The NPESAP promotes strengthened land and natural resource management, including water resources	**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 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 **TARGET C1.** By 2030 Belize's natural landscapes and seascapes are all functional and build biodiversity resilience to climate change **TARGET D1.** By 2025, key ecosystem services are sustainably managed and resilient to threats.	▪ Clear articulation of the critical role of natural resources and ecosystem services in poverty alleviation and disaster risk-mitigation in any revision and implementation of the NPESAP.
National Land Use Policy and Integrated Planning Framework (2011)	Identifies best land-use for planned, balanced management of development and maintenance of ecosystem services, also taking into account natural ecosystems and species requirements	**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 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	▪ Effective implementation of the National Land Use Policy and Integrated Planning Framework across all relevant Ministries, coordinated with NBSAP, National Integrated Water Resource Act, ICZMP ▪ Review of mechanisms /feasibility for changes required for implementation of *Activity B2.1: Extension of use of Environmental Compliance Plans, and environmental standards to lands of 100 acres and above, coastal and cayes, with protection*

			of sensitive / priority ecosystems

MAINSTREAMING – LINKS TO NATIONAL STRATEGIES AND FRAMEWORKS (continued)			
National Strategy / Framework	**Link to Biodiversity**	**Relevant NBSAP Target(s)**	**Recommendations**
National Land Use Policy and Integrated Planning Framework (2011) (continued)	Building ecosystem resilience and adaptation to climate change impacts	**TARGET C1.** By 2030 Belize's natural landscapes and seascapes are all functional and build climate change resilience for national biodiversity	▪ Integration of recommendations for planning for future ecosystem functionality and climate change resilience into National Land Use Policy and Integrated Planning Framework ▪ Integrate climate change adaptation considerations for biodiversity into NPAS and national development planning
	Recognizes the need to ensure maintenance and effective, sustainable management of ecosystem services and timber / non-timber resources	**TARGET D1.** By 2025, key ecosystem services are sustainably managed and resilient to threats **TARGET B1.** By 2020 primary extractive natural resource use in terrestrial, freshwater and marine environments is guided by sustainable management plans, with improved	▪ Strengthened integration of ecosystem services into National Land Use Planning Policy and Integrated Planning Framework, the National Integrated Water Resources Act and PA management plans ▪ Legislative review and strengthening of ecosystem services legislation – 66' coastal and riparian ecosystems, protection of 25° slopes

		biodiversity sustainability	
	Recommends that provision of environmental services be considered in land valuation for taxation	**TARGET A2.** By 2020 Belize has legislated and implemented a national harmonized system of environmental standards and incentives that promote environmental responsibility and sustainability.	▪ Amend Land Tax Act to support incentives for maintenance of environmental services, and remove significant disincentives

MAINSTREAMING – LINKS TO NATIONAL STRATEGIES AND FRAMEWORKS (continued)			
National Strategy / Framework	**Link to Biodiversity**	**Relevant NBSAP Target(s)**	**Recommendations**
National Land Use Policy and Integrated Planning Framework (2011) (continued)	Recognizes the importance of the National Protected Areas System and need for integration into national land use planning as "sacrosanct"	**TARGET C4.** Between 2016 and 2020, the National Protected Areas System is further strengthened, and effectively fulfils its roles in providing ecosystem services, ecosystem and species protection	▪ Evaluate current legislation for strengthening and implementation of this recommendations of the National Land Use Plan

National Climate Change Policy, Strategy and Action Plan	Improving resilience of natural ecosystems	**TARGET C1.** By 2030 Belize's natural landscapes and seascapes are all functional and build climate change resilience for national biodiversity	▪ Implement legislative policies identified in the Growth and Sustainable Development Strategies (CSF3) ▪ Institutionalize the National Climate Change Office
Sustainable Tourism Development Plan	Recognizes the importance of biodiversity and natural ecosystems to the tourism industry	**TARGET A2:** By 2020 Belize has legislated and implemented a national harmonized system of environmental standards and incentives that promote environmental responsibility and sustainability.	▪ Strengthen strategies for support of improved natural resource management – the National Protected Areas System, wildlife regulations and guidelines for low-impact development outside the NPAS
Bioprospecting Framework	Protection of genetic resources and benefits to traditional users	**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.	▪ Develop and implement a national framework for bioprospecting, including sharing of benefits
Forest Act **Fisheries Act** **Wildlife Protection Act**	Regulation of extractive use - addressing the loss / degradation of natural ecosystems and species populations	**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	▪ Strengthen permitting systems and enforcement of natural resource extraction legislation and regulation ▪ Review and strengthen Mangrove Protection Act ▪ Amend natural resource extraction legislation and regulations for increased, penalties ▪ Endorsement of Fisheries Resource Bill

MAINSTREAMING – LINKS TO NATIONAL STRATEGIES AND FRAMEWORKS (continued)			
National Strategy / Framework	**Link to Biodiversity**	**Relevant NBSAP Target(s)**	**Recommendations**

Forest Act **Fisheries Act** **Wildlife Protection Act (continued)**	Regulation of extractive use - addressing the loss / degradation of natural ecosystems and species populations	**TARGET C3.** Between 2016 and 2030, no species in Belize becomes functionally extinct nationally	▪ Revise and strengthen the Wildlife Protection Act and other relevant legislation, with increased fines
Environmental Protection Act and regulations	Protection of the environment from development impacts, pollution	**TARGET B2.** By 2020, 80% of businesses monitored in Belize are compliant with environmental standards	▪ Extend requirement for environmental plans and standards to lands of 100 acres and above, coastal and cayes, with protection of sensitive / priority ecosystems ▪ Incorporate climate change considerations into the EIA process ▪ Strengthen enforcement of ECPs and other environmental regulations with increased fines
		TARGET C3. Between 2016 and 2030, no species in Belize becomes functionally extinct nationally	▪ Integration of National Threatened Species List into EIA process, national planning and decision making
National Protected Areas System Act	Effective management of Belize protected areas for biodiversity protection, ecosystem services and community benefits	**TARGET C1.** By 2030 Belize's natural landscapes and seascapes are all functional and build climate change resilience for national biodiversity	▪ Identify positive incentives for best practices that ensure maintenance and restoration of ecosystem functionality, vulnerable ecosystems and high biodiversity value areas
		TARGET C2. By 2020, three key corridors identified under the NPAPSP are established physically and legally, and effectively managed	▪ Assess the current legal framework for biological corridors and strengthen if necessary
			▪ Legally define the 3 key biological corridors (Northern, Central and Southern) through georeferenced Statutory Instruments

MAINSTREAMING – LINKS TO NATIONAL STRATEGIES AND FRAMEWORKS (continued)			
National Strategy / Framework	**Link to Biodiversity**	**Relevant NBSAP Target(s)**	**Recommendations**

National Protected Areas System Act	Effective management of Belize protected areas for biodiversity protection, ecosystem services and community benefits	**TARGET C4.** Between 2016 and 2020, the National Protected Areas System is further strengthened, and effectively fulfils its roles in providing ecosystem services, ecosystem and species protection	▪ Implement the revised National Protected Area System Plan (NPASP) and supporting NPAS Rationalization report ▪ Re-assess and amend inaccurate protected area SI's / boundaries where necessary ▪ Legal assessment of co-management framework of NPAS Act and integration of privately protected areas for strengthening if necessary
		TARGET D1. By 2025, key ecosystem services are sustainably managed and resilient to threats	▪ Legislative review and strengthening of ecosystem services legislation ▪ Integrate into Land Use Planning Framework and National Integrated Water Resources Act and PA management plans
National Integrated Water Resources Act	Maintenance of intact watersheds for continued water catchment and supply	**TARGET D1.** By 2025, key ecosystem services are sustainably managed and resilient to threats	▪ Legislative review drafting, submission and enactment of ecosystem services legislation aligned and integrated into Land Use Planning Framework and National Integrated Water Resources Act and PA management plans
National Lands Act Land Tax Act	Addressing large scale clearance of land and land degradation	**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	Amend Land Tax Act to include incentives for the long term commitment of land to conservation / maintenance of environmental services

MAINSTREAMING – LINKS TO NATIONAL STRATEGIES AND FRAMEWORKS (continued)			
National Strategy / Framework	**Link to Biodiversity**	**Relevant NBSAP Target(s)**	**Recommendations**

National Lands Act Land Tax Act (continued)	Addressing large scale clearance of land and land degradation	**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	▪ Amend legislation for integration of environmental conditions into the land conveyance process for lands of 100 acres and above ▪ Incentivise location of new developments on degraded lands rather than removing natural ecosystems critical for climate change resilience
National Climate Change Policy, Strategy and Action Plan	Improving resilience of natural ecosystems	**TARGET C1.** By 2030 Belize's natural landscapes and seascapes are all functional and build climate change resilience for national biodiversity	▪ Institutionalize the National Climate Change Office
Ministry of Finance	Incentives for maintenance of biodiversity, ecosystems and ecosystem services	**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	▪ Identify incentives for private landowners ▪ Strengthen penalties for environmental infractions ▪ Incentivise location of new developments on degraded lands rather than removing natural ecosystems critical for climate change resilience
		TARGET C1. By 2030 Belize's natural landscapes and seascapes are all functional and build climate change resilience for national biodiversity	▪ Amend legislation for positive incentives for best practices that ensure maintenance and restoration of ecosystem functionality, vulnerable ecosystems and high biodiversity value areas
National Climate Change Policy, Strategy and Action Plan	Improving resilience of natural ecosystems	**TARGET C1.** By 2030 Belize's natural landscapes and seascapes are all functional and build climate change resilience for national biodiversity	▪ Implement legislative policies identified in the Growth and Sustainable Development Strategies (CSF3) ▪ Institutionalize the National Climate Change Office

MAINSTREAMING – LINKS TO NATIONAL STRATEGIES AND FRAMEWORKS (continued)			
National Strategy / Framework	**Link to Biodiversity**	**Relevant NBSAP Target(s)**	**Recommendations**
Belize Tourism Board Act		**TARGET C3.** Between 2016 and 2030, no species in Belize becomes functionally extinct nationally	▪ Strengthen regulations for tour guide and tourism operations legislation against wildlife crimes ▪ Strengthen regulations for tourism operations relevant to compliance with environmental standards
BAHA **Forest Department - CITES**	Addressing invasive species	**TARGET B6.** By 2018, Belize has in place a strengthened system for early detection and effective management of invasive species	▪ Strengthen policies and their implementation re. importation of exotic species
	Addressing biosafety	**TARGET C6.** By 2020, Belize is implementing a bio safety policy that safeguards against large-scale loss of biological integrity	▪ Legal drafting, submission and enactment of Biosafety Policy

Implementation Plan

4.1 CAPACITY DEVELOPMENT

4.2 COMMUNICATION AND OUTREACH

4.3 RESOURCE MOBILIZATION

Photos: Left: Wildtracks. Subsistence fishing, southern Belize
Centre: Wildtracks. Papayas
Right: TIDE. Critically Endangered Central American river turtle, TIDE Private Lands

4.1 CAPACITY DEVELOPMENT

Since the development of the first NBSAP, in 1998, Belize has been gradually building capacity - 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. It is recognised that the implementation of the updated NBSAP will require coordinated action by a broad spectrum of these agencies, working at a range of scales (Table 5).

AGENCY	ROLES AND RESPONSIBILITIES
Forest Department (MAFFESD)	The FD oversees the sustainable management of Belize's terrestrial resources through implementation of the Forest Act, and the Wildlife Protection Act. It fulfils its duties, in part, through the coordinated delegation to a range of government, and non-governmental partner agencies. The CBD National Focal Point sits within this department. The FD serves as co-chair of the National Protected Areas Committee, which serves to advise the GOB on all issues related to the National Protected Area System, and the Protected Areas Conservation Trust is responsible for financial sustainability
Fisheries Department (MAFFESD)	The Fisheries Department is mandated through national legislation to manage Belize's fisheries, and to provide for the establishment and marine reserves within the system. The BFD also serves as co-chair of the NPAC, the entity which serves to advise the GOB on all issues related to the NPAS and PACT.
Department of the Environment (MAFFESD)	The DoE is responsible for fostering prudent use and proper management of the natural resources of Belize, the preservation, protection and improvement of the environment, and the control of pollution.
National Climate Change Office (MAFFESD)	The National Climate Change Office is responsible for coordinating the implementation of Belize's National Climate Change Policy and Strategic Action Plan and climate change Programs, and advises the GoB on matters related to climate change.
Ministry of Natural Resources and Immigration (MNRI)	The MNRI undertakes to foster an integrated approach of coordination, protection and sustainable management of Belize's natural resources. The GEF Operational Focal Point is embedded in this Ministry.
Department of Agriculture (MAFFESD)	The Department of Agriculture seeks sustainable rural development through the agricultural sector, providing the economic base for enhanced economic growth of the Country and addressing poverty alleviation, and to ensure food security, generate income and foreign exchange, create employment, and conserve natural resources.
Ministry of Finance	The MoF is required to advise on, coordinate and implement the government's economic and fiscal policies and Programs including the generation and allocation of financial resources to provide appropriate public services and to contribute to the overall development of Belize.
Ministry of Economic Development	The Ministry of Economic Development has recently been separated from the Ministry of Finance, and focuses on public and private sector investment in Belize's development.
Ministry of Tourism and Culture	The MTC holds overall responsibility for the development of tourism in Belize, including leading implementation of the National Sustainable Tourism Master Plan (NSTMP), and the preservation of Belize's cultural heritage. The Belize Tourism Board (BTB) and the National Institute of Culture and History (NICH) are statutory bodies within the Ministry of Tourism and Culture.

AGENCY	ROLES AND RESPONSIBILITIES
Ministry of Energy, Science and Technology and Public Utilities	The MESTPU aims to strategically integrate energy, science and technology into national development planning and decision making and improve policy and regulatory framework for public utilities to improve service delivery.
Coastal Zone Management Authority and Institute (CZMAI)	The CZMAI is a quasi-governmental entity established to advise on the sustainable use and planned development of Belize's coastal resources through increased knowledge, planning and the building of alliances for the benefit of the Belizean people and the global community.
Institute of Archaeology (IoA)	The IoA is a quasi-governmental agency established in 2003, which replaced the Department of Archaeology. The IoA is dedicated to the research, protection, preservation, and sustainable management of Belize's cultural and archaeological resources. It has among its objectives the sustainable development and effective management of all public archaeological reserves and parks.
Protected Areas Conservation Trust (PACT)	PACT is a national trust established to provide financial support to the NPAS. PACT has significant roles in park financing, and as such, in the financial sustainability of the system.
APAMO	APAMO is Belize's network of environmental non-governmental organizations (both NGOs and CBOs), and provides representation of co-managed protected area management organizations in national planning initiatives, particularly for PA management. Members of APAMO co-manage as much as 30% of the NPAS.
National NGOs	Several national conservation NGOs co-manage protected areas, mandated by FD or BFD, and are active in national planning initiatives, particularly for protected area management.
International NGOs	International NGOs with a presence in Belize work directly by supporting interventions to ensure sustainable management of the natural resource base, financial sustainability of PAs, and improved management effectiveness of PAs.
University of Belize - Environmental Research Institute (ERI)	ERI builds national capacity for the effective management, sustainable use and conservation of Belize's natural resources. It provides a mechanism for research that meets the natural resource management needs of Belize as identified in relevant national plans and policies, and provides training for effective protected area management.

Table 5: Roles and responsibilities of primary NBSAP implementation agencies

Government is faced with rapid, often unplanned development in agriculture and tourism, threatening Belize's critical natural resources. The primary Government departments are challenged by excessive responsibilities, insufficient staff for the tasks at hand, lack of appropriate equipment and transportation, and operational budgets that are being cut rather than expanded.

A capacity development needs assessment was conducted during the development of the national Growth and Sustainable Development Plan (GSDS; GoB, 2014), to identify capacity building needs across Ministries and government departments.

Through the NBSAP planning process, it was also recognized that Belize needs to build in-country capacities at multiple levels for the effective implementation of the NBSAP:

- Individual Level:
  - the general Belize public is not effectively engaged in the process of biodiversity and ecosystem conservation, and the sustainable use of natural resources, and has only a limited understanding of its importance.
  - nationally, at the technical level, the number of individuals that have the skills required for technical positions is limited, but increasing.

- Institutional Level
  - Government agencies, NGOs and CBOs are often limited by availability of human resources, and hold responsibilities that stretch over the entire country, with few staff and significant logistical challenges to address these responsibilities.
  - mainstreaming across Government is limited, with only recent recognition of the importance of the environment to national development, and integration into national development planning.
  - Government agencies not directly involved in biodiversity and the environment are not effectively engaged in the process of biodiversity conservation.

- Systemic Level
  - there is limited mainstreaming of environmental ethics permeating through national decisions making and actions.

GOVERNMENTAL UNIT	CAPACITY DEVELOPMENT NEEDS LINKED TO THE GSDS
All Ministries	▪ General skills-needs include: strategic planning and critical analysis; Program budgeting; monitoring and evaluation; project preparation and management; report and proposal writing; leadership; and change management ▪ Need for effective frameworks for improved collaboration between Ministries and departments towards achieving the NBSAP and the GSDS / Horizon 2030
Ministry of Energy, Science, Technology and Public Utilities	▪ More technically-trained staff, with a focus on key areas of prioritized need such as energy efficiency in the transport and industrial sectors ▪ Development of an extension structure to support diffusion and new technologies (including green technologies) ▪ Understanding of Belize's climate change commitments in relation to energy
Ministry of Finance Ministry of Economic Development	▪ Policy formulation and strategic planning, including, integrated economic, social, and ecological development policy, taxation policy, expenditure policy and industrial relations policy. ▪ Macroeconomic forecasting, including revenue and expenditure forecasting ▪ Research including that in relation to, economic, social and sustainable development policy; financing instruments; development financing; and governance institutions ▪ Monitoring and evaluation, including that with respect to capital projects ▪ Project preparation and management

GOVERNMENTAL UNIT	CAPACITY DEVELOPMENT NEEDS LINKED TO THE GSDS
Forest Department (MAFFESD)	▪ Additional, technically-trained staff with a focus on key areas of prioritized need – e.g. conducting natural resource valuation ▪ Knowledge of the natural resources being managed ▪ Skills in presenting clear justifications for improved investment in natural resource management and protected areas ▪ Strategic planning, monitoring and evaluation of outputs and outcomes and integration into decision making ▪ Established functional communications network that assists in coordination of activities among natural resource management professionals. ▪ Technical capacity to be able to provide capacity building and technical support to co-management partners, to ensure co-management agreements are successful ▪ Improved mechanisms and technology for cross-agency collaboration for effective enforcement of natural resource-related crimes
Fisheries Department (MAFFESD)	▪ Strategic planning, monitoring and evaluation of outputs and outcomes and integration into decision making ▪ Mechanisms for improved integration of partners and stakeholders into management of marine protected areas
Department of Sustainable Development (MAFFESD)	▪ Tracking and monitoring of Belize's commitments under international agreements ▪ IT staff to support knowledge management and diffusion ▪ Communication (e.g. keeping Ministries and stakeholders informed of relevant developments in SD)
Department of Agriculture (MAFFESD)	▪ Agricultural statistician ▪ Knowledge of climate change, implications on agriculture in Belize, and technological solutions for climate-smart adaptation ▪ Training of District-based Agricultural Extension Officers for improved ability to assist farmers and diffusion of climate-smart technology and methods
Ministry of Natural Resources	▪ Senior qualified hydrologists (several sub-specialties) ▪ Improved collaboration with other stakeholders (particularly Forest Department)
Ministry of Tourism and Culture	▪ Program budgeting, planning, project management, writing ▪ Understanding of climate change, implications on tourism in Belize, and technological solutions for climate-smart adaptation ▪
Statistical Institute of Belize	▪ Additional qualified staff (statisticians, demographers, etc.) to support the Monitoring and Evaluation process of the NBSAP and GSDS ▪ Capacity to gather and manage data in a centralized location

(Adapted from GSDS, 2014)

A more specific needs assessment was also conducted by UB-ERI in 2011 to design a national capacity building course targeted at the NPAS management partners, which covers the critical knowledge areas, skill sets, and attitudes required by effective PA professionals, and profile the roles and responsibilities associated with effective PA management. Priorities were identified as Research and Monitoring for PA Management, Institutional Capacity and Strengthening, Ranger Training, and Conservation/ Protected Area Sustainable financing (ERI, 2011). A targeted training Program in 2013 / 2014 addressed many of these gaps, building capacity across the National Protected Areas System. The results are now being further developed to propose a national register of competences for the different protected area management and staff levels, aligned with the global register of protected areas competencies (IUCN/WCPA, 2015).

The targets with specific capacity building or training needs in their related actions have been identified through the NBSAP revision process (Table 6):

NATIONAL TARGETS WITH IDENTIFIED CAPACITY BUILDING REQUIREMENTS	
Strategy	
A2	By 2020 Belize has legislated and implemented a national harmonized system of environmental standards and incentives that promote environmental responsibility and sustainability
A4	By 2020, 100% of relevant Government, 75% civil society and 50% of the general public in Belize have increased awareness and appreciation of biodiversity and demonstrate active good stewardship
B1	By 2020 primary extractive natural resource use in terrestrial, freshwater and marine environments is guided by sustainable management plans, with improved biodiversity sustainability
B2	By 2020, 80% of businesses monitored in Belize are compliant with environmental standards
B4	By 2020 Belize is restoring 30% of degraded ecosystems to maintain priority ecosystems and ecosystem services essential for increasing Belize's resilience to climate change impacts
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
C1	By 2030, Belize's natural landscapes and seascapes are all functional and build biodiversity resilience to climate change
C3	Between 2016 and 2030, no species becomes functionally extinct in Belize
C4	By 2020, average management effectiveness of the NPAS has improved to 80%
D1	By 2025, key ecosystem services are sustainably managed and resilient to threats
E1	By 2018, 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
E2	By 2020, accurate and current data on Belize's natural resources and environmental services informs relevant national development decisions

Table 6: National targets with identified capacity building needs

A review of the actions identified for each of the targets demonstrates a specific range of skills that will need to be employed in order for implementation to be effective, with a range of technical experts required Table 7). The chart does not include experts on species, habitats or individual threats (e.g., invasive species and climate change), or as those focused on policy development or implementation, as these are universal to varying degrees across all targets.

Capacity Requirements for NBSAP Implementation											
Action	*Legal experts*	*GIS technicians*	*Database technicians*	*Educators & trainers*	*Environmental economists*	*Spatial planners*	*Agronomists*	*Outreach & media experts*	*Industry advisors*	*M&E experts & statisticians*	*Sustainable development specialists*
A1.1									■		
A2.1									■		
A2.2	■								■		
A2.3	■								■		
A3.1					■						
A3.2					■						
A3.3					■						
A4.1				■							
A4.2				■							
A4.3								■			
B1.1			■							■	
B1.2	■										
B1.3									■	■	
B1.4									■	■	
B2.1	■										
B2.2	■										
B2.3										■	
B2.4	■										
B2.5									■		
B3.1						■					
B3.2	■	■		■							
B3.3	■								■		
B3.4	■	■				■			■		
B3.5		■				■	■				
B3.6							■				
B4.1		■		■							
B5.1									■		
B6.1				■				■			
C1.1			■							■	
C1.2									■		■
C1.3					■						
C1.4	■										■
C2.1	■										
C2.2	■	■				■				■	

Capacity Requirements for NBSAP Implementation											
Action	*Legal experts*	*GIS technicians*	*Database technicians*	*Educators & trainers*	*Environmental economists*	*Spatial planners*	*Agronomists*	*Outreach & media experts*	*Industry advisors*	*M&E experts & statisticians*	*Sustainable development specialists*
C3.1			■							■	
C3.2	■			■							
C3.3				■							
C3.4								■			
C4.1		■		■		■					
C4.2	■	■		■							
C4.3	■			■	■						
C4.4				■	■						
C4.5				■							■
C5.1	■			■							
D1.1		■									
D1.2	■			■	■						■
D2.1	■				■				■		
E1.1				■				■			
E1.2					■						
E1.3				■				■			
E1.4				■				■			
E2.1			■							■	
E2.2			■		■					■	
E3.1			■							■	

Table 7: Capacity Requirements for NBSAP Implementation

4.2 COMMUNICATION AND OUTREACH

Communication and outreach is critical if NBSAP implementation is to be mainstreamed throughout public and private sector, and across the general public in Belize. It is key for engaging stakeholder support and partnerships for the implementation of activities towards the sustainable use of biodiversity, and a requirement under Article 13 of the CBD (Figure 3), and supported by the Convention's Communication, Education and Public Awareness (CEPA) Program. The NBSAP itself identifies the need for an effective communication and outreach plan as one of the highest priority supporting strategies in achieving many of the NBSAP objectives (NBSAP Strategy A4.1; Figure 4), and it is integrated into objectives and strategies. One of the first activities to be conducted on approval of the NBSAP is the development of the NBSAP Communication and Outreach Strategy, providing a framework to guide the development and delivery of communication activities.

Article 13 of the Convention on Biological Diversity (CBD) calls for each Contracting Party:

"to promote and encourage understanding of the importance of, and the measures required for, the conservation of biological diversity, as well as its propagation through media, and the inclusion of these topics in the education programs ..."

Figure 3

Building awareness and engagement is critical at all levels if NBSAP implementation is going to succeed – with the CBD Secretariat, with regional partners, across departments within the Ministry of Agriculture, Forestry, Fisheries, the Environment and Sustainable Development, across other Government Ministries, with non-government, private sector partners, local decision makers and leaders, the general Belize public, and across national borders. Targeted outreach strategies developed within the NBSAP framework will strengthen NBSAP implementation, promoting collaborative partnerships, shifts in attitudes and behavioural change – and ultimately, mainstreaming and nurturing widespread stakeholder ownership of the NBSAP and support of national biodiversity conservation.

The low level of national awareness of biodiversity and the link between biodiversity health, human health, and achieving national development goals has been flagged as a major barrier to the successful implementation of the NBSAP, with a need to strengthen environment, conservation and biodiversity within the school curriculum at all levels to ensure future generations are better informed and demonstrate improved environmental stewardship. National investment in coordinated, collaborative, sustained outreach campaigns is considered important, to replace short-term, project-based initiatives.

Many organizations have implemented successful individual initiatives to increase awareness, improve best practices and reduce pressure on biodiversity. There is recognition that there is a need to be more strategic in awareness and communication activities - through collaborative partnerships that improve sustainability, reach and effectiveness of the messages being transferred.

KEY COMPONENTS CONTRIBUTING TOWARDS THE NBSAP COMMUNICATION AND OUTREACH PLAN

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

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

A4.1 Develop and implement a National Communication, Outreach and Engagement Framework to improve understanding of the role and importance of biodiversity and increase active good stewardship

- *Identify key stakeholder groups to be engaged as advocates/champions for biodiversity*
- *Develop and implement Awareness and Engagement Strategies targeted at key stakeholder groups*
- *Initiate education awareness programmes to draw attention to the impacts of Climate Change on the sectors and measures to adapt and mitigate those anticipated impacts.*

A4.*2 Improved integration of environmental education into classroom activities*

- *Develop materials and lesson plans in collaboration with Ministry of Education to support improved integration of environmental education into classroom activities*
- *Engage principles for effective integration of environmental education at all levels*
- *Training and support of teachers in integrating environmental education in the classroom*

A4.3 *Develop and implement national communication strategies for key components of the NBSAP*

Figure 4

Key areas of work for communication and outreach have been identified based on situation assessments of threats to and drivers of biodiversity loss during the development of the NBSAP. These include the need to build an awareness and understanding of:

- Role and relevance of the NBSAP
- Role and relevance of biodiversity
- Biodiversity
- Ecosystem services
- Climate change
- National Protected Areas System
- Sustainable land use and natural resource management
- Land-based pollution
- Protecting threatened species

Whilst these may stand alone as individual communication strategies or plans (there is already a Communication Strategy for the National Protected Areas System, for example, and a draft strategy in preparation for wildlife), they need to be couched within a single strategic framework, with targeted messages at multiple levels, to ensure effective mainstreaming – from national decision makers to primary school students.

Once developed, 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 being developed (Table 8). 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.

Table 8: NBSAP STRATEGIC ACTIONS AND ACTIVITIES RELEVANT TO THE COMMUNICATION AND OUTREACH STRATEGY			
A: MAINSTREAMING: *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*			
TARGET	**STRATEGIC ACTION**	**ACTIVITY**	**PRIORITY AREA**
A3: By 2020, all relevant national development decisions in Belize take into consideration ecosystem services and biodiversity relevance to the national economy	*A3.1 Improve information on the value of ecosystem services and assess best resource use for decision making at national level*	Socialisation of ecosystem services and values across Ministries, civil society and the general public	Ecosystem Services
B: REDUCING PRESSURES: *Direct and indirect pressures on Belize's marine, freshwater and terrestrial ecosystems are reduced to sustain and enhance national biodiversity and ecosystem services*			
B3. Between 2016 and 2020, Belize has limited its net rate of land use change for natural ecosystems / areas to no more than 0.6% per year	*B3.1 Implementation of the National Land Use Policy and Integrated Planning Framework across all relevant Ministries*	Socialisation and adoption of National Land Use Plan across Ministries	Sustainable land use and natural resource management
	B3.3 Integrate environmental change limits into land conveyances for prioritised ecosystems	Socialise environmental change limits across Lands Department, Association of Real Estate Brokers, attorneys, BELTRADE and other key stakeholders	Sustainable land use and natural resource management
	B3.4 Incentivise location of new developments on degraded lands rather than removing natural ecosystems critical for climate change resilience	Socialise incentives for use of degraded lands through BELTRAIDE and other key stakeholders	Sustainable land use and natural resource management
	B3.5 Promote shift to more environmentally sustainable agriculture, reducing rate of deforestation	Promote environmentally sustainable management systems	Sustainable land use and natural resource management
	B3.6 Implement effective fire management across Belize	Develop, socialise and implement best practices for the management of fires related to agricultural land clearing	Sustainable land use and natural resource management
B6. By 2018, Belize has in place a strengthened system for early	*B6.1 Develop and implement an action plan to identify and address prevention*	Strengthen public awareness of the issue of invasive species	Invasive species

detection and effective management of invasive species	*and / or management of invasive species*

NBSAP STRATEGIC ACTIONS AND ACTIVITIES RELEVANT TO THE COMMUNICATION AND OUTREACH STRATEGY			
C: Protection: *Functional ecosystems and viable populations of Belize's biodiversity are maintained and strengthened*			
TARGET	**STRATEGIC ACTION**	**ACTIVITY**	**PRIORITY AREA**
C1. By 2030 Belize's natural landscapes and seascapes are all functional and build biodiversity resilience to climate change	*C1.2 Identify and implement improved adaptive management regimes for critical landscape / seascape ecosystems based on climate change vulnerability*	Socialise and implement the National Climate Change Policy, Strategy and Action Plan	Climate change
		Promote the development of institutional mechanisms that will enhance Belize's planning and response capacity to Climate Change	Climate change
	C1.3 Provide positive incentives for best practices that ensure the maintenance and restoration of ecosystem functionality, vulnerable ecosystems and high biodiversity value areas	Identify, implement and socialise incentives for maintenance and restoration of critical ecosystems on private lands	Sustainable land use and natural resource management Climate change
C3. Between 2016 and 2030, no species becomes functionally extinct in Belize	*C3.1 Update and approve Belize's National Threatened Species List*	Produce updated, endorsed, prioritised National Threatened Species List and socialise	Protecting threatened species
	C3.4 Improve sensitization of the general public to wildlife and the environment	Finalize and implement the National Wildlife Awareness Strategy	Protecting threatened species
C4. By 2020, average management effectiveness of the National Protected Areas System has increased to 80%	*C4.1 Implement the revised National Protected Area System Plan (NPAS) and supporting NPAS Rationalization report*	Implement the NPAS communication strategy	National Protected Areas System
C5. By 2020, Belize is implementing a biosafety policy that safeguards against large-scale loss of biological integrity	*C5.1 Revise and implement the Biosafety Policy*	Raise awareness of biosafety issues among policy and decision makers, public	Biodiversity

Table 5: NBSAP Strategic Actions and Activities Relevant to the Communication and Outreach Strategy

NBSAP STRATEGIC ACTIONS AND ACTIVITIES RELEVANT TO THE COMMUNICATION AND OUTREACH STRATEGY			
D: BENEFITS: *Strengthened provision of ecosystem services, ecosystem-based management, and the equitable sharing of benefits from biodiversity*			
TARGET	**STRATEGIC ACTION**	**ACTIVITY**	**PRIORITY AREA**
D1. By 2025, key ecosystem services are sustainably managed and resilient to threats	D1.2 Review, develop /update and operationalize national management strategies for each key ecosystem service	Sensitize the Belize population at all levels to the importance of ecosystem services and the management strategies for their protection	Ecosystem Services
E: IMPLEMENTATION: *Effective implementation of the National Biodiversity Strategy and Action Plan through capacity building, strategic decision making and integrated public participation*			
E1. By 2018, 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	*E1.3 Socialize the NBSAP at all levels*	Develop and implement NBSAP Communication and Engagement Strategy	Role and relevance of the NBSAP
	E1.4 Identify and implement mechanisms for civil society and the general public's effective involvement in the implementation of the NBSAP	Develop and implement Communication and Engagement Strategy to socialise the NBSAP	Role and relevance of the NBSAP
E2. By 2020, accurate and current data on Belize's natural resources and environmental services informs relevant national development decisions	*E2.1 Centralize information on status of biodiversity and ecosystems and valuations of biodiversity and ecosystem services*	Establish the Clearing House Mechanism - a data management platform	Ecosystem services Biodiversity

Table 8: NBSAP Strategic Actions and Activities Relevant to the Communication and Outreach Strategy

4.3 RESOURCE MOBILIZATION

4.3.1 Review of Existing Financial Mechanisms

The following section details the current biodiversity conservation financial mechanisms in use in Belize, and potentially available for implementation of the NBSAP. Whilst these mechanisms provide an indication of some of the necessary funding, there will still be a significant funding gap that will need to be met. It should be noted, though, that bearing the cost of implementation of the NBSAP isn't just the responsibility of the government environmental sector, but across all sectors, as well as civil society and non-governmental organizations, as the health of the environment and biodiversity is tightly linked to successful national development.

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 national allocations towards Ministries responsible for natural resource management, 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.

Bilateral and Multi-lateral Funding

Global Environment Facility (GEF): The GEF, established in 1991, is the financial mechanism for implementation of both the CBD and the UNFCCC. It has invested in Belize since 1991, with eleven of nineteen national projects focused on biodiversity and four in multi-focal areas. The GEF Focal Point is housed in the Ministry of Natural Resources. Belize has been a participant in twenty-four regional and global projects financed by the GEF - eight investing in biodiversity and two in multifocal area projects. Most recently, GEF has partnered with the Central American Commission on Environment and Development (CCAD) to implement a US$10M regional project focused on the connected reefs of Belize, Guatemala, Honduras and Mexico. This project, the Integrated Transboundary Ridges-to-Reef Management of the Mesoamerican Reef (MAR2R), is scheduled to invest in strengthening regional collaboration for the ecological integrity of the Mesoamerican Reef, with an increased focus on the ridge to reef approach to its management (GEF, 2016; Table 9).

Agency	Project	GEF Funding	**Co-Financing**
WWF-US	Integrated Transboundary Ridges-to-Reef Management of the Mesoamerican Reef	9,018,349	69,457,826
UNIDO	Development and Implementation of a Sustainable Management Mechanism for POPs in the Caribbean	8,839,000	19,040,000
UNEP	Support to Preparation of the Third National Biosafety Reports to the Cartagena Protocol on Biosafety - GRULAC and CEE REGIONS	1,152,950	1,025,000

Table 9: Regional GEF projects, 2010 – 2016

The GEF has continued to commit funding for Belize's national biodiversity conservation, climate change adaptation, and land degradation mitigation projects through a number of GEF agencies, including the United Nations Development Programme (UNDP), United Nations Environmental Programme (UNEP), the Food and Agricultural Organization (FAO) of the United Nations, the Inter-American Development Bank (IDB), the World Bank and World Wildlife Fund-US (WWF-US). For the GEF-6 replenishment (July 2014 to June 2018), US$2,860,000 has been committed to biodiversity, of a total US$5,740,000 across the three focal areas (GEF, 2016; Table 10).

GEF AGENCY	Project	GEF Funding	Co-Financing
UNDP	Strengthening National Capacities for the Consolidation, Operationalization and Sustainability of Belize's Protected Areas System	975,000	1,031,000
World Bank	Management and protection of Key Biodiversity Areas (KBAs)	6,085,600	16,000,000
UNDP	National Biodiversity Planning to Support the implementation of the CBD 2011-2020 Strategic Plan	220,000	102,000
UNDP	Capacity-building for the strategic planning and management of natural resources in Belize	759,000	914,000
UNDP	Belize Chemicals and Waste Management Project	990,000	6,500,000
World Bank	Energy Resilience for Climate Adaptation	8,000,000	4,800,000

Table 10: National GEF projects, 2010 – 2016

Whilst these projects are focused at national level, the GEF also provides funding at site-level project level through the **GEF Small Grants Programme**, established in Belize in 1993, and focused on empowering and supporting grassroots initiatives and community-level action, investing in community stewardship. Belize has received financial support from the SGP since 1993 totalling just under US$5.8 million, leveraging over US$6.4 million in co-financing resources for 226 projects executed by civil society and community based organizations. Of these projects, over 85% (192) are biodiversity-related. The GEF SGP at the Program level has managed to leverage significant financial resources to support community initiatives in territories and areas conserved by indigenous and local communities (ICCAs, from Oak Foundation, AusAid, and the German Ministry of Environment, among others.

The GEF Small Grants Programme embodies the very essence of sustainable development by "Community Action Global Impact". By providing financial and technical support to projects that conserve and restore the environment while enhancing people's well-being and livelihoods, SGP demonstrates that community action can maintain the fine balance between human needs and environmental imperatives.

GEF-SGP, 2010

An important component of the GEF SGP Program in Belize is the **Community Management of Protected Areas for Conservation Programme** (COMPACT), targeted at projects that are associated with improving community stewardship of Belize's World Heritage Site – The Belize Barrier Reef Reserve System. The SGP also manages investment funding from other agencies, such as the Australia Aid (AusAid) climate change mitigation initiative. As a small country, this investment in coastal communities is considered a significant contribution towards engaging these coastal stakeholders.

The Inter-American Development Bank (IDB) has supported improved solid waste management, planning for waste water and sanitation for the Placencia Peninsula, land management Programs, improving agricultural health systems, the support of green power through Belcogen, supporting cacao growers, disaster risk management and upgrading tourism infrastructure. Building capacity for disaster preparedness and emergency response has also been the focus of **United Nations Development Programme (UNDP)** support, as has improved water resource management, through the development of the National Integrated Water Resource Management Act (2011).

Belize has benefited over the last ten years from a number of bilateral funding partners, both at the national and regional level. Australia has invested in community-based climate change adaptation projects through the **Australian Agency for International Development (AusAID)** managed through the GEF Small Grants Programme. Germany is investing in regional projects through the **Federal Ministry for Economic Cooperation and Development** (BMZ) and **Kreditanstalt fuer Wiederaufbau** (KFW). The **BMZ** is investing in a regional Program focused on the conservation and sustainable use of the Selva Maya, the largest tropical rainforest block north of the Amazon Basin, and including portions of Belize's northern forests. The project supports work to develop common strategies fostering local and transnational cooperation between Belize, Guatemala and Mexico, through the GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit), managed through CCAD, the environmental arm of the Central American Integration System (SICA). The United Kingdom has financed a number of biodiversity studies through the **Department for International Development** (DFID), generally based on collaborative partnerships between UK and Belize institutions. Much of this aid is focused on climate change adaptation. The **European Union** is supporting the Global Climate Change Alliance (GCCA) regional Program, under the 10th EDF Intra-African Caribbean and Pacific financial framework in the Caribbean.

Japan, too, has invested in Belize for many years through the **Japan International Cooperation Agency** (JICA), and has focused on "disaster risk reduction and environmental conservation" and "disparity reduction" in order to tackle the country's external and internal vulnerabilities.

NGO / Private Sector

Grant funding is critical for the management of the National Protected Areas System, with investment sought by co-management partners, with the support of the Government, for implementation of many of the management strategies and activities in co-managed protected areas as well as for wildlife rehabilitation and management. Funding agencies include international funders, including The Nature Conservancy, Wildlife Conservation Society, World Wildlife Fund, and Fauna and Flora International, and

philanthropic agencies such as OAK Foundation and Summit Foundation. Smaller funders are also very important, with a focus on species, building capacity for community conservation, building natural-resource based resilience for communities and other specific project based activities and funders.

The **United States Fish and Wildlife Service** works directly with agencies in Belize (both Government and non-Government), and has provided funding for conservation projects through its **Wildlife Without Borders** Program, focusing on conserving "priority species and ecosystems across high-biodiversity value landscapes in the Mesoamerican Biological Corridor while simultaneously benefiting local communities" (Table 11).

YEAR	PROJECT	IMPLEMENTING AGENCIES
2015	Increasing wildlife security through development of a landscape-wide compliance strategy for the Southern Maya Mountains.	Ya'axché Conservation Trust.
	Prevention and control of agricultural incursions in the Chiquibul National Park.	Friends for Conservation and Development
	5 Year cooperative agreement for the conservation of Mesoamerica's last wild places (Multiple Countries)	Wildlife Conservation Society
2014	Promoting conservation and sustainable land-use in the Maya Golden landscape, southern Belize.	Fauna and Flora International / Ya'axché Conservation Trust
	Human-jaguar conflict mitigation in the Southern Biological Corridor, Belize.	Ya'axché Conservation Trust / Panthera

Table 11: USFWS Investment in Belize

National Funding for Biodiversity

The **Protected Areas Conservation Trust (PACT)** is the primary national financial sustainability mechanism for support of the National Protected Areas System. The Protected Areas Conservation Trust Act was passed in 1995 (Act 15 of 1995), and PACT was established as a statutory body in 1996. Over its 20 years of existence, PACT has assisted local conservation organizations with millions of dollars in funding for projects assisting in the maintenance of effective protected areas and providing leverage for funding from external sources. PACT's investments are aligned to the operational framework of the National Protected Areas Policy and System Plan (NPAPSP), focused on building management effectiveness of the NPAS, and strengthening biodiversity conservation in Belize.

The functions of PACT are

"…to contribute to the sustainable management and development of Belize's natural and cultural assets for the benefit of Belizeans and the global community, both now and for future generations."

Protected Areas Conservation Trust (Amendment) Act, 2015

In the financial year April 2014 – March 2015, PACT's revenue exceeded Bz$5.6 million, and originated from a variety of sources (PACT, 2016). The two largest contributions were from financial sustainability mechanisms focused on fees associated with tourism. 45% was received from a Conservation Fee, levied on departing visitors to Belize and 49% from the commission levied on cruise ship passengers. The remaining 6% is through interest and other income sources (including investments and donations from agencies, corporations and interested individuals). PACT has a well-established Endowment Fund of over Bz$5.5 million, receiving a minimum of 5% of the total revenue of the Trust each fiscal year. It also provides fiduciary and grant management services for external funding sources such as the MARFund and the Belize Nature Conservation Foundation (Debt for Nature Swap) (Figure 7), and is accredited to receive funds to carry out approved projects and Programs.

PACT has traditionally funnelled these funds through small, medium and large grants to eligible organizations for conservation-based projects in or around protected areas, and therefore has played a significant role in park financing and contributing towards the financial sustainability of the National Protected Areas System. For the 2012 –2013 financial year, PACT awarded a total of almost Bz$2 million under 12 grant types, for protected area-associated project and capacity-building activities. The revision of the PACT Act in 2015 brought a significant shift in financing priorities, with an improved ability to invest in operational costs (including critical staff) – identified as a significant financing gap for the majority of the protected areas. In the 2016 fiscal year, PACT has set a portfolio of Bz$1.2 million dollars, to be invested in in three main areas:

- *Institutional and governance strengthening*
- *Financial sustainability and resource mobilization*
- *Protected areas management functions.*

Grants are awarded to recipients based on the criteria developed by the Board to achieve the goals and objectives of the Trust through "*strategic partnerships, assessments and management plans, linked to the implementation of the National Protected Areas System Plan; subject to the*

DEBT FOR NATURE SWAP

In August 2001, the governments of the U.S. and Belize, in conjunction with The Nature Conservancy, announced a debt swap. The $5.5 million in appropriated funds were combined with $1.3 million in private funds raised by The Nature Conservancy to reduce Belize's official debt to the U.S. by half. Under the agreement, the Government of Belize issued new obligations that will generate approximately $9 million in local currency payments to help a consortium of four local non-governmental organizations (NGOs) administer conservation activities in protected areas.

Three different major legal instruments were created to govern the Belize debt-for-nature swap. The "Swap Fee Agreement" between TNC and the US Government set out the procedure for the Conservancy to contribute $800,000 toward the reduction of Belize's debt. A second agreement between the governments of the US and Belize set out the requirements for the GOB to make payments into accounts for local NGOs, and deliver title of 11,000 acres of land to TIDE. In return the USG agreed to cancel approximately $8.6 million (net present value) of debt. The final instrument, the "Forest Conservation Agreement", is among the Conservancy, the GOB, TIDE, PfB, BAS, and PACT, and sets out the obligations of each party under the debt-swap, including how money is paid into the accounts for each organization from the GOB, and how the organizations may use that money.

Figure 7: Debt-for-nature swaps in Belize

recipients meeting the criteria required by the PACT Board; or based on a procedure identified by a specific funding source" (PACT (Amended) Act, 2015).

PACT funds provide leverage for protected area management agencies to seek external funds – Belize is fortunate in having consistent support for biodiversity and protected area management from a number of multi-lateral / bilateral aid agencies, international grant giving NGOs and philanthropic organizations and international inter-governmental organizations.

Climate Change Associated Options

A number of climate change funding opportunities associated with the UNFCC funding lines are being considered, including access to REDD+ and the Green Climate Fund. UNDP is also an active partner, with a portfolio of climate change initiatives, developed within the European Union funded Global Climate Change Alliance (GCCA) framework, and implemented under the National Climate Change Office within the Ministry of Fisheries, Forestry, the Environment and Sustainable Development, including:

- Enhancing Belize's Resilience to Adapt to the Effects of Climate Change,
- Enabling Activities for the Preparation of Belize's Third National Communication to the UNFCCC, including updating inventories of greenhouse gases and development of a comprehensive climate change adaptation strategy

Reducing Emissions from Deforestation and Forest Degradation (REDD+), a global initiative designed to provide financial assistance to groups or countries for protecting their forests, reducing emissions of greenhouse gas pollutants, with the target of reducing net emissions on a global scale. The REDD+ agenda has been identified as supporting Belize's efforts to achieve inclusive and sustainable natural resource-based growth and enhanced climate resilience, as well as being consistent with the objectives of the World Bank Country Partnership Strategy (FY12-15). Belize has been building its capacity towards utilization of REDD+, with the acceptance of the REDD Readiness Preparation Proposal by the World Bank's Forest Carbon Partnership Facility (FCPF) in March 2015, and subsequent allocation of anticipated grant funding of US$ 3.8 million. PACT was identified as the agency tasked with developing a funding strategy for the implementation phase of REDD+.

The **Green Climate Fund (GCF)** is another key multilateral financing mechanism to support climate action in developing countries, under the UNFCC. GCF is currently preparing Belize and other Small Island Developing States in the region towards the development of readiness requests, enabling application for financial support from the Fund. The Caribbean Community Climate Change Centre (CCCCC), headquartered in Belize, has been accredited as the regional implementing entity by the board of the Green Climate Fund.

Natural Capital

BELIZE'S NATURAL CAPITAL

Belize's stocks of natural assets, including geology, soil, air, water and all living things. Belize's people derive a wide range of services from its Natural Capital.

Belize is wealthy in terms of its natural capital – the value of its biodiversity and ecosystem services. There have been several non-Government initiatives to value ecosystem services, but these have not been integrated into national accounting and reporting, and ecosystem services, generally, are not fully taken into consideration when decisions are being made at national level. "National accounting systems that treat nature as a free, unlimited resource fail to account for the vital goods and services nature provides to people" (Conservation International, 2016)

National level valuations include the "Coastal Capital: Belize - The Economic Contribution of Belize's Coral Reefs" (Cooper et al., 2009). However, whilst this was a world-leading output, it had only limited national impact at Government level. Similar initiatives have focused on the Maya Mountains Massif (Hammond et al., 2011) and sport fishing (Fedler, 2008).

Coral Reefs and Mangroves: Coral reefs provide a wide range of ecosystem goods and services which are of high value and of critical importance to the local and national economies in Belize. Despite this high value, the extent and health of coral reef systems have declined in recent decades and continue to be threatened by human activities that include both direct anthropogenic pressures (including land based pollution, unsustainable fishing, and poor tourism practices) and climate change (increasing surface temperatures, ocean acidification and increased intensity of tropical storm events). The total value of these services was estimated to be between US$395-559 million per year (Table 12) - as a reference point, Belize's GDP totalled US$1.3 billion in in that same year.

	CORAL REEF	MANGROVES	COMBINED CONTRIBUTION
Tourism	$ US 0.1 – 0.12	US$0.15 – 0.18	-
Fisheries	US$0.01	US$0.01	-
Shoreline protection	US$0.08 – 0.13	US$0.28 – 0.39	-
Total per km^2/year	**US$0.19 – 0.26**	**US$0.44 – 1.02**	**-**
Total for all Belize/year	**US$268 – 370**	**US$174 – 249**	**US$395 - 559**

Notes: Mangrove and reef fisheries and tourism values are not additional, as they include revenues that rely on both habitats.
Values are expressed in million US$/$km^2$/year unless indicated differently (US$/2007).
Based on 1400 km_2 of coral reef and 400-420 km_2 of mangroves
Source: Burke, L., Cooper, E. and Bood N. 2008. Coastal Capital: Belize – The Economic Contribution of Belize's Coral Reefs and Mangroves.

Table 12: Estimated coral reef and mangroves contribution to the Belizean economy

A number of **forest based** assessments have been completed in recent years on valuation of ecosystem services for specific areas including for the Rio Bravo Conservation and Management Area (Eade et al., 1994) and Maya Mountains Massif (Hammond et al., 2011). An assessment of the Maya Mountains Massif

and the Maya Mountain Marine Corridor (Hammond et al. 2011) demonstrated that the value of forest cover is very high relative to other ecosystem services (Table 13).

CATEGORY	VALUE ESTIMATES (MILLION BZ$)		BASIS	IMPACT OF LAND USE CHANGE **[A]**
	Low	**High**		
Coastal Tourism and Fisheries	24.4	39.8	Present Value	Potentially major
Tourism and Recreation	13.7	30.3	Present Value	Potentially major
Lodging	*4.9*	*8.0*		
Activities and Other	*7.4*	*19.1*		
Taxes	*1.4*	*3.2*		
Hydrological Services	54.5	84.8	Net Present Value	
Hydropower – current facilities [b]	-	-		*Minor*
Hydropower – future development	*54.5*	*84.8*		*Unknown*
Potable water				*Major [c]*
Forests [d]	31.0	416.0	Net Present Value	
Timber	*22.4*	*250.9*		*Major*
Carbon	*8.6*	*165.1*		*Major*
Non-Timber Forest Products	29.6	91.8	Net Present Value	
Xate [e]	*25.7*	*83.7*		*Major*
Bayleaf/Botan palm [f]	*3.9*	*8.1*		*Major*
Ecosystem Goods and Services	**153.2**	**662.7**		
Wind Resources	-	[g]		None
Minerals [h]	30.0	100.0	Net Smaller Return	None
Total Natural Capital	**183.2**	**762.7**		

[a] Valuation of the impact of land use change was not possible in all cases. For some ecosystem services, including fisheries, tourism and future hydropower developments, it is virtually impossible to value impacts with any precision. Due to this uncertainty, the impacts are described qualitatively. In all cases, impacts are expected to be proportional to land use.

[b] The value of the ecosystem service of sediment reduction is estimated at zero due to negligible impacts on current hydropower production. The annual value of hydropower generated is $17.5 million.

[c] Value estimates are based on increased costs under various Land Use Change scenarios. Implicitly, Land Use Change scenarios reduce the Net Present Value to zero.

[d] It is not likely that all ecosystem service values are jointly realizable, so these totals are at the upper end of the value spectrum.

[e] Estimated market values. Harvest values were estimates at $1.7-6.7 million.

[f] Estimated market values. Harvest values were estimates at $0.09-0.32 million.

[g] Net Present Value estimates not possible due to extreme uncertainty around project costs. If project costs are so large as to thwart investments, the value will be zero.

[h] Includes estimated value of gold deposits. Excludes granite value due to lack of reliable data.

Table 13: Estimate of Natural Capital of the Maya Mountains of Belize (Hammond et al. 2011)

4.3.2 Assessment of Finance Gaps and Needs

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. Aichi Target 20 calls for countries to assess the financial resource needs and to mobilize financial resources for effectively implementing the CBD Strategic Plan at a national level. A comprehensive review of financial needs and current expenditure in Belize is being carried out through the BIOFIN Initiative (Figure 6), 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).

Financial resources for the effective implementation of the NBSAP are expected to come from a range of sources, including national budgetary allocations and the associated country-level mechanisms listed above, official direct assistance and project-based fundraising. While predictions on financial flows are challenging, there are a number that seem more promising at this stage. These would include climate-related funding

BIOFIN

BIOFIN is a global partnership led by the UNDP Ecosystems and Biodiversity Programme, in partnership with the European Union and the Governments of Germany, Switzerland, Norway and Belgium. It seeks to address the biodiversity finance challenge in a comprehensive manner – to define biodiversity finance needs and gaps with greater precision through detailed national-level assessments, to determine challenges and opportunities for resource mobilisation, and to build a sound business case for increased biodiversity investment.

BIOFIN works along two main axes:

1. *Globally-led development of a new methodological framework:* An entirely new methodological framework has been developed to assess the national context for biodiversity finance and provide recommendations for countries to adopt.

2. *Adaptation and implementation of this new methodological framework at national level:* To help countries increase the importance attributed to biodiversity and in consequence bridge the financing gap, the work at national level is being led by relevant Ministries through the following components:
   a. Analyse the integration of biodiversity and ecosystem services in sectoral and development policy, planning and budgeting.
   b. Assess future financing flows, needs and gaps for managing and conserving biodiversity and ecosystem services
   c. Develop comprehensive national Resource Mobilisation Strategies to meet the biodiversity finance gap
   d. Initiate implementation of the Resource Mobilisation Strategy at national level

For more information: www.biodiversityfinance.net

Figure 6: The Biodiversity Finance Initiative (BIOFIN) – Mobilising Resources for Biodiversity and Sustainable Development

streams, additional Debt for Nature Swaps, and more efficient use of national allocations, including those to other Ministries, through the adoption of ecosystem-based strategies to effectively tackle wider societal issues such as disaster risk reduction, food and water security, and health.

The CBD also recommends investigating the use of "innovative financial mechanisms" for scaling up finance for biodiversity. Six of such mechanisms are:

- environmental fiscal reform
- payments for ecosystem services
- biodiversity offsets
- markets for green products
- biodiversity in climate change funding
- biodiversity in international development finance

Protected Areas

An assessment of the Belize National Protected Areas System estimated that the NPAS received funding equivalent to about 2.6% of the Government of Belize's 2010 annual budget (US$8.9 million) or about US$8 per hectare (Drumm *et al*., 2011) - though it is important to recognize that the majority of this funding was largely external to the annual budget (by contrast, Costa Rica spends about US$24 per hectare on its protected area system). A significant funding gap was identified between current investments and the funding needed to operate at a level that sustains the health of the protected areas at an acceptable level of management effectiveness - of between US$10.2 million (the level of funding required to operate key Programs to sustain the maintenance of ecosystem functions) and US$19.4 million for the ideal level of funding required to operate all the Programs to reach and sustain optimal ecosystem functions) (Drumm *et al*., 2011).

Summary of Financial Status of National Protected Areas System, 2010

US$8.9M – 2010 Government expenditure on national protected areas (approximately US$8 per hectare)

US$2.6M – 2010 estimated grant funding for protected areas in the NPAS

US$10.9M – Financial shortfall for basic level management of the NPAS

US$19.4M – Financial shortfall for optimum level management of the NPAS

Drumm et. al., 2011

Resource Mobilization Planning

Belize has not, to date, submitted a financial report to the CBD. A Resource Mobilization Plan was developed in 1998, based on the first NBSAP, but was not implemented, and has not been revised since then. In its Fifth National Report, it was noted that "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."

Institutional Monitoring and Reporting

5.1 NATIONAL COORDINATION STRUCTURE

5.2 CLEARING HOUSE MECHANISM

5.3 MONITORING AND EVALUATION

Photos: Left: Wildtracks. Karst features and ancient Maya cultural artefacts
Centre: Wildtracks. Pine savanna of the Southern Coastal Plain
Right: Wildtracks. Mangrove…critical in provision of ecosystem services

5.1 NATIONAL COORDINATION STRUCTURE

Implementation of the National Biodiversity Strategy and Action Plan will be through the establishment of the Biodiversity Office (BiO), to be housed in the Forest Department, to 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 and the National Protected Areas Technical Committee (Table 14).

TARGET E1. By 2018, 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				
Action		**Activities**	**Agencies**	**Synergies**
HIGH	*E1.1 Establish the Biodiversity Office to lead implementation of the NBSAP*	▪ Establish, institutionalise and operationalise the Biodiversity Office (BiO) under the ministry responsible for Forestry, Fisheries and Protected Areas ▪ Ensure effective communication and collaboration between BiO, NPAS, NCCO, Forestry and Fisheries Depts. and DoE	***Lead*** Forest Department	NPAS Act NCCPSAP PACT Act

Table 14: Target E1: Establishment of the Biodiversity Office

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. Over the last five years, there has been an increasing recognition that there needs to be greater coordination and collaboration between Government departments, with the development of a number of overarching frameworks to ensure effective mainstreaming, including:

- Integrated Land Use Planning Framework
- Integrated Coastal Zone Management Plan
- National Climate Change Strategy and Action Plan
- National Environmental Action Plan

This need for coordination and collaboration extends to the implementation of the NBSAP. Whilst management of biodiversity falls largely under the Ministry of Agriculture, Fisheries, Forestry, the Environment and Sustainable Development, it is critical that the implementation of the NBSAP is mainstreamed across both Government and non-Government sectors. Where possible, links with these and other national initiatives have been identified to facilitate integration with existing frameworks.

The need for the harmonization of policies is recognized in the priority action A1. *Develop the framework to guide the harmonization of policies that positively impact biodiversity, across all Government departments.* The National Biodiversity Action Plan (NBAP) identifies the key Government and non-

Government agencies that need to be engaged as participatory partners in the implementation of NBSAP actions, and the key synergies already available for effective integration into existing strategies and frameworks (Table 15).

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.			
Action	**Activities**	**Agencies**	**Synergies**
A1.1 Develop the framework to guide the harmonization of policies that positively impact biodiversity, across all Government departments	▪ Policy review to identify areas for harmonization (synergies) ▪ Identify guiding principles to ensure harmonization of new and existing policies ▪ Develop and implement proposed integrated coordinating mechanism	Forest Department (Biodiversity Office / Sustainable Development Unit) National Climate Change Office	Integrated Land Use Planning Framework BIOFIN ICZMP NEAP 3.1.1 (3) NEAP Target 12.1.1 NEAP 12.1.1 (1) IWRMP KBA Output 2.2a KBA Output 3.1a EPA Act

Table 15: Linking the NBSAP with other policies and plans

Recently, the PACT Act has been revised to better fulfil its role in Belize (Protected Areas Conservation Trust (Amendment) Act, 2015), the amendments to the Act expand PACT's role to one of oversight and coordination of the National Protected Areas System including "*to further strengthen the provisions of the Act in order to enhance the operations of the Trust in achieving its mission of promoting the sustainable management of Belize's protected areas; to make better provisions relating to the exemption from payment of the conservation fee*"

Improving National Commitment

A review of barriers to the implementation of the first NBSAP (1998) led to a series of recommendations:

- Strengthen awareness at Cabinet level of the importance of the environment for national development, building support for the implementation of the NBSAP and NPAPSP.
- Increase communication at CEO level between key Ministries involved in natural resource management for improved cross-sectoral coordination and collaboration.
- Invest time and effort to strengthen cross-ministerial collaboration, coordination and commitment for improved natural resource management – use of cross-sectoral, nationally focused, significant, externally funded projects (e.g. KBA project, climate change adaptation projects) may be the most effective way of approaching this.
- Ensure engagement of main political parties to ensure cross-party buy-in and medium-term continuity across political regimes.
- Effective oversight of implementation through the Biodiversity Office, based on cross-sectoral representation, composition and expertise, with the guidance of a Technical Committee, to

ensure transparency and active commitment to implementation of the NBSAP, and to avoid duplication of effort.

- Strengthen the long term collaboration and coordination achieved with relevant natural resource management departments now being under the same Ministry, and avoid division in the future.
- Build in mechanisms for external monitoring of Government implementation of the revised NBSAP by a multi-sectoral committee, including conservation community stakeholders.

5.2 CLEARING HOUSE MECHANISM

What is a Clearing House Mechanism?

An agency that brings together seekers and providers of goods, services or information, thus matching demand with supply.

Belize is in the first stages of re-establishing its 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 based on an understanding of the needs of collaborating Ministries, NGO and CBO partners and special interest-groups. The CHM will serve as the information exchange platform for biodiversity information in Belize, facilitating and supporting the implementation of the National Biodiversity Strategies and Action Plan. It will also provide a mechanism for linking with institutions at the regional level, and with the central CBD CHM.

The key roles of the CHM will be:

- Centralised collation of biodiversity information, legislation and reports
- A national mechanism for the exchange of information on biodiversity, invasive species and biosafety
- Facilitation of national reporting
- Improving scientific and technical co-operation between partners
- Network development – both within Belize and regionally
- Transparency – providing reliable national, regional, and local data
- Increasing public awareness and education, and access to training Programs and funding opportunities

Effective information management, access and dissemination is critical for NBSAP implementation, in its role in providing information for NBSAP and biodiversity management decision making. The ability to consistently and continuously disseminate reliable content, with updating will require a constant effort, and functional and appealing content that is easy to find, up-to-date and useful.

Biodiversity-related information will include:

- Biodiversity
- NBSAP and national reports
- Other national biodiversity-related documents
- Information by Program areas relevant to the country

5.3 MONITORING AND EVALUATION

For NBSAP implementation to be effective, it is important that progress towards the targets is 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 (Table 16).

TARGET	INDICATORS
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.	▪ Report on the policy recommendations and proposed framework for coordinating mechanism (yes / no) ▪ Adoption of the policy recommendations and proposed framework for integrated coordinating mechanism (yes / no)
TARGET A2. By 2020 Belize has legislated and implemented a national harmonized system of environmental standards and incentives that promote environmental responsibility and sustainability.	▪ Government incentives for conservation and sustainable business (Eco-Audit) ▪ Trends in compliance to environmental standards - number of fines, level of fines ▪ Number of positive incentives ▪ Number of initiatives using positive incentives ▪ Removal/ amendment of productive land concession rate (yes / no) ▪ % of identified disincentives that have been addressed

Table 16: Measuring success of outputs

Monitoring and evaluation will be ongoing, with a rapid yearly review of implementation, a review of outcomes and outputs conducted by the Biodiversity Office in the second year, and a full, formal review starting at the beginning of the fifth year - the last year of the NBSAP cycle - in preparation for NBSAP revision. When necessary, the Biodiversity Office may request interim reports and independent reviews to identify critical barriers to implementation, or seek recommendations on improving effective implementation.

Progress will be reported on a national platform to ensure continued engagement of all stakeholders in NBSAP implementation. Success in implementation of the plan is not always reflected in success of outcomes – are we fulfilling our national commitments to maintaining our ecosystems, ecosystem services and species? Are we fulfilling our international commitments under the CBD?

Over the past ten years, national agencies, research institutions and NGO partners in Belize have been developing Programs for measuring the health of the environment. The University of Belize Environmental Research Institute has worked with its partners on the development of the National Biodiversity Monitoring Program (ERI, 2016), including standardized and systematic monitoring of biodiversity indicators by partners across Belize, focused on measuring progress towards the Aichi Targets. It builds on indicators from established monitoring Programs such as The Healthy Reefs Initiative, which reports

on standardised indicators of reef health (the Healthy Reef Report Card) and environmental health (Healthy Reef Eco-Audit) every two years (Table 17).

NATIONAL BIODIVERSITY MONITORING PROGRAM			
Aichi Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impact of use of natural resources well within safe ecological limits.			
Headline Indicator: *Trends in pressures from unsustainable agriculture, forestry, fisheries and aquaculture*			
Operational Indicator: *Trends in population and extinction risk of utilized species, including species in trade*			
Specific Indicator	**Source**	**Implementing Partner(s)**	**Frequency**
Hunting frequency and amount of harvest	Social surveys (hunters)	UB-ERI, FD, CSFI, PfB, FCD, BAS, Ya'axche, TIDE	Every three years
Trends in contribution of wild meat in diet	Social surveys (households)	UB-ERI, FD, CSFI, PfB, FCD, BAS, Ya'axche, TIDE	Every three years
Aichi Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced			
Headline Indicator: *Trends in extent, condition and vulnerability of ecosystems, biomes and habitats*			
Operational Indicator: *Trends in extent of selected biomes, ecosystems and habitats*			
Specific Indicator	**Source**	**Implementing Partner(s)**	**Frequency**
Forest Cover ▪ Broadleaf ▪ Mangrove ▪ Littoral ▪ Savannah	Remote Sensing	UB-ERI, FD	Annually
Seagrass Cover	SeagrassNet, Remote Sensing	UB-ERI, BAS, SEA, HRI, Fisheries, SACD	Biannually
Coral Cover	MBRS	UB-ERI, HRI, NCRMN	Annually
Macroalgae Cover	MBRS	UB-ERI, HRI, NCRMN	Annually

Table 17: Example of National Biodiversity Monitoring Program Framework

Whilst the NBMP was developed to provide Belize with indicators on biodiversity health, using the Aichi Target framework, the framework will also provide a solid foundation for the development of a monitoring program for outcome success for the NBSAP. Targets and actions have been linked with NBMP indicators (Table 18). Goals and targets have also been linked to the CBD Aichi Targets (Table 19).

LINKING NBSAP TARGETS TO THE NBMP FRAMEWORK	
GOAL A: MAINSTREAMING: 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	
NBSAP TARGET	**NATIONAL BIODIVERSITY MONITORING PROGRAM INDICATOR**
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.	▪ Trends in integration of biodiversity and ecosystem service values into sectoral and development policies
TARGET A2: By 2020 Belize has legislated and implemented a national harmonized system of environmental standards and incentives that promote environmental responsibility and sustainability.	▪ Trends in number and value of incentives, including subsidies harmful to biodiversity, removed, reformed or phased out
TARGET A3: By 2020, all relevant national development decisions in Belize take into consideration ecosystem services and biodiversity relevance to the national economy	▪ Trends in local recognition of biodiversity, protected areas and environmental benefits
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	▪ Trends in awareness, attitudes and public engagement in support of biological diversity and ecosystem service ▪ Trends in public engagement with biodiversity ▪ Trends in number of community based conservation initiatives
GOAL B: REDUCING 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 TARGET	**NATIONAL BIODIVERSITY MONITORING PROGRAM INDICATOR**
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	▪ Trends in pressures from unsustainable agriculture, forestry fisheries and aquaculture
TARGET B2. By 2020, 80% of businesses monitored in Belize are compliant with environmental standards	▪ Trends in proportion of degraded / threatened habitats ▪ Trends in policies considering ecosystem services in environmental impact assessment and strategic environmental assessment ▪ Trends in water quality in aquatic ecosystems ▪ Trends in extent of selected biomes, ecosystems and habitats ▪ Trends in fragmentation of natural habitat
TARGET B3. Between 2016 and 2020, Belize has limited its net rate of land use change for natural ecosystems / areas to no more than 0.6% per year (continued)	▪ Trends in extent of selected biomes, ecosystems and habitats ▪ Trends in policies considering ecosystem services in environmental impact assessment and strategic environmental assessment

	▪ Agricultural expansion rate ▪ Trends in proportion of degraded / threatened habitats
LINKING NBSAP TARGETS TO THE NBMP FRAMEWORK	
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	▪ Trends in extent of selected biomes, ecosystems and habitats ▪ Trends in proportion of degraded / threatened habitats ▪ Frequency, distribution and extent of fires by land use type
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	▪ Trends in number and distribution of invasive species
GOAL C: PROTECTION: Functional ecosystems and viable populations of Belize's biodiversity are maintained and strengthened	
NBSAP TARGET	**NATIONAL BIODIVERSITY MONITORING PROGRAM INDICATOR**
TARGET C1. By 2030, Belize's natural landscapes and seascapes are all functional and build biodiversity resilience to climate change	▪ Trends in proportion of degraded / threatened habitats ▪ Trends in integration of biodiversity, ecosystem services and benefits sharing into planning, policy formulation and implementation, and incentives ▪ Trends in integration of biodiversity, ecosystem services and benefits sharing into planning, policy formulation and implementation, and incentives
TARGET C2. By 2020, three key corridors identified under the NPAPSP are physically and legally established, and effectively managed effectively	▪ Trends in fragmentation of natural habitats ▪ Trends in connectivity of PAs and other area- based approached integrated into landscapes and seascapes
TARGET C3. Between 2016 and 2030, no species will become functionally extinct in Belize	▪ Trends in abundance, distribution and level of risk of extinction of priority species ▪ Trends in awareness and attitudes to biodiversity
TARGET C4. By 2020, average management effectiveness of the National Protected Areas System has increased to 80%	▪ Trends in coverage, condition, representativeness and effectiveness of PA and other area-based approached ▪ Trends in coverage of NPAS ▪ Trends in representative coverage of PAs and other area-based approaches ▪ Trends in connectivity of PAs ad other area-based approaches integrated into landscapes and seascapes ▪ Trends in PA condition / management effectiveness including more equitable management
TARGET C5. By 2020, Belize is implementing a biosafety policy that safeguards against large-scale loss of biological integrity	

LINKING NBSAP TARGETS TO THE NBMP FRAMEWORK	
GOAL D: BENEFITS: The provision of ecosystem services, ecosystem-based management, and the equitable sharing of benefits from biodiversity is strengthened.	
NBSAP TARGET	**NATIONAL BIODIVERSITY MONITORING PROGRAM INDICATOR**
TARGET D1. By 2025, key ecosystem services are sustainably managed and resilient to threats	▪ Status and trends in extent and condition of habitats that provide carbon storage ▪ Trends in distribution, condition and sustainability of ecosystem services for equitable human well-being ▪ Trends in well-being of communities who depend directly on local ecosystem goods and services
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	
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 TARGET	**NATIONAL BIODIVERSITY MONITORING PROGRAM INDICATOR**
TARGET E1. By 2018, 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	▪ Trends in public engagement with biodiversity ▪ Trends in number of community-based conservation initiaitives
TARGET E2. By 2020, accurate and current data on Belize's natural resources and environmental services informs relevant national development decisions	

Table 18: Alignment of National Goals and Targets with the the NBMP Indicators

AICHI GOALS AND TARGETS	NBSAP GOALS AND TARGETS
Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society	***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***
Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.	**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.
Target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.	**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 A3**. By 2020, 100% of relevant national development decisions in Belize take into consideration ecosystem services and biodiversity relevance to the national economy. **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 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.	**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 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.	**TARGET A3.** By 2020, 100% of relevant national development decisions in Belize take into consideration ecosystem services and biodiversity relevance to the national economy.

AICHI GOALS AND TARGETS	NBSAP GOALS AND TARGETS
Strategic Goal B: Reduce the direct pressures on biodiversity and promote 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***
Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.	**TARGET B3.** Between 2016 and 2020, Belize has limited its net rate of land use change for prioritised natural ecosystems / areas to no more than 0.6% per year. **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. **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 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.	**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 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	**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 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	**TARGET B2.** By 2020, 80% of businesses monitored in Belize are compliant with environmental standards.
Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	**TARGET B6.** By 2018, Belize has a strengthened system in place for early detection and effective management of invasive species.

Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	**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. **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.
AICHI GOALS AND TARGETS	**NBSAP GOALS AND TARGETS**
Strategic Goal C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity	***GOAL C: Functional ecosystems and viable populations of Belize's biodiversity are maintained and strengthened***
Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascapes.	**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 C4.** By 2020, average management effectiveness of the National Protected Areas System has increased to 80%.
Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	**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 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	**TARGET C5.** By 2020, Belize is implementing a biosafety policy that safeguards against large-scale loss of biological integrity.
Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services.	***GOAL D: Strengthened provision of ecosystem services, ecosystem-based management and the equitable sharing of benefits from biodiversity***
Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	**TARGET D1.** By 2025, key ecosystem services are sustainably managed and resilient to threats.
Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has	**TARGET B4.** BY 2020, Belize is restoring 30% of degraded ecosystems to maintain and improve the

been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	status of ecosystems and ecosystem services essential for increasing Belize's resilience to climate change impacts. **TARGET C1.** By 2030, Belize's natural landscapes and seascapes are all functional and build biodiversity resilience to climate change.
Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	**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.
AICHI GOALS AND TARGETS	**NBSAP GOALS AND TARGETS**
Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building	***GOAL E: The NBSAP is implemented effectively through capacity building, informed strategic decision making and integrated public participation***
Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.	**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 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.	**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 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.
Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.	**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.
Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan 2011- 2020 from all sources and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes	**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 A3.** By 2020, 100% of relevant national development decisions in Belize take into consideration ecosystem services and biodiversity relevance to the national economy.

contingent to resources needs assessments to be developed and reported by Parties.	

Table 19: Alignment of National Goals and Targets with the CBD Aichi Targets

Belize's National Biodiversity Strategy and Action Plan

GLOSSARY

REFERENCES

Photos: Left: A. Denice / Wildtracks. Reef-related tourism – supporting the Belize economy
Centre: Wildtracks. Replanting mangroves – coastal protection
Right: Wildtracks. Roseate spoonbill

GLOSSARY

Adapted from NCCPSAP, 2016

Biodiversity: The numbers and relative abundance of different species and ecosystems of a region

Adaptation: Adjustment in natural or human systems to a new or changing environment. Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Adaptive capacity: Adaptive capacity of communities depends on economic and ecological well-being, the extent of dependency on natural resources, infrastructure (human-built or natural), effectiveness of institutions and governance systems, insurance, secure land tenure and mediation measures, and information and communication systems. A community with the capacity to adapt is likely to be more resistant to impacts or able to recover from stressful events and conditions.

Biofuels: Gas or liquid fuel made from plant material (biomass). Includes wood, wood waste, wood liquors, peat, railroad ties, wood sludge, spent sulfite liquors, agricultural waste, straw, tires, fish oils, tall oil, sludge waste, waste alcohol, municipal solid waste, landfill gases, other waste, and ethanol blended into motor gasoline

Climate Change: Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from:

- natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- natural processes within the climate system (e.g. changes in ocean circulation);
- human activities that change the atmosphere's composition (e.g. through burning fossil fuels) and the land surface (e.g. deforestation, reforestation, urbanization, desertification, etc.)

Climate Change Adaption: Climate change adaptation refers to the ability of society to plan for and respond to change in a way that makes it better equipped to manage its exposure and sensitivity to climate change. IPCC definition: *"Adjustment in natural or human system in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities."*

Ecosystem: Any natural unit or entity including living and non-living parts that interact to produce a stable system through cyclic exchange of materials

Ecosystem-based adaptation: The use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change.

Ecosystem Based Management: An integrated approach that considers the entire ecosystem (including humans), and aims to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans require.

Ecosystem services (also ecosystem goods and services): the benefits people obtain from ecosystems. These include provisioning services such as food, water, timber, and fibre; regulating services such as the

regulation of climate, floods, disease, wastes, and water quality; cultural services such as recreation, aesthetic enjoyment, and spiritual fulfilment; and supporting services such as soil formation, photosynthesis, and nutrient cycling.

Emissions: The release of a substance (usually a gas when referring to the subject of Climate Change) into the atmosphere

Erosion: The process where soil or rock is moved or weathered by the action of streams, glaciers, waves, winds, or underground water

Global Warming: Global warming is an average increase in the temperature of the atmosphere near the Earth's surface and in the troposphere, which can contribute to changes in global climate patterns. Global warming can occur from a variety of causes, both natural and human induced. In common usage, "global warming" often refers to the warming that can occur as a result of increased emissions of greenhouse gases from human activities.

Inundation: The submergence of land by water, particularly in a coastal setting

Maladaptation practices*:* Action taken ostensibly to avoid or reduce vulnerability to climate change that impacts adversely on, or increases the vulnerability of other systems, sectors or social groups

Mitigation: Mitigation of climate change refers to those response strategies that reduce the sources of greenhouse gases or enhance their sinks, to reduce the probability of reaching a given level of climate change. Mitigation reduced the likelihood of exceeding the adaptive capacity of natural systems and human societies.

Ocean Acidification: Occurs when CO_2 in the atmosphere reacts with water to create carbonic acid, decreasing both ocean pH and the concentration of the carbonate ion, which is essential for calcification by marine organisms such as corals (Green *et al.,* 2012).

Resilience: The amount of change a system can undergo without changing state. Resilience is a tendency to maintain integrity when subject to disturbance.

Social vulnerability: A function of exposure (the extent to which a community comes into contact with climate events or specific climate impacts), sensitivity (the degree to which a community is negatively affected by changes in climate), and adaptive capacity (the potential or capability of a community to adjust to impacts of changing climate) (Wongbusarakum *et al.,* 2011).

Saltwater Intrusion: The process by which saltwater enters a coastal aquifer, leading to contamination of groundwater

Sea Level Rise: An increase in the mean level of the ocean. Relative sea level rise considers the mean level of the ocean relative to the land

Storm Surge: A rising of the sea as a result of wind and atmospheric pressure changes associated with a storm.

Vulnerability: The degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character,

magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.

REFERENCES

Aldous A., P. Gonzalez, and K. Popper (2007). A Method for Incorporating Climate Change into Conservation Action Plans. The Nature Conservancy.

Anderson, E.R., Cherrington, E.A., Flores, A.I., Perez, J.B., Carrillo R., and E. Sempris (2008).Potential Impacts of Climate Change on Biodiversity in Central America, Mexico, and the Dominican Republic." CATHALAC / USAID.

Anthony K. R. N., D. I. Kline, G. Diaz-Pulido, S. Dove and O. Hoegh-Guldberg (2008). Ocean acidification causes bleaching and productivity loss in coral reef builders. Proceeding of the National Academy of Science, November 11, 2008. Vol. 105, No. 45

Arnold C. and L. Gunderson (2013). Adaptive Law and Resilience, 43 Environmental Law Reporter News and Analysis 10426 (2013)

Aronson, R. B., W. F. Precht, and I. G. Macintyre (1998). Extrinsic Control of Species Replacement on a Holocene Reef in Belize: The Role of Coral Disease. Coral Reefs, 17:223– 230.

Aronson, R. B., W. F. Precht, I. G. Macintyre, T. J. T. Murdoch (2000). Coral bleach-out in Belize. Brief Communications, Nature Vol: 405

Aronson, R. B. and W. F. Precht (2006). Conservation, precaution, and Caribbean reefs Coral reefs 25 (3), 441-450

Aquaculture Stewardship Council (2014). www.asc-aqua.org

Auil N. (1998). Belize Manatee Recovery Plan. BZE/92/G31. UNEP 67.pp

Belize Audubon Society (2008). An environmental Agenda for Belize, 2008 – 2013

Barnes, R.A. (2013). The Capacity of Property Rights to Accommodate Social Ecological Resilience, 18 Ecology and Sociology 6.

Belize Environmental Technologies (BET) (2013). A Diagnostic and Analytical Review of Belize's Environmental Governance Framework; Belize, March 2013.

Belize Enterprise for Sustainable Technology (2008). National Integrated Water Resources Management Policy (Including Climate Change) for Belize. Prepared for the Caribbean Community Climate Change Centre

Bovarnick, A., F. Alpizaar and C. Schell (Eds). 2010. The importance of biodiversity and ecosystem in economic growth and equity in Latin America and the Caribbean: An economic valuation of ecosystems. UNEP.

Burke, L., and J. Maidens. (2004). Reefs at risk in the Caribbean. World Resources Institute, Washington DC, USA.

Caribbean Community Climate Change Centre (2008). National Integrated Water Resources Management Policy for Belize. Belize.

Caribbean Community Climate Change Centre (2012). Greenhouse Gas Inventory Development Report: Belize.

Central Bank (2012). Belize – 30 Years Retrospect and Challenges Ahead

Clarke, C., M. Canto, S. Rosado (2013). Belize Integrated Coastal Zone Management Plan. Coastal Zone Management Authority and Institute (CZMAI), Belize City.

Cherrington et al. (2010). Technical Report: Identification of Threatened and Resilient Mangroves in the Belize Barrier Reef System. Water Center for the Humid Tropics of Latin America and the Caribbean (Cathalac). Revised October 2010.

Cherrington E., E. R. Anderson, A. I. Flores, B. E. Hernandez, A. H. Clemente, E. Sempris, F. Picado and D. Erwin (2011). Implications of Climate Change for Forest Structure and Carbon Storage in the Tropical Zones of Latin America and the Caribbean. Servir

Cherrington E. A. (2014). Technical report: basic assessment of key ecosystem coverage of Belize protected areas. Report to NPAS.

Cho-Ricketts L. and E. Cherrington (2011). Technical report: Validation of the 2010 Belize mangrove cover map

Cliquet, A., Baches, C., Harris, J., and Howsam, P. (2009). Adaptation to climate change: Legal Challenges for Protected Areas; Utrecht Law Review 5.

Coastal Zone Management Authority and Institute (2014). Integrated Coastal Zone Management Plan

Conservation International (2004). Northern Region of the Mesoamerica Biodiversity Hotspot, Belize, Guatemala, Mexico. Critical Ecosystem Partnership Fund.

Conservation International (2016). Valuing and Accounting for Natural Capital. Downloaded 2016, http://www.conservation.org/projects/Pages/Valuing-and-Accounting-for-Natural-Capital.aspx

Convention on Biological Diversity. Incentive Measures for the Conservation and Sustainable Use of Biological Diversity: Case studies and lessons learned; Secretariat of the Convention on Biological Diversity.

Convention on Biological Diversity (2013). Resource Mobilization Information Digest No 360, February 2013. Central and North Americas: Financial Planning for Biodiversity

Convention on Biological Diversity; Biodiversity Related Conventions; https://www.cbd.int/brc/.
Convention on Biological Diversity (CBD); International and Regional Management Arrangements; Global; U.S. Office of International Affairs and U.S. Department of State; Office of Ecology and Terrestrial Conservation.
Cooper, E., Burke, L. and Bood N. (2008). Coastal Capital: Belize – The Economic Contribution of Belize's Coral Reefs and Mangroves. World Resources Institute, Washington DC, USA.

Crier, J.E. (1998). The Environment, the Constitution and the Coupling Fallacy, Law Quadrangle Notes; the University of Michigan Law School; Volume 32, No.3, Spring.

Department of the Environment (2005). Belize's National Capacity Self-Assessment for Global Environmental Management.

Department of Environment (2008). National Plan of Action for the Control of Land-Based Sources of Marine Pollution in Belize.

Department of the Environment (2014). Belize's National Environmental Action Plan

Drumm, A., J. Echeverría and M. Almendarez (2011). Sustainable Finance Strategy and Plan for the Belize Protected Area System. Drumm Consulting

Eade, J.D.O. and Moran, D. Spatial Economic Valuation: Benefits Transfer using Geographical Information Systems.
http://www.cepal.org/ilpes/noticias/paginas/4/31914/Eade_Moran_96_GIS_valuation_Belize.pdf

ECOLEX – the Gateway to Environmental Law; Convention for the Conservation of the Biodiversity and the Protection of Wilderness Areas in Central America;
http://www.ecolex.org/ecolex/ledge/view/RecordDetails?id=TRE-001162&index=treaties

Eldis (2008). National Integrated Water Resources Management Policy (Including Climate change) for Belize

Environmental Defense Fund (2014). Community-based fishery management delivers individual and collective benefits in Belize (http://blogs.edf.org/edfish/2014/04/18/community-based-fishery-management-delivers-individual-and-collective-benefits-in-belize/)

Environmental Research Institute (2011). National Environment and Natural Resource Management Agenda, University of Belize

Environmental Research Institute (2011). National Biodiversity Monitoring Program, University of Belize

Fedler A.J. (2011).The Economic Value of Turneffe Atoll. Turneffe Atoll Trust.

Food and Agriculture Organization (2011). CPF Belize FAO March 2011 with annexes.doc: 2011-2015

Food and Agriculture Organization Aquastat (2015). Aquastat database.
http://www.fao.org/nr/water/aquastat/countries_regions/BLZ/index.stm

Food and Agriculture Organization; National Lands Act 1992. FAOLEX No: LEX-FAOC004676

Forest Department (2014). REDD+ Readiness Preparation Proposal for Belize. Submitted to Forest Carbon Partnership Facility, June 9th, 2014.

Friends for Conservation and Development (2013). State of the Chiquibul Forest. Presentation

Friends for Conservation and Development (2015). State of the Chiquibul Forest. Presentation

Friends for Conservation and Development (2016). FCD Annual Report, 2015

Government of Belize (2015). Belize National Stocktaking and Target Setting Report to the CBD

Foster, R.J., B.J. Harmsen, D.W. Macdonald, D.J. Collins, Y. Urbina, R. Garcia and C.P. Doncaster (2014). Wild meat: a shared resource amongst people and predators. Oryx, Fauna and Flora International.

Gischler C., E. Rodriguez, L. Rojas Sánchez, C. Gonzalez Torres, G. Servetti, L. Olson (2014). The energy sector in Belize. IDB Technical Note 721

Global Environment Facility. https://www.thegef.org/country/belize

Government of Belize (1998). National Biodiversity Strategy and Action Plan

Government of Belize (2001). Policy on Adaptation to Global Climate Change.

Government of Belize (2006). Horizon 2030

Government of Belize (2005). National Protected Areas Policy and System Plan

Government of Belize (2007). National Poverty Elimination Strategy (2007 – 2011)

Government of Belize (2009). National Poverty Elimination Strategy and Action Plan (2009 – 2013)

Government of Belize (2010). Belize Medium Term Development Strategy, 2010 – 2013. Building resilience against social, economic and physical vulnerabilities. Ministry of Economic Development, Commerce and Industry and Consumer Protection

Government of Belize (2010). National Policy on Responsible Tourism

Government of Belize / United National Development Programme (2011). MDG Acceleration Framework: Water and Sanitation.

Government of Belize / United National Development Programme (2013). Millennium Development Goals Report and Post 2015 Agenda: Belize 2013.

Government of Belize (2012). National Sustainable Tourism Master Plan of 2030 (Endorsed 2012)

Government of Belize (2012). National Sustainable Energy Strategy 2012-2033. Ministry of Energy, Science and Technology and Public Utilities.

Government of Belize (2013). National Gender Policy 2013. National Women's Commission of Belize, Belize.

Government of Belize (2013). National Culture Policy Draft 2013, National Institute of Culture and History, Belize.

Government of Belize (2014). National Budget

Government of Belize (2015). Growth and Sustainable Development Strategy for Belize 2015-2018

Government of Belize (2015). National Protected Areas Policy and System Plan (revised)

Government of Belize (2015). Belize National Stocktaking and Target Setting Report to the CBD

Government of Belize (2016). Belize National Climate Change Policy, Strategy and Action Plan (NCCPSAP)

Government of Belize (2016). Nationally Determined Contribution under the United Nations Framework Convention on Climate Change

Government of Belize (2015). PACT (Amended) Act, 2015.

Government of Belize / United National Development Programme (2013). Millennium Development Goals Report and Post 2015 Agenda: Belize 2013.

Glowka L., C. Shine, O. Rey Santos, Mohiuddin Farooque and Lothar Gundling (1998). A Guide to Undertaking Biodiversity Legal and Institutional Profiles; IUCN, Gland, Switzerland, Cambridge, UK and Bonn, Germany, xvi+ 60 pp.

Graham R., K. L. Rhodes, D. Castellanos (2009). Characterization of the goliath grouper *Epinephelus itajara* fishery of southern Belize for conservation planning. Endangered Species Research, Vol. 7: 195–204, 2009

Hammond, D., G. Busby and R. Hartwell (2011). Economic Valuation of the Environmental Goods and Services of the Maya Mountain Massif and the Maya Mountain Marine Corridor (Terrestrial Area). Ecosystem Economics

Harrison, L. R., N. K. Dulvy (eds), (2014). Sawfish: A Global Strategy for Conservation. IUCN Species Survival Commission's Shark Specialist Group, Vancouver, Canada.

Healthy Reefs (2014). Healthy Reef Initiative Eco-Audit Results for Belize, 2014

Heathy Reefs (2015). Healthy Reef Initiative Report Card, 2015

Healthy Reefs (2016). Healthy Reef Initiative Eco-Audit Results for Belize, 2016

Heller N. and E. Zavaleta, 'Biodiversity management in the face of climate change: A review of 22 years of recommendations', 2009 Biological Conservation. IGRAC. 2012. Online database at http://www.igrac.net/. International Groundwater Resources

Humby, Tracy-Lynn (2014) "Law and Resilience: Mapping the Literature," Seattle Journal of Environmental Law: Vol. 4: Iss. 1, Article 4;107.

Huq, S. and J. Ayers (2007). Critical list: the 100 nations most vulnerable to climate change. Sustainable Development Opinion, International Institute for Environment and Development.

IGRAC (2012).Online database at http://www.igrac.net/.International Groundwater Resources Assessment Centre. WMO/UNESCO.

IICA (2008). IICA's Contribution to the Development of Agriculture and Rural Communities in Belize. 2007 Annual Report.

International Development Bank (2012). Belize and the IDB: Twenty Years of Partnership

Intergovermental Panel on Climate Change (2007). Climate Change Synthesis Report

Intergovermental Panel on Climate Change (2014). Climate Change 2014: Impacts, Adaptation and Vulnerability.

Intergovermental Panel on Climate Change (2014). Climate Change 2014: Mitigation of Climate Change.

IUCN (2016). The IUCN Red List of Threatened Species. Version 2016-2. http://www.iucnredlist.org. Downloaded on 04 September 2016. IUCN/WCMC.

IUCN (1996). World Heritage Nomination – IUCN Summary: Belize Barrier Reef System (Belize).

IUCN/WCMC (2016). Report on WHS in Danger: Belize Barrier Reef System (Belize).

Jacobs, N. and A. Castenada (1998).The Belize National Biodiversity Strategy and Action Plan. Ministry of Natural Resources and the Environment, Belize

Jung, C., "TIESR Dataset," Belize Constitution Report; Toronto Initiative for Economic and Social Rights, online at www.TIESR.org

Kaiser K. (2011). Preliminary Study of Pesticide Drift into the Maya Mountain Protected Areas of Belize. Bulletin of Environmental Contamination and Toxicology 86: 56-59

Lobel P. S. and L. K. Lobel (2011). Endemic marine fishes of Belize: evidence of isolation in a unique ecological region. In: Palomares, M.L.D., Pauly, D. (eds.), Too Precious to Drill: the Marine Biodiversity of Belize, pp. 48-51. Fisheries Centre Research Reports 19(6). Fisheries Centre, University of British Columbia

May, J. R. and Daly, E. (2015). Global Environmental Constitutionalism; Cambridge University Press.

McSweeney, C., M. New and G. Lizcano. UNDP Climate Change Country Profiles Belize. UNDP Climate Change Country Profiles. http://country-profiles.geog.ox.ac.uk

Meehl, G.A., T.F. Stocker, W.D. Collins, P. Friedlingstein, A.T. Gaye, J.M. Gregory, A. Kitoh, R. Knutti, J.M. Murphy, A. Noda, S.C.B. Raper, I.G. Watterson, A.J. Weaver and Z.-C. Zhao. (2007).Global Climate Projections. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Meerman, J.C. (2005). National Protected Areas Policy and System Plan. Forest Department

Meerman, J.C. (2007). Establishing a Baseline to Monitor Species and Key Biodiversity Areas in Belize.

Meerman, J. C. (2011). Ecosystems Map of Belize – 2011 edition: http://biological-diversity.info

Meerman, J. C.; Compilation of Information on Biodiversity in Belize; Forest Department, Belmopan

Meerman J., J. McGill and M. Cayetano (2011). National Integrated Planning Framework for Land Resource Development.

Millennium Ecosystem Assessment (2005) http://www.millenniumassessment.org/en/index.html

Ministry of Agriculture (2003). Agricultural Development Management and Operational Strategy (ADMOS)

Ministry of Agriculture (2002). The National Food and Agriculture Policy

Ministry of Energy, Science and Technology and Public Utilities (2012). Strategic Plan 2012 – 2017

Ministry of Forestry, Fisheries and Sustainable Development (2012). Belize National Sustainable Development Report

Ministry of Forestry, Fisheries and Sustainable Development (2014). Management and Protection of Key Biodiversity Areas of Belize: Environmental Management Framework

Ministry of Forestry, Fisheries and Sustainable Development (2014). Readiness Preparation Proposal, Submitted to the Forest Carbon Partnership Facility.

Ministry of Natural Resources (1998). 1st National Report to the United Nations Convention on Biological Diversity

Ministry of Natural Resources (2002). 2nd National Report to the United Nations Convention on Biological Diversity

Ministry of Natural Resources (2006). 3rd National Report to the United Nations Convention on Biological Diversity

Ministry of Natural Resources (2010). 4th National Report to the United Nations Convention on Biological Diversity

Ministry of Natural Resources and the Environment (2010). Belize Environmental Outlook – GEO Belize 2010.

Ministry of Tourism (2011). National Sustainable Tourism MasterPlan of Belize 2030

National Climate Change Office (2016). Nationally Determined Contribution under the United Nations Framework Convention on Climate Change pursuant to decision 1 CP/21 of the Paris Agreement

National Institute of Culture and History (2016). National Cultural Policy

OECD. (2013). Scaling-up Finance Mechanisms for Biodiversity. OECD, Paris, France.

Olson D. M and e. Dinerstein, 1998. The Global 200: A representation approach to conserving the Earth's most biologically valuable ecoregions. Conservation Biology 12: 502–515.

Platt S.G. and J.C. Meerman, (1999). Diversity, Observations, And Conservation Of The Herpetofauna Of Turneffe, Lighthouse, And Glovers Atolls, Belize. British Herpetological Society Bulletin. No.66. 1999

Rainwater, T.R., Pop, T., Cal, O., Platt, S.G., Hudson, R. (2010). A recent survey of the critically endangered Central American river turtle (Dermatemys mawii) in Belize. Report to Turtle Conservation Fund and Belize Fisheries Department, Belize City, Belize.

Richardson, R. (2009). Belize and Climate Change: The Cost of Inaction. UNDP

Ruhl, J.B. (2011). General Design Principles for Resilience and Adaptive Capacities in Legal Systems – with Application to Climate Change Adaptation; North Carolina Law Review, Vol. 89, 2011.

Secretariat of the Convention on Biological Diversity. (2011) Incentive Measures for the Conservation and Sustainable Use of Biological Diversity: Case studies and lessons learned. Technical Series No. 56

Sarteneja Alliance for Conservation and Development (2013). Corozal Bay Wildlife Sanctuary Research and Monitoring Plan.

Statistical Institute of Belize data. Downloaded 2015.

TEEB (2009). The Economics of Ecosystems and Biodiversity for National and International Policy Makers – Summary: Responding to the Value of Nature

Texas Invasive Species institute (2014). http://www.tsusinvasives.org/home/database/penaeus-monodon.

The Biodiversity Finance Initiative (BIOFIN) (2015). Mobilising resources for biodiversity and sustainable development. An Overview and Key Progress Summary, May 2015

The Laws of Belize; Belize Legal Information Network Online; www.belizelaw.org

The Nature Conservancy (2015). Ecosystem representation data (draft)

Tyrell T. (2016). Report on Assessments of Capacity and Finance Gaps and Needs, and of Existing Biodiversity Finance, Including a Review of the Existing Financing Mechanisms Applied for Biodiversity in Belize.

UNESCO (1996). 20th Session of the Convention Concerning the Protection of The World Cultural and Natural Heritage (CONF 201).

UNFCCC (2015). www.unfccc.int

University of Belize – Environmental Research Institute (2016). National Biodiversity Monitoring Program Framework'

Usher, M. A. (2016); Strengthening Policy, Legislative and Institutional Measures for Improved Biodiversity Conservation, Sustainable Use and Benefit Sharing in Belize; Belize Forest Department; Ministry of Agriculture, Forestry, Fisheries, Climate Change, Environment and Sustainable Development; Belize

Walker Z. and P. Walker (2005). National Framework for Management Planning under the National Protected Areas Policy and System Plan. Belize Forest Department.

Walker Z. and P. Walker (2007). Technical Assessment of the Maya Mountains Massif, with four outputs: Technical Assessment of Biodiversity and Culture (in collaboration with Jaime Awe); Technical

Assessment of Threats and Opportunities; Socio-Economic Assessment (in collaboration with Nellie Catzim). Belize Forest Department and The Nature Conservancy

Walker Z. and P. Walker (2008). Conservation Action Plan for the Southern Belize Reef Complex. Friends of Nature, TNC and Belize Fisheries Department

Walker Z., P. Walker, N. Catzim and J. Awe (2008). Technical Assessment of the Biodiversity and Cultural Values of the Maya Mountains Massif. Belize Forest Department and The Nature Conservancy.

Walker Z. and P. Walker (2009). Columbia River Forest Reserve – Strategic Management Plan 2011 – 2015. Belize Forest Department and Ya'axché Conservation Trust.

Walker Z. and P. Walker (2010). Status of Protected Areas in Belize. APAMO

Walker Z. (2010). The Southern Belize Reef Complex – Managing for Climate Change. Southern Environmental Association

Walker Z. and P. Walker (2010). Status of Protected Areas in Belize. Report for APAMO

Walker Z. and P. Walker (2013). Rationalization Exercise of the Belize National Protected Areas System. Belize Forest Department, Ministry of Forest, Fisheries and Sustainable Development

World Resources Institute (2005). Belize Coastal Threat Atlas

World Resources Institute (2007). Belize Coastal Threat Atlas

World Travel and Tourism Council (2015). Travel and Tourism Economic Impact 2015: Belize

Young R., L. Wolfe and V. Macfarlane (2005). Monitoring Management Effectiveness in Belize's Protected Areas. NPAPSP.

https://www.cbd.int/doc/world/bz/bz-nr-05-en.pdf
https://www.thegef.org/gef/country_profile/BZ
https://sgp.undp.org/index.php?country=21
http://www.worldbank.org/projects/search?lang=en&searchTerm=&tab=map&countryshortname_exact=Belize
OECD. 2013. Scaling-up Finance Mechanisms for Biodiversity. OECD, Paris, France.
https://www.cbd.int/doc/world/bz/bz-nr-05-en.pdf
https://www.thegef.org/gef/country_profile/BZ